



CA / CMA FOUNDATION  
FOR SEP 24 / JAN 25 (NEW SYLLABUS)

“India's Most Trusted Faculty”

Help you to achieve your dreams

CA, CS  
**GOPAL BHOOT**



Visit Our Website  
[WWW.GOPALBHOOTCA.COM](http://WWW.GOPALBHOOTCA.COM)

LEARN MORE

Call Us For Info:  
**98305 64405**



# **GOPAL BHOOT CLASSES**

**CS/CMA FOUNDATION, INTER**

*Why*  
**SELECT US?**



**BEST FACULTY**

**1 YEAR VALIDITY 16**

**LIVE BACK UP**

**ALL MTP SOLVED**

**COLOUR DISPLAY**

**UNLIMITED VIEWS**

**CHAPTERWISE TEST**

**ALL RTP SOLVED**

**PHYSICAL BOOKS**

**FULL BACK UP**

**MENTOR GUIDANCE**

**REGULAR REVISIONS**

**100% DOUBT SOLVING**

**FRIENDLY ENVIRONMENT**

**FULL SYLLABUS COVERAGE**

**FREE FAST TRACK CLASS**

**CALL US NOW - 9830564405**



**WWW.GOPALBHOOTCA.COM**

 **Gopalbhootclasses**

  **GOPAL BHOOT**



# WHY SELECT US?

- ⇒ UNDERSTAND, APPLY IN REAL LIFE, REVISE
- ⇒ CHAPTERWISE & FULL SYLLABUS MOCK TEST
- ⇒ SYSTEMATIC BOOKS WHICH INCLUDE FULL ICAI MAT +
- ⇒ 30 YEARS PAST EXAM QUESN + ALL MTP + ALL RTP
- ⇒ EXAMPLES YOU WILL REMEMBER FOR LIFE
- ⇒ FOCUS ON APPLICATION NOT ON MEMORISING BLINDLY

## OUR CA RANKERS

 SHUBHAM JAIN 350	 ANUSHA KEDIA 345	 KHUSHI KUMARI 339	 SWASTIKA CHETANI 337	 RAGHAV MUNDRA 336	 AKSHAT JAIN 336	 PRITEE AGRAWAL 331	 AMAN AGRAWAL 327	 KRISHNA AGRAWAL 325	 SAHELI MUKHERJEE 324	 KESHAV JAIN 324
 RAHUL RANJAN 324	 ABHAY GUPTA 323	 ANCHAL JAIN 323	 JAY AGRAWAL 322	 SIDHI JAIN 322	 KUSHAGRA JAIN 321	 SUMIT AGRAWAL 321	 RIDHI JAIN 319	 RASHMI AGRAWAL 318	 SRISHTI BINDAL 318	 ROHIT JAIN 318
 NAHAR AGRAWAL 317	 AKANSHA AGRAWAL 315	 ANKUR KUMAR 315	 SIDDHANT KASHNIWAL 312	 PRATHAM CHAUDHARY 310	 HARSH KEDIA 310	 RAHUL JAIN 308	 RITIK JAIN 308	 AAYESHA AGRAWAL 307	 RAUNAK BAGARIA 306	 HONEY SHROFF 306
 PRIYAL KEDIA 306	 TANYA AGRAWAL 305	 UMANG JAIN 303	 KUSHI KAUR MAGO 303	 SABAL KUMAR 302	 AYUSH JALAN 301	 RACHIT AGRAWAL 301				



AIR 1

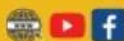
ABHINAV PRAKASH MISHRA, IPCC May-2019

## OUR CMA RANKERS

 UMESH AGARWALA 348	 ANISHA CHOUDHARY 346	 LATA BAJAJ 346	 SANGITA SHARMA 342	 SHUBHAM YADAV 342	 CHIRAG HAZRA 342	 ANUP GOYAL 338	 RISHAB AGARWALA 336	 VARUN AGRAWAL 334	 LIKHIT AGRAWALA 332	 KHUSHI DALMIA 328
 TITHI KHAWAS 322	 SANWLI KUMARI 322	 ASHUTOSH BAJAJ 322	 SUBHASH CHANDRA 320	 SATYAM KUMAR 320	 SNEHA SHAW 318	 Chandan Chaudhary 316	 PRATIK KUMAR BHAW SINGHIA 316	 SACHIN KUMAR ROY 316	 ANKIT GUPTA 312	 SATWIKA SRIVASTAVA 312
 BARUN AGRAWAL 312	 PRIYAL KEDIA 312	 PRIYANSHU PAWAN 310	 UJJWAL KUMAR GUPTA 310	 SANJEET BARNWAL 310	 RIYA RAJAK 310	 DEV RAT DALMIA 308	 SONAM KUMARI 306	 SANJANA PRASAD 306	 PRATYUSH GUPTA 306	 KSHITIZ KUMAR 305

AND MANY MORE....

72, GIRISH PARK (NORTH), ABOVE AMIT AGARWAL BLIND SCHOOL, 2ND FLOOR, KOLKATA-700 006  
CONTACT: 9830564405/9830620852



<b>MATH MTP</b>	<b>Pg. No. (See Page No. On Top of the Page)</b>
<i>October, 2019</i>	<i>1 to 17</i>
<i>October, 2020</i>	<i>18 to 35</i>
<i>March, 2021</i>	<i>36 to 53</i>
<i>April, 2021</i>	<i>54 to 72</i>
<i>October 2021</i>	<i>73 to 90</i>
<i>November 2021</i>	<i>91 to 107</i>
<i>March 2022</i>	<i>108 to 124</i>
<i>June, 2022</i>	<i>125 to 142</i>
<i>November 2022</i>	<i>143 to 177</i>
<i>April 2023</i>	<i>178 to 195</i>
<i>May 2023</i>	<i>196 to 213</i>
<i>November 2023</i>	<i>214 to 232</i>
<i>December 2023</i>	<i>233 to 249</i>



**MOCK TEST PAPER 1**  
**FOUNDATION COURSE**

**PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS**

Time: 2 hours

Marks: 100

**Section A : Business Mathematics and Logical Reasoning**

1. The ratio of the earnings of two persons 3:2. If each saves  $\frac{1}{5}$ <sup>th</sup> of their earnings, the ratio of their savings.
  - (a) 2:3
  - (b) 3:2
  - (c) 4:5
  - (d) 5:4

**RATIO**
  
2. The Third Proportional to 15 and 20 is
  - (a)  $\frac{80}{3}$
  - (b) 80
  - (c)  $\frac{80}{7}$
  - (d) 120

**PROPORTION**
  
3. If  $\log_9 x + \log_3 x = \frac{3}{2}$  then x is
  - (a) 0
  - (b) 1
  - (c)  $\frac{9}{4}$
  - (d) 3

**LOG**
  
4. If x+y, y+z, z+x are in the ratio 6:7:8 and x + y + z =14 then the value of x is
  - (a) 6
  - (b)  $\frac{14}{3}$
  - (c) 8
  - (d) 10

**RATIO**
  
5. If  $2^x = 3^y = 6^z$  then  $\frac{1}{x} + \frac{1}{y} =$ 
  - (a)  $\frac{1}{z}$
  - (b)  $\frac{1}{z} - \frac{1}{x}$
  - (c)  $\frac{1}{z} + \frac{1}{x}$

**INDICES**

(d) 0

6. 5 chairs and 3 tables cost of Rs.350. and 3 Chairs and 5 tables cost Rs.370. What is the cost of the table and two chairs?

(a) Rs.130  
 (b) Rs. 120  
 (c) Rs.150  
 (d) Rs.140

**LINEAR EQUATION**

7. If one root of the quadratic equation is  $2 + \sqrt{3}$ , the equation is \_\_\_\_

(a)  $x^2 - 4x + 1 = 0$   
 (a)  $x^2 + 4x + 1 = 0$   
 (c)  $x^2 - 4x - 1 = 0$   
 (d) None of these

**QUADRATIC EQUATION**

8. If thrice of A's age 6 years ago be subtracted from twice his present age, the result would be equal to his present age. Find A's Age

(a) 9  
 (b) 8  
 (c) 10  
 (d) 12

**LINEAR EQUATION**

9. Let  $A = \begin{pmatrix} 2 & 3 \\ 4 & 5 \end{pmatrix}$ ;  $B = \begin{pmatrix} 1 & 5 \\ 6 & 7 \end{pmatrix}$  then the value  $A-3B$

(a)  $\begin{pmatrix} -1 & -12 \\ -14 & -16 \end{pmatrix}$

(b)  $\begin{pmatrix} 1 & -12 \\ -14 & 16 \end{pmatrix}$

(c)  $\begin{pmatrix} -1 & 12 \\ -14 & 16 \end{pmatrix}$

(d)  $\begin{pmatrix} 1 & 12 \\ -14 & 16 \end{pmatrix}$

10.  $\begin{pmatrix} a & b \\ b & a \end{pmatrix} \times \begin{pmatrix} a & b \\ b & a \end{pmatrix}$

(a)  $\begin{pmatrix} a^2 + b^2 & 0 \\ 0 & a^2 + b^2 \end{pmatrix}$

(b)  $\begin{pmatrix} -a^2 - b^2 & 0 \\ 0 & a^2 + b^2 \end{pmatrix}$

(c)  $\begin{pmatrix} a^2 - b^2 & 0 \\ 0 & a^2 + b^2 \end{pmatrix}$

(d)  $\begin{pmatrix} a^2 - b^2 & 0 \\ 0 & a^2 - b^2 \end{pmatrix}$

11. The solution set of the in equation  $x + 2 > 0$  and  $2x - 6 > 0$  is

- (a)  $(-2, \infty)$   
 (b)  $(3, \infty)$   
 (c)  $(-\infty, 2)$   
 (d)  $(-\infty, -2)$

**SET**

12. A company produces two products A and B, each of which requires processing in two machines. The first machine can be used at most for 60 hours, the second machine can be used at most for 40 hours. The product A requires 2 hours on machine one and one hour on machine two. The product B requires one hour on machine one and two hours on machine two. Express above situation using linear inequalities.

- (a)  $2x + y \leq 60$  and  $x + 2y \geq 40$ .  
 (b)  $2x + y \geq 60$  and  $x + 2y \geq 40$ .  
 (c)  $2x + y \leq 60$  and  $x + 2y \leq 40$ .  
 (d)  $2x + y \geq 60$  and  $x + 2y \leq 40$ .

**INEQUALITIES**

13. Rs. 1000 is invested at annual rate of interest of 10% p.a. The amount after two years if compounding is done annually is \_\_\_\_\_

- (a) Rs. 121  
 (b) Rs. 1210  
 (c) Rs. 2110  
 (d) None of these

**TIME VALUE AND MONEY**

14. If A person invests Rs.3,000 in a three years' investment that pays you 12% per annum. Calculate the future value of the investment.

- (a) Rs.4214.78  
 (b) Rs. 4124.78  
 (c) Rs.4324.48  
 (d) Rs.4526.48

**TIME VALUE AND MONEY**

15. A person deposited a sum of Rs. 10,000 in a bank. After 2 years, he withdrew Rs. 4,000 and at the end of 5 years, he received an amount of Rs. 7,900; then the rate of simple interest is:

- (a) 6%  
 (b) 5%  
 (c) 10%  
 (d) None of these

**TIME VALUE AND MONEY**

16. A company is considering proposal of purchasing a machine either by making full payment of Rs.4000 or by leasing it for four years at an annual rate of Rs.1250. Which course of action is preferable if the company can borrow money at 14% compounded annually? [P (4,0.14) = 2.9137]

- (a) leasing is not preferable

- (b) leasing is preferable
- (c) cannot determined
- (d) none of these

**TIME VALUE AND  
MONEY**

17. Anil bought a motor cycle costing Rs.1,30,000 by making a down payment of Rs.30, 000 and agreeing to make equal annual payment for five years. How much would be each payment if the interest on unpaid amount be 10% compounded annually? [  $P(5, 0.10) = 3.7908$  ]

- (a) Rs.28379.70
- (b) Rs.26300.70
- (c) Rs.26500.70
- (d) Rs.26379.70

**TIME VALUE AND  
MONEY**

18. Shoba borrows Rs.50,00,000 to buy a house. If he pays equal instalments for 20 years and 10% interest on outstanding balance, what will be the equal annual instalment?

[Given :  $P(20,0.10) = 8.51356$ ]

- (a) Rs.687298.4
- (b) Rs.685298.4
- (c) Rs.585298.4
- (d) Rs.587298.4

**TIME VALUE AND  
MONEY**

19. A trust fund has invested Rs. 30,000 in two different types of bonds which pays 5% and 7% interest respectively. Determine how much amount is invested in each type of bond if trust obtains an annual total interest of Rs. 1600.

- (a) Rs.5000
- (b) Rs.6000
- (c) Rs.7000
- (d) Rs. 8000

**TIME VALUE AND  
MONEY**

20. An overdraft of Rs. 50,000 to be paid back in equal annual installments over a period of 20 years. Find the value of Installment, if interest is compounded annually at 14% per annum.

[Given  $(1.14)^{20} = 13.74349$ ]

- (a) Rs .550.50
- (b) Rs .549.30
- (c) Rs .559.50
- (d) Rs .560.50

**TIME VALUE AND  
MONEY**

21. At six months' intervals A deposited of Rs. 1000 in a savings account which credit interest at 10% p.a., compounded semi-annually. The first deposit was made when A's son was 6 months old and last deposit was made when his son was 8 years old. The money remained in the account and was presented to the son on his 10<sup>th</sup> birthday. How much did he receive?  $(1.06)^{16} = 2.1829$

- (a) Rs.25740
- (b) Rs.23740
- (c) Rs.25860
- (d) Rs.25760

**TIME VALUE AND  
MONEY**



22. What is the effective rate of interest if the nominal rate 5 % p.a converted quarterly?

- (a) 6.09 %
- (b) 5.09 %
- (c) 5.55%
- (d) 5.60 %

**TIME VALUE AND  
MONEY**

23. A sum of money doubles itself at compound interest in 10 years. In how many years will it become eight times?

- (a) 20
- (b) 30
- (c) 40
- (d) 35

**TIME VALUE AND  
MONEY**

24. Certain sum of money borrowed at simple interest amount to Rs.2688 in three years and to Rs.2784 in four years at the rate per annum equal to

- (a) 7%
- (b) 6%
- (c) 5%
- (d) 4%

**TIME VALUE AND  
MONEY**

25. In how many ways can a committee of 3 ladies and four gents be chosen from 8 ladies and 7 gents?

- (a) 1950
- (b) 1920
- (c) 1940
- (d) 1960

**PERMUTATION &  
COMBINATION**

26. In how many ways can the letters of the word 'STRANGE' be arranged so that the vowels never come together?

- (a) 3600
- (b) 3686
- (c) 5040
- (d) 4050

**PERMUTATION &  
COMBINATION**

27. A box contains 7 red, 6 white and 4 blue balls. How many selections of three balls on of each colour?

- (a) 178
- (b) 158
- (c) 198
- (d) 168

**PERMUTATION &  
COMBINATION**

28. The number of diagonals in a polygon of 6 sides

- (a) 9
- (b) 8
- (c) 6
- (d) 12

**PERMUTATION &  
COMBINATION**

29. If  $A = \{1, 2, 3, 4, 5\}$  and  $B = \{6, 7, 8\}$ , then cardinal number of  $A \times B$  is:

- (a) 15
- (b) 5
- (c) 3
- (d) 8

**SETS**

30. The number of subsets of the set  $A = \{1, 2, 3, 4, 5, 6, 7, 8\}$  is

- (a) 36
- (b) 128
- (c) 256
- (d) None of these

**SETS**

31. If  $f(x) = \left( \frac{x^2 - 4}{x - 2} \right)$ , then  $f(2)$  is

- (a) 0
- (b) 2
- (c) 4
- (d) 1

**RELATIONS &  
FUNCTIONS**

32. The first term of an A.P. is 100 and the sum of whose first 6 terms is 5 times the sum of the next 6 terms, then the c.d. is –

- (a) –10
- (b) 10
- (c) 5
- (d) None of these

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

33. The sum of  $n$  terms of an A.P. is  $3n^2 + n$ ; then its  $p^{\text{th}}$  term is

- (a)  $6P + 2$
- (b)  $6P - 2$
- (c)  $6P - 1$
- (d) None of these

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

34. if three AM's between 3 and 11, they are

- (a) 4, 6, 8
- (b) 3, 5, 7
- (c) 5, 7, 9
- (d)  $11/2, 15/2, 19/2$

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

35. If  $y^3 \cdot x^5 = (x+y)^8$ , then  $\frac{dy}{dx}$  is

- (a)  $\frac{y}{x}$
- (b)  $\frac{-y}{x}$

**DIFFERENTIAL  
CALCULUS**

(c)  $\frac{y^5}{x^3}$

(d) None of these

36. If  $f'(x) = 3x^2 + 2$  &  $f(0) = 0$  then find  $f(2)$ .

(a) 8

(b) 10

(c) 12

(d) None of these

**DIFFERENTIAL  
CALCULUS**37. The gradient of the curve  $x^3 + y^3 = 9$  at the point (1,2) is

(a) -1/4

(b)  $\frac{1}{4}$ 

(c) 4

(d) -4

**DIFFERENTIAL  
CALCULUS**38. If  $x = \frac{2t}{1+t^2}$ ,  $y = \frac{1-t^2}{1+t^2}$  then  $\frac{dy}{dx} + \frac{x}{y}$  is

(a) 1

(b) 2

(c) 0

(d)  $4t^2$ **DIFFERENTIAL  
CALCULUS**39. Evaluate  $\int \frac{2x+1}{x(x+1)} dx$ (a)  $\log(x^2 - x) + c$ (b)  $\log(x^2 + x) + c$ (c)  $\log(x^2 + 1) + c$ 

(d) None of these

**INTEGRAL  
CALCULUS**40. Evaluate  $\int_0^1 x.e^x dx$ 

(a) e

(b) e-1

(c) 2e

(d) 1

**INTEGRAL  
CALCULUS****Logical Reasoning**

41. Find the missing term of the series 17, 14, 15, 12, 13, ?, ?

(a) 10, 11

(b) 14, 11

**NUMBER SERIES**

- (c) 11, 13  
(d) 12, 13
42. Find out the odd man out of the series 5, 27, 61, 122, 213, 340, 509  
(a) 27  
(b) 61  
(c) 122  
(d) 509
43. a\_c\_ba\_ca\_cb  
(a) abcc  
(b) acba  
(c) bcaa  
(d) bcba
44. In a certain language TWINKLE is written as SVHOJKD, then how would FILTERS be written in the same code?  
(a) EHKUDQR  
(b) ITNFKD  
(c) KVOHMF  
(d) TIMFKD
45. C is mother of A and B. If D is husband of B, then what is C to D?  
(a) Mother  
(b) Aunt  
(c) Mother-in-law  
(d) Sister
46. Read the following information carefully to answer the questions that follow.  
I. 'P + Q' means 'P is father of Q'  
II. 'P - Q' means 'P is mother of Q'  
III. 'P × Q' means 'P is brother of Q'  
IV. 'P ÷ Q' means 'P is sister of Q'  
Which of the following means 'M' is maternal uncle of T?  
(a)  $M \div K - T$   
(b)  $M \times K - T$   
(c)  $M \times K + T$   
(d)  $M \div K + T$
47. Pointing a man to photo graph, a man is said to a woman, "His mother is the only daughter of your father". How is the woman is related to the man in the photograph?  
(a) Sister  
(b) Mother  
(c) Wife

NUMBER SERIES

NUMBER SERIES

NUMBER SERIES

BLOOD RELATION

BLOOD RELATION

BLOOD RELATION

BLOOD RELATION

- (d) Daughter
48. Moni is daughter of Sheela. Sheela is wife of my wife's brother. How Moni is related to my wife?
- (a) Cousin  
(b) Niece  
(c) Sister  
(d) Sister-in-law
- BLOOD RELATION**
49. Four girls are A, B, C and D are sitting around a circle facing the centre. B and C are in front of each other, which of the following is definitely true?
- (a) A and D are in front of each other  
(b) A is not between B and C  
(c) D is to the left of C  
(d) A is to the left of C
- SEATING ARRANGEMENTS**
50. Seven children A, B, C, D, E, F and G are sitting in a row. G is to be right of D and to the left of B. A is on the right of C, A and D have one child between them. E and B have two children between them. Who is exactly in the middle?
- (a) A  
(b) C  
(c) D  
(d) G
- SEATING ARRANGEMENTS**
51. A man starts for his office in the North direction, he turns to his left, and then to his right and again to his right. In which direction he will be facing?
- (a) North  
(b) South  
(c) East  
(d) North
- DIRECTION TEST**
52. Pramila is going towards East. She turns left, moves on same distance and again turns to her left. After walking some distance, she turns to her right and moves on. In which direction she is going now?
- (a) North  
(b) South  
(c) North-West  
(d) West
- DIRECTION TEST**
53. Six friends A, B, C, D, E and F are sitting in row facing East. "C "is between 'A' and 'E'. 'B' is just to the right of 'E but left of D'. 'F' is not right end. How many persons are to the left of E ?
- (a) 1  
(b) 2  
(c) 3  
(d) 4
- SEATING ARRANGEMENTS**
54. If 'MEAT' is written as 'TEAM', then 'BALE' is written as
- (a) ELAB  
(b) EABL

(c) EBLA

NUMBER SERIES

(d) EALB

55. Town D is 12 km towards the North of A. Town C is 15 km towards the West of town D. Town B is 15 km towards the west of town A, how far and which direction is town B from town C ?

(a) 15 Km towards North

(b) 12 Km towards North

DIRECTION TEST

(c) 3 km towards South

(d) 12 km towards South

56. Rajiv walks 10 m South from his house, turns left and walks 25 m, again turns left and walks 40 m, then turns right and walks 5 m to reach the college. In which direction is the college from his house

(a) North

(b) South-West

DIRECTION TEST

(c) North-East

(d) East

~~(57-60) Each of the following questions contains two statements followed by two conclusions numbered I and II. You have to consider the two statements to be true, even if they seem to be at variance at the commonly known facts. You have to decide which of the given conclusions definitely follows from the given statements~~

~~Give answer (a) if only I follows; (b) if only conclusion II follows; (c) both I and II follows and (d) if neither I nor II follows:~~

~~57. Statements: I. Some books are magazines.~~

~~II. Some magazines are novels~~

~~Conclusions: I. Some books are novels~~

~~II. Some novels are magazines.~~

~~58. Statements: I. Some scales are pencils.~~

~~II. Some erasers are pencils.~~

~~Conclusions: I. Some pencils are erasers.~~

~~II. Some pencils are scales.~~

~~59. Statements: I. Some bikes are vans.~~

~~II. All vans are trains.~~

~~Conclusions: I. Some bikes are trains.~~

~~II. No van is a bike.~~

~~60. Statements: I. No month is a year.~~

~~II. No year is second.~~

~~Conclusions: I. All months are second.~~

~~II. No Second is month.~~

**Part B Statistics (40 Marks)**

61. The number of times a particular item occurs in a given data is called its
- Variation
  - Frequency
  - Cumulative frequency
  - None of these
- STATISTICAL REPRESENTATION OF DATA**
62. Frequency density is used in the construction of
- Histogram
  - Ogive
  - Frequency polygon
  - None of these
- STATISTICAL REPRESENTATION OF DATA**
63. The width of each of ten classes in a frequency distribution is 2.5 and the lower class boundary of the lowest class is 10.6. Which one of the following is the upper class boundary of the highest class?
- 35.6
  - 33.1
  - 30.6
  - None of these
- STATISTICAL REPRESENTATION OF DATA**
64. Let L be the lower class boundary of a class in a frequency distribution and m be the mid point of the class. Which one of the following is the higher class boundary of the class?
- $m + \frac{m+2}{2}$
  - $L + \frac{m+L}{2}$
  - $2m-L$
  - $m - 2L$
- STATISTICAL REPRESENTATION OF DATA**
65. The mean of the values of 1, 2, 3 ..... n with respective frequencies x, 2x, 3x, ..... nx is
- $\frac{n+1}{2}$
  - $\frac{n}{2}$
  - $\frac{2n+1}{3}$
  - $\frac{2n+1}{6}$
- CENTRAL TENDENCY**
66. The mean of four observations is 10 and when a constant a is added to each observation, the mean becomes 13. The value of a is
- 2
  - 3
  - 3
- CENTRAL TENDENCY**

- (d) None of these
67. A person travels from A to B at the rate of 20 km/hr and from B to A at the rate of 30km/hr. What is the average rate of whole journey ?
- (a) 30 km/ hr.  
 (b) 24 km/hr.  
 (c) 35 km/hr.  
 (d) none of these
- CENTRAL TENDENCY**
68. The average salary of a group of unskilled workers is Rs.10,000 and that of a group of skilled workers is Rs.15,000. If the combined salary is Rs.12,000, then what is the percentage of skilled workers?
- (a) 40%  
 (b) 50%  
 (c) 60%  
 (d) none of these
- CENTRAL TENDENCY**
69. The third decile for the numbers 15, 10, 20, 25, 18, 11, 9, 12 is
- (a) 13  
 (b) 10.70  
 (c) 11  
 (d) 11.50
- CENTRAL TENDENCY**
70. If the SD of x is 3, what us the variance of (5-2x)?
- (a) 36  
 (b) 6  
 (c) 1  
 (d) 9
- DISPERSSION**
71. If the values of all observations are equal then the Standard Deviation of the given observations is
- (a) 0  
 (b) 2  
 (c) 1  
 (d) None of these
- DISPERSSION**
72. The Standard Deviation of a set of 50 items is 10. Find the Standard Deviation if every item is increased by 5.
- (a) 15  
 (b) 5  
 (c) 10  
 (d) None of these
- DISPERSSION**
73. Find the coefficient of variation if the sum of squared deviations taken from mean 40 of 10 observations is 360.
- (a) 15  
 (b) 20  
 (c) 40
- DISPERSSION**



- (d) None of these
74. The average of  $n$  numbers is  $x$ . If each of the numbers is multiplied by  $(n+1)$ ; then the average of new set of numbers is
- (a)  $x$
- (b)  $\frac{x}{n+1}$
- (c)  $(n+1)x$
- (d) None of these
75. The average weight of 8 person increases by 1.5 kg, if a person weighing 65 kg replaced by a new person, what would be the weight of the new person?
- (a) 76 kg
- (b) 80 kg
- (c) 77 kg
- (d) None of these
76. For open-end classification, which of the following is the best measure of central tendency?
- (a) AM
- (b) GM
- (c) Median
- (d) Mode
77. The presence of extreme observations does not affect
- (a) AM
- (b) Median
- (c) Mode
- (d) Any of these.
78. Two variables  $x$  and  $y$  are given by  $y = 2x - 3$ . If the median of  $x$  is 20, what is the median of  $y$ ?
- (a) 20
- (b) 40
- (c) 37
- (d) 35
79. If one card is drawn at random from a pack of playing cards; find the probability it is neither a hearts nor a club:
- (a)  $\frac{1}{2}$
- (b)  $\frac{1}{4}$
- (c)  $\frac{1}{8}$
- (d) None of these

**CENTRAL  
TENDENCY**

**CENTRAL  
TENDENCY**

**CENTRAL  
TENDENCY**

**CENTRAL  
TENDENCY**

**CENTRAL  
TENDENCY**

**PROBABILITY**

80. Three balls are drawn at random from a bag containing 6 blue and 4 red balls. What is the chance that 2 balls are blue and 1 is red?

- (a)  $\frac{1}{4}$   
 (b)  $\frac{3}{4}$   
 (c)  $\frac{1}{2}$   
 (d) None of these

**PROBABILITY**

81. The probability that a person travels by a plane is  $\frac{1}{5}$  and that he travels by train is  $\frac{2}{3}$ . Find the probability of his traveling neither by plane nor by train?

- (a)  $\frac{13}{15}$   
 (b)  $\frac{2}{15}$   
 (c)  $\frac{1}{15}$   
 (d) None of these

**PROBABILITY**

82. Find the probability that at least 5 defective bolts will be found in a box of 200 bolts. If it is known that 2% of such bolts are expected to be defective (Given:  $e^{-4} = 0.0183$ )

- (a) 0.4717  
 (b) 0.3717  
 (c) 0.3017  
 (d) None of these

**THEORETICAL DISTRIBUTIONS**

83. Let X be a random variable with the following distribution

X	-2	4	8
P(x)	$\frac{1}{6}$	$\frac{1}{3}$	$\frac{1}{2}$

Find expected value of the random variable

- (a) 5  
 (b) 6  
 (c) 7  
 (d) 8

**PROBABILITY**

84. If x & y are two independent variables such that  $x \sim B(n_1, P)$  and  $y \sim B(n_2, p)$  then the parameter of  $Z = x+y$  is

- (a)  $(n_1+n_2), P$   
 (b)  $(n_1-n_2), P$   
 (c)  $(n_1+n_2), 2P$   
 (d) None of these

**THEORETICAL DISTRIBUTIONS**

85. Five coins tossed 3200 times. The number of times 5 heads appeared is

- (a) 500
- (b) 1200
- (c) 200
- (d) 100

**PROBABILITY**

86. For the normal distribution density function  $f(x) = k.e^{\frac{(x^2-6x+9)}{8}}$ , the mean and variance are

- (a) (2,3)
- (b) (3,2)
- (c) (4,3)
- (d) (3,4)

**THEORETICAL DISTRIBUTIONS**

87. The mean deviation of normal distribution is 16. The Quartile Deviation is

- (a) 40/3
- (b) 20/3
- (c) 100/3
- (d) 50/3

**THEORETICAL DISTRIBUTIONS**

88. The Quartile Deviation of the normal distribution  $f(x) = \frac{1}{\sqrt{18\pi}} e^{\frac{-(x-10)^2}{18}}$ ,  $-\infty < x < \infty$  is

- (a) 3
- (b) 4/3
- (c) 2
- (d)  $\frac{3}{4}$

**THEORETICAL DISTRIBUTIONS**

89. If x and y are two independent normal random distributions with mean and SD's are (10, 5) and (15, 12) these mean and SD of (x+y) is

- (a) (27, 15)
- (b) (10, 27)
- (c) (25,13)
- (d) (12,25)

**THEORETICAL DISTRIBUTIONS**

90. If two variables are independent their covariance is

- (a) 1
- (b) -1
- (c) 0
- (d) None of these

**PROBABILITY**

91. If two regression coefficients are 4 and 16, the percentage of unexplained variation is
- (a) 64
  - (b) 36
  - (c) 54
  - (d) 46
- REGRESSION**
92. The covariance between two variables  $x$  and  $y$  is 72. The variances of  $x$  and  $y$  are 144 and 84. The coefficient of correlation is
- (a)  $1/3$
  - (b)  $4/5$
  - (c)  $2/3$
  - (d)  $3/5$
- CORRELATION**
93. If the coefficient of determination is 0.64 and the regression coefficient of  $x$  on  $y$  is 4 then the regression coefficient  $y$  on  $x$  is
- (a) 0.32
  - (b) 0.16
  - (c) 0.48
  - (d) 0.96
- REGRESSION**
94. ~~Circular test is the extension of~~
- ~~(a) Unit test~~
  - ~~(b) Factor reversal test~~
  - ~~(c) Time reversal test~~
  - ~~(d) None of these~~
95. Unit test is satisfied by by
- (a) Fischers Index number
  - (b) Laspyers Index number
  - (c) Simple GM of price relatives
  - (d) Bowleys Index number
- INDEX NUMBER**
96. The best average construction of Index number is
- (a) AM
  - (b) GM
  - (c) HM
  - (d) none of these
- INDEX NUMBER**
97. The Paasches and Fishers index numbers are 169 and 156 respectively, then Laspyre's Index number is
- (a) 144
- INDEX NUMBER**

- (b) 152  
(c) 148  
(d) 151.5
98. ~~The rise and fall of a time series over periods longer than one year is called:~~  
(a) ~~Secular trend~~  
(b) ~~Seasonal variation~~  
(c) ~~Cyclical Variation~~  
(d) ~~irregular variations~~
99. ~~A time series has~~  
(a) ~~Two Components~~  
(b) ~~Three Components~~  
(c) ~~Four Components~~  
(d) ~~Five Components~~
100. What is Spurious correlation?  
(a) It is bad relation between two variables  
(b) It is low correlation between two variables  
(c) It is the correlation between two variables having no casual relation  
(d) It is negative correlation

**CORRELATION**



**MOCK TEST PAPER**  
**FOUNDATION COURSE**

**PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS**

**Time: 120 Minutes**

**Maximum Marks: 100**

**Section A: Business Mathematics and Logical Reasoning**

1. If  $x : y = 2 : 3$ , then find  $(5x+2y) : (3x-y)$ 
  - (a)  $13/3$
  - (b)  $16/3$
  - (c)  $19/3$
  - (d)  $7/3$

**RATIO**
  
2. A bag contains ₹187 in the form 1 rupee, 50 paise and 10 paise coins in the ratio 3:4:5. Find the number of each type of coins.
  - (a) 102, 136, 170
  - (b) 136, 102, 170
  - (c) 170, 102, 136
  - (d) none

**LINEAR EQUATION**
  
3.  $\log_e x + \log(1+x) = 0$  is equivalent to
  - (a)  $x^2+x+e = 0$
  - (b)  $x^2+x-e = 0$
  - (c)  $x^2+x+1 = 0$
  - (d)  $x^2+x-1 = 0$

**LOG**
  
4. The ratio of the speed of the two trains is 2: 5. If the distances they travel are in the ratio 5: 9, find the ratio of times taken by them.
  - (a) 2: 9
  - (b) 18: 25
  - (c) 25: 18
  - (d) 10: 45

**RATIO**
  
5. If  $x = 3^{1/4} + 3^{-1/4}$  and  $y = 3^{1/4} - 3^{-1/4}$ , then the value of  $3(x^2 + y^2)^2$  will be
  - (a) 12
  - (b) 18
  - (c) 46
  - (d) 64

**INDICES**

6. Find the value of  $(x + y)$ , if  $\left(x + \frac{y^3}{x^2}\right)^{-1} - \left(\frac{x^2}{y} + \frac{y^2}{x}\right)^{-1} + \left(\frac{x^3}{y^2} + y\right)^{-1} = \frac{1}{3}$

- (a)  $1/3$
- (b) 3
- (c)  $1/2$
- (d) 2

INDICES

7. If  $2x - 3y = 1$  and  $5x + 2y = 50$ , then what is the value of  $(x - 2y)$ ?

- (a) -2
- (b) 6
- (c) 7
- (d) 10

LINEAR EQUATION

8. The cost of 5 mangoes is equal to the cost of 20 oranges. If the total cost 2 mangoes and 10 oranges is ₹ 22.50, find the cost of two oranges.

- (a) ₹ 1.25
- (b) ₹ 2.50
- (c) ₹ 3
- (d) ₹ 3.50

LINEAR EQUATION

9. The roots of the quadratic equation  $9x^2 + 3kx + 4 = 0$  are equal if

- (a)  $k = \pm 2$
- (b)  $k = \pm 3$
- (c)  $k = \pm 4$
- (d)  $k = \pm 5$

QUADRATIC EQUATION

10. If one root of a equation is  $2 + \sqrt{5}$ , then the quadratic equation is

- (a)  $x^2 + 4x - 1 = 0$
- (b)  $x^2 - 4x - 1 = 0$
- (c)  $x^2 + 4x + 1 = 0$
- (d)  $x^2 - 4x + 1 = 0$

QUADRATIC EQUATION

11. A man sells 6 radios and 4 televisions for ₹ 18,480. If 14 radios and 2 televisions are sold for the same amount. What is the price of radio?

- (a) ₹ 1848
- (b) ₹ 840
- (c) ₹ 1680
- (d) ₹ 3360

LINEAR EQUATION

12. if  $\begin{pmatrix} x+y & 1 \\ 1 & x-y \end{pmatrix} + \begin{pmatrix} 2 & 3 \\ 2 & -4 \end{pmatrix} = \begin{pmatrix} 12 & 4 \\ 3 & 0 \end{pmatrix}$  then

- (a)  ~~$x = 7, y = 3$~~   
 (b)  ~~$x = -7, y = -3$~~   
 (c)  ~~$x = -7, y = 3$~~   
 (d)  ~~$x = 7, y = -3$~~

13. What is the value of x, if  $A = \begin{pmatrix} 1 & 4 \\ -2 & x \end{pmatrix}$  is a singular matrix

- (a) ~~5~~  
 (b) ~~6~~  
 (c) ~~7~~  
 (d) ~~8~~

14. The transpose of a square matrix is a \_\_\_\_

- (a) ~~null matrix~~  
 (b) ~~row matrix~~  
 (c) ~~Square matrix~~  
 (d) ~~Column matrix~~

15. The solution set of the equations  $x+2 > 0$  and  $2x -6 > 0$  is

- (a)  ~~$(-2, \infty)$~~   
 (b)  ~~$(3, \infty)$~~   
 (c)  ~~$(-\infty, -2)$~~   
 (d)  ~~$(-\infty, -3)$~~

16. The solution space of the inequalities  $2x + y \leq 10$  and  $x - y \leq 5$  :

- (i) includes origin  
 (ii) includes the point (4,3)

Which one is correct?

- (a) Only (i)  
 (b) only (ii)  
 (c) Both (i) and (ii)  
 (d) None of these

17. A sum of money triples itself in 18 years under simple interest. what is the rate of interest per annum?

- (a) 9 %  
 (b) 9.09 %  
 (c) 11.11 %  
 (d) 13%

INEQUALITIES

INEQUALITIES

INEQUALITIES



18. What time will be required for a sum of money to double itself at 8 % Simple interest?
- (a) 8 Years  
(b) 8.5 Years  
(c) 12.5 Years  
(d) 12 Years
- TIME VALUE AND MONEY**
19. The difference between simple interest and compound interest on a sum of ₹ 6,00,000 for two years is ₹ 6000. What is the annual rate of interest?
- (a) 8 %  
(b) 10 %  
(c) 6 %  
(d) 12 %
- TIME VALUE AND MONEY**
20. What is the sum of money will amount to ₹ 11035.50 in four years at compound interest for 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> years being 4% , 3% , 2% and 1% respectively.
- (a) ₹ 10,000  
(b) ₹ 11,000  
(c) ₹ 1035  
(d) ₹ 11,305
- TIME VALUE AND MONEY**
21. Find the present value of ₹ 10,000 to be required after 5 years, if the interest rate be 9 per cent compounded annually (Given:  $(1.09)^{-5} = 0.65$ )
- (a) ₹ 5500  
(b) ₹ 5600  
(c) ₹ 6000  
(d) ₹ 6500
- TIME VALUE AND MONEY**
22. A Machine was purchased for ₹ 10,000. Its rate of depreciation is 10% in the first year and 5 % per annum afterwards. Find the depreciated value of Machine after 7 years of purchase (Given  $(0.95)^6 = 0.7351$ )
- (a) ₹ 6606  
(b) ₹ 6616  
(c) ₹ 6660  
(d) ₹ 6661
- TIME VALUE AND MONEY**
23. A company is considering proposal of purchasing a machine either by making full payment of ₹4,000 or by leasing it for 4 years at an annual rent of ₹1250. Which course of action is preferable? if the company can borrow money at 14 % per annum? [ Given:  $(1.14)^4 = 1.6870$ ]
- (a) Leasing preferable  
(b) Leasing is not preferable  
(c) can't say  
(d) none of these
- TIME VALUE AND MONEY**

24. A man borrows ₹4000 from a bank at 10% compound interest. At the end of every year ₹ 1,500 as part of repayment of loan and interest. How much is still owe to the bank after three such instalments [Given:  $(1.1)^3 = 1.331$ ]
- (a) ₹ 359  
 (b) ₹ 820  
 (c) ₹ 724  
 (d) ₹ 720.
- TIME VALUE AND MONEY**
25. The effective rate of interest for one-year deposit corresponding to a nominal 7 % rate of interest per annum convertible quarterly. is
- (a) 7 %  
 (b) 7.5  
 (c) 7.4 %  
 (d) 7.18 %
- TIME VALUE AND MONEY**
26. The future value of annuity of ₹1,000, made annually for 5 years at the interest of 14% compounded annually is (Given  $(1.14)^5 = 1.925410$ )
- (a) ₹ 5610  
 (b) ₹ 6610  
 (c) ₹ 6160  
 (d) ₹ 6160
- TIME VALUE AND MONEY**
27. What will be the population after three years when present population is ₹25,000 and population increases at the rate of 3 % in first year, 4 % in second year and 5 % in third year?
- (a) 28119  
 (b) 29118  
 (c) 27000  
 (d) 30000
- TIME VALUE AND MONEY**
28.  $SI = 0.125 P$  at 10% p.a find the time
- (a) 1.25 years  
 (b) 25 Years  
 (c) 0.25 Years  
 (d) none
- TIME VALUE AND MONEY**
29. The number of triangles that can be formed by choosing the vertices from set of 12 points, seven of which lie on the same straight line is
- (a) 185  
 (b) 175  
 (c) 115  
 (d) 105
- PERMUTAION & COMBINATION**

30. How many ways can be letters of the word "FAILURE" be arranged so that the consonants may occupy only odd places?
- (a) 576  
(b) 476  
(c) 376  
(d) 276
31. In an examination a candidate has to pass in each of the 4 papers. In how many different ways can be failed?
- (a) 14  
(b) 16  
(c) 15  
(d) None of these
32. In an election the number of candidates is one more than the number of members to be elected. If a voter can vote in 254 different ways; find the number of candidates.
- (a) 8  
(b) 10  
(c) 7  
(d) None of these
33. If a, b, c are in AP and x, y, z are in GP, then the value of  $x^{(b-c)} \cdot y^{(c-a)} \cdot z^{(a-b)}$  is
- (a) 1  
(b) 0  
(c) b (c-a)  
(d) none
34. The sum of the first two terms of an infinite geometric series is 15 and each term is equal to the sum of all the terms following it; then the sum of the series is
- (a) 20  
(b) 15  
(c) 25  
(d) None of these
35. Let  $f: R \rightarrow R$  be such that  $f(x) = 2^x$ , then  $f(x+y)$  equals
- (a)  $f(x) + f(y)$   
(b)  $f(x) \cdot f(y)$   
(c)  $f(x) \div f(y)$   
(d) none of these
36. If  $A = \{ p, q, r, s \}$ ,  $B = \{ q, s, t \}$  and  $C = \{ m, q, n \}$  find  $C - (A \cap B)$
- (a)  $\{m, n\}$   
(b)  $\{p, q\}$

PERMUTAION &  
COMBINATION

PERMUTAION &  
COMBINATION

PERMUTAION &  
COMBINATION

ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS

ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS

RELATIONS &  
FUNCTIONS

SETS

(c) {r, s}

(d) {p, r}

37. The set having no element is called

(a) Singleton set

(b) null set

(c) finite set

(d) Infinite set

**SETS**38. If  $x\sqrt{1+y} + y\sqrt{1+x} = 0$ , then  $(1+x)^2 \frac{dy}{dx} =$ 

(a) 0

(b) 1

(c) -1

(d) 2

**DIFFERENTIAL  
CALCULUS**39. Find  $\frac{dy}{dx}$  at  $t = 1$  when  $x = t \log t$  and  $y = \frac{(\log t)}{t}$ 

(a) 1

(b) -1

(c) -1/2

(d) 0

**DIFFERENTIAL  
CALCULUS**40. If  $f'(x) = 3x^2 + 2$  and  $f(0) = 0$ , find  $f(2)$ 

(a) 5

(b) 8

(c) 10

(d) 12

**DIFFERENTIAL  
CALCULUS**

41. Find next number in the following series 7, 11, 13, 17, 19, 23, 25, 29?

(a) 30

(b) 31

(c) 32

(d) 33

**NUMBER SERIES**

42. Find odd man out of the following series 41, 43, 47, 53, 61, 71, 73, 81

(a) 41

(b) 47

(c) 61

(d) 81

**NUMBER SERIES**

43. If PLAY is coded as 8123 and RHYME is coded as 49367. What will be code of MALE?

- (a) 6217
- (b) 6198
- (c) 6395
- (d) 6285

**NUMBER SERIES**

44. Find the alphabet missing series ac\_cab\_baca\_a\_ab

- (a) aabc
- (b) aacb
- (c) babb
- (d) bcbb

**NUMBER SERIES**

45. If East is replaced by South-East, then West will be replaced by which replaced by which of the following directions?

- (a) North-East
- (b) North
- (c) East
- (d) North- West

**DIRECTION TESTS**

46. Raju is facing East, he turns  $100^\circ$  in the clockwise direction and  $145^\circ$  in the anti-clock wise direction. Which direction is he facing now?

- (a) West
- (b) North-East
- (c) North
- (d) South-West

**DIRECTION TESTS**

47. If a man on motor bike starts from a point and rides 4 km South then turns left and rides 2 km and turn again to the right to ride in which direction is he moving?

- (a) North
- (b) West
- (c) South
- (d) North

**DIRECTION TESTS**

48. Five people A, B, C, D and E are seated about a round table. Every chair is spaced equidistant from adjacent chairs.

- I. C is seated next to A
- II. A is seated two seats from D.
- III. B is not seated next to A.

Which of the following must be true?

- (I) D is seated next to B.
- II E is seated next to A.

**SEATING  
ARRANGEMENT**

Select the correct answer from the codes given below:

- (a) Only I  
 (b) Only II  
 (c) Both I and II  
 (d) Neither I nor II
49. Six friends A, B, C, D, E and F are sitting in a row facing East. 'C' is between 'A' and 'E'. 'B' is just to the right of 'E' but left of 'D'. 'F' is not the right end. How many persons are Left of 'E' ?
- (a) 1  
 (b) 2  
 (c) 3  
 (d) 4

**SEATING  
ARRANGEMENT**

50. In a straight line there are six persons sitting in a row? B is between F and D. E is between A and C. A does not stand next to F or D, C does not stand next to D. F is between which of the following?
- (a) B and E  
 (b) B and C  
 (c) B and D  
 (d) B and A

**SEATING  
ARRANGEMENT**

51. Hema walks 30 km North. Then, she turns right and walks 30 m then she turns right and walks 55 m. Then she turns left and walks 20 m. Then she again turns left and walks 25 m. How many meters away is she from her original position.
- (a) 45 m  
 (b) 50 m  
 (c) 66 m  
 (d) 55 m

**DIRECTION TESTS**

52. Directions to solve
- (a) P, Q, R, S, T, U, V and W are sitting round the circle and are facing the Centre  
 (b) P is second to the right of T who is the neighbor of R and V.  
 (c) S is not neighbour of P  
 (d) V is neighbour of U  
 (e) Q is not between S and W, W is not between U and S

**SEATING  
ARRANGEMENT**

Who is two of the following are not neighbour

- (a) RV  
 (b) UV  
 (c) RP  
 (d) QW

53. Pointing to a photograph of a boy, Ravi said, "He is son of the only son of my mother". How is Ravi related to that boy ?

- (a) Brother
- (b) Uncle
- (c) Cousin
- (d) Father

**BLOOD RELATION**

54. If A +B means A is brother of B, A-B means A is sister of B, and A × B means A is the father of B . Which of the following means that C is the son of M?

- (a) M-N×C+F
- (b) F-C+ N×M
- (c) N+M-F×C
- (d) M×N-C+F

**BLOOD RELATION**

55. If D is brother of B and B is related C. To answer this question which of the following statements are necessary?

- I. The son of D is the grandson of C.
- II. B is the sister of D.

- (a) Only I
- (b) Only II
- (c) Either I or II
- (d) I and II

**BLOOD RELATION**

56. There are two couple in a family. K has two children. M is wife of O, who is the brother of B. F is daughter K. U is sister of S, who is son of O. T is the son of B, who is the male. How U is related to T?

- (a) Mother
- (b) Brother
- (c) Sister
- (d) Cousin

**BLOOD RELATION**

57. ~~Statements I: Seetha is a girl.~~

~~II: All girls are nice.~~

~~Conclusions I: All girls are Seetha.~~

~~II: Seetha is not a nice girl.~~

- ~~(a) If only I follow.~~
- ~~(b) If only II follow.~~
- ~~(c) If both I and II follow.~~
- ~~(d) If neither I nor II follow.~~

58. ~~Statements: I: Some fruits are flowers.~~

~~II: No flower is a boat.~~

~~III: All boats are rivers.~~

~~Conclusions: I: Some fruits are rivers.~~

~~II: Some rivers are boats.~~

~~III: Some rivers are fruits~~

~~IV: Some flowers are fruits~~

~~(a) Only I and III follows.~~

~~(b) Only II and III follows.~~

~~(c) Only II and IV follows~~

~~(d) All follows.~~

~~59. Statement I: Some chairs are caps . II: No cap is red.~~

~~Conclusion: I: Some caps are Chairs~~

~~II: No Chair is red~~

~~(a) If only Conclusion I follow~~

~~(b) If only conclusion II follow~~

~~(c) If either I or II follow.~~

~~(d) If neither I nor II follow.~~

~~60. Statement I: Some tigers are bats~~

~~II: Some bats are cats~~

~~Conclusion: I: Some tigers are cats~~

~~II: Some cats are tigers~~

~~(a) If only Conclusion I follow~~

~~(b) If only conclusion II follow~~

~~(c) If either I or II follow.~~

~~(d) If neither I nor II follow.~~

### Section B: Statistics

61. The following data relates to the incomes of 90 persons:

Income in ₹	1500-1999	2000-2499	2500-2999	3000-3499
No.of Persons	13	32	20	25

Which is the percentage of persons earning more than ₹ 2,000?

(a) 45

(b) 85.56

(c) 52

(d) 55

**STATISTICAL  
REPRESENTATION  
OF DATA**

62. The most appropriate diagram to represent the data relating to the monthly expenditure on different items by a family is ?

(a) Histogram

(b) Pie-diagram

**STATISTICAL  
REPRESENTATION  
OF DATA**



- (c) Frequency polygon  
 (d) Line graph
63. The distribution of income is an example of frequency distribution of
- (a) Continuous variable  
 (b) A discrete variable  
 (c) An attribute  
 (d) (b) or (c)

**STATISTICAL  
 REPRESENTATION  
 OF DATA**

64. The number of accidents for seven days in a locality are given below :

No. of accidents	:	0	1	2	3	4	5	6
Frequency	:	12	15	23	30	9	3	2

What is the number of cases when 3 or less accidents occurred?

- (a) 56  
 (b) 6  
 (c) 80  
 (d) 87
65. Two variables assume the values 1,2, 3,.. 5 with frequencies as 1, 2, 3, ..5 , then what is the AM ?
- (a) 11/3  
 (b) 15/8  
 (c) 4.86  
 (d) 10

**STATISTICAL  
 REPRESENTATION  
 OF DATA**

**CENTRAL  
 TENDENCY**

66. If there are two groups with 75 and 65 as harmonic means containing 15 and 13 observation then combined HM is given by
- (a) 70  
 (b) 72.25  
 (c) 78  
 (d) 76

**CENTRAL  
 TENDENCY**

67. Quartile can be determined graphically using

- (a) ogive  
 (b) Histogram  
 (c) Pie Chart  
 (d) Frequency Polygon

**CENTRAL  
 TENDENCY**

68. The mean deviation about Mode for the numbers 4/11, 6/11, 8/11, 9/11, 12/11, 8/11 is

- (a) 9/15  
 (b) 12  
 (c) 6/11  
 (d) 1/6

**DISPERSION**

69. The range of 28, 22, 40, 20, 15, 50 is  
(a) 40  
(b) 22  
(c) 35  
(d) none of these
70. A shift of origin has no impact on  
(a) Mean Deviation  
(b) Standard Deviation  
(c) Quartile Deviation  
(d) All of these
71. What is the coefficient of variation of the following numbers 53, 52, 61, 60, 64  
(a) 18.09  
(b) 8.09  
(c) 12.23  
(d) 15.45
72. The quartiles of the variables are 45, 52, and 65 respectively, its Quartile Deviation is  
(a) 5  
(b) 10  
(c) 25  
(d) 8.30
73. The mean and SD for a, b, and 2 are 3 and 1 respectively, the value of ab would be  
(a) 3  
(b) 5  
(c) 12  
(d) 13
74. If the relation between x and y is  $5y - 3x = 10$  and the mean deviation about mean for x is 12, then the mean deviation of y about mean is  
(a) 9.20  
(b) 6.80  
(c) 7.20  
(d) 15.80
75. Which measure of dispersion is based on all the observations  
(a) Standard Deviation  
(b) Mean Deviation  
(c) Quartile Deviation  
(d) Both (a) and (b)

DISPERSION

DISPERSION

DISPERSION

DISPERSION

DISPERSION

DISPERSION

DISPERSION

76. An investment consultant predicts that the odds against the price of a certain stock going up are 2:1 and odd are in favor of the price remaining the same are 1:3 .what is the probability that the price of stock will go down ?
- (a)  $5/12$   
 (b)  $7/12$   
 (c)  $1/3$   
 (d)  $1/4$
- PROBABILITY**
77. A pair of dice rolled. If the sum of the two dice is 9, find the probability that one of the dice showed is 3
- (a)  $1/3$   
 (b)  $1/4$   
 (c)  $1/2$   
 (d)  $1/8$
- PROBABILITY**
78. The overall percentage of failures in a certain examination was 30. What is the probability that out of a group of 6 candidates at least four passed the examination?
- (a) 0.747331  
 (b) 0.757331  
 (c) 0.76991  
 (d) 0.72339
- PROBABILITY**
79. What is the probability of getting neither total of 7 nor 11 when the pair of dice is tossed?
- (a)  $7/9$   
 (b)  $2/9$   
 (c)  $3/9$   
 (d)  $4/9$
- PROBABILITY**
80. What is the probability that a leap year selected at random contains either 53 Sundays or 53 Mondays
- (a)  $2/7$   
 (b)  $3/7$   
 (c)  $4/7$   
 (d)  $1/7$
- PROBABILITY**
81. if A and B are two events, such that  $P(A) = 1/4$ ,  $P(B) = 1/3$  and  $P(A \cup B) = 1/2$ , then  $P(B/A)$  is equal to
- (a)  $3/4$   
 (b)  $1/2$   
 (c)  $1/4$   
 (d)  $1/3$
- PROBABILITY**
82. What is the probability of getting exactly 2 head in 7 tosses of a fair coin?
- (a)  $5/64$   
 (b)  $7/64$   
 (c)  $7/128$
- PROBABILITY**

- (d)  $21/128$
83. The Binomial Distribution for which mean = 15 and variance = 6.0 is
- (a)  ${}^{25}C_x (3/5)^x (2/5)^{25-x}$
- (b)  ${}^{25}C_x (2/5)^x (3/5)^{25-x}$
- (c)  ${}^{25}C_x (2/5)^x (3/5)^{1-x}$
- (d)  ${}^{25}C_x (3/5)^x (2/5)^{1-x}$
84. The SD of a binomial distribution with parameter n and p is
- (a)  $n(1-p)$ .
- (b)  $np(1-p)$ .
- (c)  $np$ .
- (d)  $\sqrt{np(1-p)}$ .
85. If  $P(X=2) = P(X=3)$  for a Poisson Variate X, then  $E(x)$  is
- (a) 2
- (b) 3
- (c) 1
- (d) none of these
86. The total area of the normal curve is
- (a) One.
- (b) 50 per cent.
- (c) 0.50.
- (d) Any value between 0 and 1
87. The mean and mode of the normal distribution
- (a) may be equal
- (b) may be different
- (c) are always equal
- (d) (a) or (b)
88. Bivariate Data are the data collected for
- (a) Two variables.
- (b) More than two variables.
- (c) Two variables at the same point of time.
- (d) Two variables at different points of time.
89. The two lines of regression become identical when
- (a)  $r = 1$
- (b)  $r = -1$
- (c)  $r = 0$

**PROBABILITY  
DISTRIBUTION**

**PROBABILITY  
DISTRIBUTION**

**PROBABILITY  
DISTRIBUTION**

**PROBABILITY  
DISTRIBUTION**

**PROBABILITY  
DISTRIBUTION**

**CORRELATION**

**REGRESSION**

- (d) (a) or (b)
90. The regression coefficients remain unchanged due to a
- (a) Shift of origin
  - (b) Shift of scale
  - (c) Both (a) and (b)
  - (d) (a) or (b).
- REGRESSION**
91. If the coefficient of correlation between two variables is  $-0.9$ , then the coefficient of determination is
- (a) 0.9
  - (b) 0.81
  - (c) 0.1
  - (d) 0.19
- CORRELATION**
92. When  $r = 0$  then  $\text{cov}(x,y)$  is equal to
- (a) + 1
  - (b) - 1
  - (c) 0
  - (d) none
- CORRELATION**
93. Purchasing Power of Money is
- (a) Reciprocal of price index number.
  - (b) Equal to price index number.
  - (c) Unequal to price index number.
  - (d) None of these.
- INDEX NUMBER**
94. Factor Reversal test is satisfied by
- (a) Fisher's Ideal Index Number
  - (b) Laspeyre's Index Number
  - (c) Paasche's Index Number
  - (d) All of the above
- INDEX NUMBER**
95. During the certain period the C.L.I. goes up from 110 to 200 and the Salary of a worker is also raised from 330 to 500, then the real terms is
- (a) Loss by ₹ 50
  - (b) Loss by ₹ 75
  - (c) Loss by ₹ 90
  - (d) None of these.
- INDEX NUMBER**
96. The number of tests adequacy is
- (a) 2
  - (b) 5
  - (c) 3
- INDEX NUMBER**

(d) 4

97. In year 2005, the whole sale price index number is 286 with 1985 as base year, then how much the prices have increased in 2005 in comparison to 1985 ?

(a) 286%

(b) 386%

(c) 86%

(d) 186%

**INDEX NUMBER**

98. ~~When the sale of cold drink increase in summer and decreases in winters is an example of ?~~

~~(a) Seasonal Variations~~

~~(b) Cyclic Variations~~

~~(c) Secular trend~~

~~(d) None~~

99. ~~Seasonal Variations take place within~~

~~(a) One year~~

~~(b) Two year~~

~~(c) half Year~~

~~(d) five years~~

100. ~~The fire in a factory is an example.~~

~~(a) Secular trend~~

~~(b) Seasonal Variations~~

~~(c) Irregular variations~~

~~(d) Cyclical Variations~~

**MOCK TEST PAPER**  
**FOUNDATION COURSE**  
**PAPER – 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS**  
**ANSWERS**

**Section A: Business Mathematics, Logical Reasoning (60 Marks)**

1	(b)	11	(b)	21	(d)	31	(c)	41	(b)	51	(b)
2	(a)	12	(d)	22	(b)	32	(a)	42	(d)	52	(a)
3	(d)	13	(d)	23	(a)	33	(a)	43	(a)	53	(d)
4	(c)	14	(c)	24	(a)	34	(a)	44	(b)	54	(d)
5	(d)	15	(b)	25	(d)	35	(b)	45	(d)	55	(d)
6	(b)	16	(a)	26	(b)	36	(a)	46	(b)	56	(d)
7	(a)	17	(c)	27	(a)	37	(b)	47	(c)	57	(d)
8	(b)	18	(c)	28	(a)	38	(c)	48	(c)	58	(c)
9	(c)	19	(b)	29	(a)	39	(a)	49	(c)	59	(a)
10	(b)	20	(a)	30	(a)	40	(d)	50	(b)	60	(d)

**Section B: Statistics (40 Marks)**

61	(b)	71	(b)	81	(d)	91	(b)
62	(b)	72	(b)	82	(d)	92	(c)
63	(a)	73	(b)	83	(a)	93	(a)
64	(c)	74	(c)	84	(d)	94	(a)
65	(a)	75	(d)	85	(b)	95	(a)
66	(a)	76	(a)	86	(a)	96	(d)
67	(a)	77	(c)	87	(c)	97	(d)
68	(d)	78	(a)	88	(c)	98	(a)
69	(c)	79	(a)	89	(d)	99	(a)
70	(d)	80	(b)	90	(a)	100	(c)

## MOCK TEST PAPER SERIES -1

## FOUNDATION COURSE

## PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 hours

Marks: 100

## Section A: Business Mathematics and Logical Reasoning

1. Two numbers are in the ratio 7: 8 if 3 is added to each of them, their ratio becomes 8:9, the numbers are

- (a) 14, 16
- (b) 24, 27
- (c) 21, 24
- (d) 16, 18

RATIO

2. Which of the numbers are not in proportions?

- (a) 6,8,5,7
- (b) 7.3,14,6
- (c) 18,27,12,18
- (d) 8,6,12, 9

PROPORTION

3. If  $x^2 + y^2 = 7xy$ , then  $\log \frac{1}{3}(x + y) =$  then x is

- (a)  $(\log x + \log y)$
- (b)  $\frac{1}{2}(\log x + \log y)$
- (c)  $\frac{1}{3}(\log x + \log y)$
- (d)  $3(\log x / \log y)$

LOG

4. The value of  $\frac{2^n + 2^{n-1}}{2^{n+1} - 2^n}$  is

- (a)  $\frac{1}{2}$
- (b)  $\frac{3}{2}$
- (c)  $\frac{2}{3}$
- (d) 2

INDICES

5. If  $3^x = 5^y = 75^z$  then

- (a)  $x+y-z=0$
- (b)  $\frac{2}{x} + \frac{1}{y} = \frac{1}{z}$
- (c)  $\frac{1}{x} + \frac{2}{y} = \frac{1}{z}$

LINEAR EQUATION



(d)  $\frac{2}{x} + \frac{1}{z} = \frac{1}{y}$

6. The value of  $\sqrt{6 + \sqrt{6 + \sqrt{6 + \dots \infty}}}$  is

- (a) -3  
(b) 2  
(c) 3  
(d) 4

QUADRATIC  
EQUATION

7. If one root of the equation  $x^2 - 3x + k = 0$  is 2, then value of k will be

- (a) -10  
(b) 0  
(c) 2  
(d) 10

QUADRATIC  
EQUATION

8. If arithmetic mean between roots of a quadratic equation is 8 and the geometric mean between them is 5, the equation is \_\_\_\_\_

- (a)  $x^2 - 16x - 25 = 0$   
(b)  $x^2 - 16x + 25 = 0$   
(c)  $x^2 + 16x + 25 = 0$   
(d) None of these

QUADRATIC  
EQUATION

9. The transpose of a column matrix is a

- (a) null matrix  
(b) row matrix  
(c) scalar matrix  
(d) column matrix

10.  $\begin{pmatrix} a & b \\ b & a \end{pmatrix} \times \begin{pmatrix} a & b \\ b & a \end{pmatrix}$

(a)  $\begin{pmatrix} a^2 + b^2 & \theta \\ \theta & a^2 + b^2 \end{pmatrix}$

(b)  $\begin{pmatrix} -a^2 - b^2 & \theta \\ \theta & a^2 + b^2 \end{pmatrix}$

(c)  $\begin{pmatrix} a^2 - b^2 & \theta \\ \theta & a^2 + b^2 \end{pmatrix}$

(d)  $\begin{pmatrix} a^2 - b^2 & \theta \\ \theta & a^2 - b^2 \end{pmatrix}$

11. The solution of the inequality  $\frac{(5-2x)}{3} \leq \frac{x}{6} - 5$  is

- (a)  $x \geq 8$
- (b)  $x \leq 8$
- (c)  $x = 8$
- (d) None of these

**INEQUALITIES**

12. On the average, experienced person does 5 units of work while a fresh one 3 units work daily but the employer have to maintain the output of atleast 30 units of work per day. The situation can be expressed as.

- (a)  $5x + 3y \leq 30$
- (b)  $5x + 3y \geq 30$
- (c)  $5x + 3y = 30$
- (d) None of these

**INEQUALITIES**

13. Rs. 8,000 becomes Rs. 10,000 in two years at simple interest. The amount that will become Rs. 6,875 in 3 years at the same rate of interest is:

- (a) Rs. 4,850
- (b) Rs. 5,000
- (c) Rs. 5,500
- (d) Rs. 5,275

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

14. The difference between the simple and compound interest on a certain sum for 3 year at 5% p.a. is Rs. 228.75. The compound interest on the sum for 2 years at 5% p.a. is:

- (a) Rs. 3,175
- (b) Rs. 3,075
- (c) Rs. 3,275
- (d) Rs. 2,975

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

15. A sum of money doubles itself in 10 years. The number of years it would treble itself is:

- (a) 25 years
- (b) 15 years
- (c) 20 years
- (d) None

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

16. The effective rate equivalent to nominal rate of 6% compounded monthly is:

- (a) 6.05
- (b) 6.17
- (c) 6.26
- (d) 6.07

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

17. A person borrows Rs. 5,000 for 2 years at 4% p.a. simple interest. He immediately lends to another person at  $6\frac{1}{4}$  % p.a. for 2 years. Find his gain in the transaction per year:

- (a) Rs. 112.50  
 (b) Rs. 125  
 (c) Rs. 225  
 (d) Rs. 167.50

**ARITHMETIC &  
 GEOMETRIC  
 PROGRESSIONS**

18. Future value of an ordinary annuity

(a)  $A(n, i) = A \left[ \frac{(1+i)^n - 1}{i} \right]$

(b)  $A(n, i) = A \left[ \frac{(1+i)^n + 1}{i} \right]$

(c)  $A(n, i) = A \left[ \frac{1 - (1+i)^n}{i} \right]$

(d)  $A(n, i) = A \left[ \frac{(1+i)^n - 1}{i(1+i)^n} \right]$

**ARITHMETIC &  
 GEOMETRIC  
 PROGRESSIONS**

19. The cost of machinery is Rs. 1,25,000/- if its useful life is estimated to be 20 years and the rate of depreciation of its cost is 10% p.a., then the scrap value of the Machinery is [given that  $(0.9)^{20} = 0.12158$ ]

- (a) 15,197  
 (b) 15,400  
 (c) 15,300  
 (d) 15,250

**ARITHMETIC &  
 GEOMETRIC  
 PROGRESSIONS**

20. If a person invests Rs.5,000 in a three years' investment that pays you 12% per annum. Calculate the future value of the investment.

- (a) Rs.7024.64  
 (b) Rs. 7124.78  
 (c) Rs.7324.48  
 (d) Rs.7526.48

**ARITHMETIC &  
 GEOMETRIC  
 PROGRESSIONS**

21. A company is considering proposal of purchasing a machine either by making full payment of Rs.4000 or by leasing it for four years at an annual rate of Rs.1250. Which course of action is preferable if the company can borrow money at 14% compounded annually? [  $P(4, 0.14) = 2.9137$  ]

- (a) leasing is not preferable  
 (b) leasing is preferable  
 (c) Cannot determined  
 (d) none of these

**ARITHMETIC &  
 GEOMETRIC  
 PROGRESSIONS**

22. Anil bought a motor cycle costing Rs.1,50,000 by making a down payment of Rs.50, 000 and agreeing to make equal annual payment for five years. How much would be each payment if the interest on unpaid amount be 10% compounded annually? [  $P(5, 0.10) = 3.7908$  ]

- (a) Rs.26379.66  
 (b) Rs.26300.70  
 (c) Rs.26500.70  
 (d) Rs.26370.70

**ARITHMETIC &  
 GEOMETRIC  
 PROGRESSIONS**

23. Shoba borrows Rs.50,00,000 to buy a house. If he pays equal instalments for 20 years and 10% interest on outstanding balance, what will be the equal annual instalment?

[Given :  $P(20,0.10) = 8.51356$  ]

- (a) Rs.687298.4  
 (b) Rs.685298.4  
 (c) Rs.585298.4  
 (d) Rs.587298.4

**ARITHMETIC &  
 GEOMETRIC  
 PROGRESSIONS**

24. How much money is to be invested every year so to accumulate Rs. 3,00,000 at the end of 10 years if interest is compounded annually at 10% [  $A(10,0.1) = 15.9374$  ]

- (a) Rs.18823.65  
 (b) Rs.18833.64  
 (c) Rs.18223.60  
 (d) Rs.16823.65

**ARITHMETIC &  
 GEOMETRIC  
 PROGRESSIONS**

25. The number of triangles that can be formed by choosing the vertices from a set of 12 points, seven of which lie on the same straight line, is:

- (a) 185  
 (b) 175  
 (c) 115  
 (d) 105

**PERMUTATION &  
 COMBINATION**

26. An examination paper consists of 12 questions divided into two parts A and B. Part A contains 7 questions and Part B contains 5 questions. A candidate is required to attempt 8 questions selecting at least 3 from each part, in how many maximum ways can the candidate select the questions?

- (a) 35  
 (b) 175  
 (c) 210  
 (d) 420

**PERMUTATION &  
 COMBINATION**

27. In how many ways can the letters of the word FAILURE be arranged so that the consonants may occupy only odd positions?

- (a) 576  
 (b) 476  
 (c) 376  
 (d) 276

**PERMUTATION &  
 COMBINATION**

28. Find the number of combinations of the letters of the word COLLEGE taken four together:

- (a) 18
- (b) 16
- (c) 20
- (d) 26

**PERMUTATION &  
COMBINATION**

29. If  $A = \{1, 2, 3, 4, 5\}$  and  $B = \{6, 7, 8, 9\}$ , then cardinal number of  $A \times B$  is:

- (a) 20
- (b) 5
- (c) 3
- (d) 8

**SETS**

30. The number of subsets of the set  $A = \{1, 2, 3, 4, 5, 6, 7, 8\}$  is

- (a) 36
- (b) 128
- (c) 256
- (d) None of these

**SETS**

31. If  $f(x) = \left( \frac{x^2 - 4}{x - 2} \right)$ , then  $f(2)$  is

- (a) 0
- (b) 2
- (c) 4
- (d) 1

**FUNCTIONS**

32. Find the sum to  $n$  terms of the series :  $7+77+777+\dots$  to  $n$  terms:

- (a)  $\frac{7}{9}(10^{n+1} - 10) - \frac{7n}{9}$
- (b)  $\frac{7}{9}(10^{n+1} - 10) + \frac{7n}{9}$
- (c)  $\frac{7}{81}(10^{n+1} - 10) - \frac{7n}{9}$
- (d)  $\frac{7}{81}(10^{n+1} - 10) + \frac{7n}{9}$

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

33. If the sum of  $n$  terms of an A.P. is  $(3n^2 - n)$  and its common difference is 6, then its third term is:

- (a) 10
- (b) 12
- (c) 14
- (d) 16

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

34. Insert 4 A.M.'s between 3 and 18:

- (a) 12,15,9,6

- (b) 6,9,12,15  
 (c) 9,6,12,15  
 (d) 15,12,9,6

**ARITHMETIC &  
 GEOMETRIC  
 PROGRESSIONS**

35.  $\sum n^2$  defines:

- (a)  $\frac{n(n+1)(2n+1)}{6}$   
 (b)  $\frac{n(n+1)}{2}$   
 (c)  $\left[\frac{n(n+1)}{2}\right]^2$   
 (d) None of these

**ARITHMETIC &  
 GEOMETRIC  
 PROGRESSIONS**

36. If  $A = (1,2,3,4,5)$   $B = (2,4)$  and  $C = (1,3,5)$  then  $(A-C) \times B$  is

- (a)  $\{(2,2), (2,4), (4,2), (4,4), (5,2), (5,4)\}$   
 (b)  $\{(1,2), (1,4), (3,2), (3,4), (5,2), (5,4)\}$   
 (c)  $\{(2,2), (4,2), (4,4), (4,5)\}$   
 (d)  $\{(2,2), (2,4), (4,2), (4,4)\}$

**SETS**

37. If  $f(x) = x^k$  and  $f'(1) = 10$  then the value of  $k$  is

- (a) 10  
 (b) -10  
 (c) 1/10  
 (d) None

**DIFFERENTIAL  
 CALCULUS**

38. Given  $x = 2t + 5$ ;  $y = t^2 - 2$ , then  $\frac{dy}{dx}$  is calculated as:

- (a)  $t$   
 (b)  $1/t$   
 (c)  $-1/t$   
 (d) None

**DIFFERENTIAL  
 CALCULUS**

39. Evaluate  $\int \frac{2x+1}{x(x+1)} dx$

- (a)  $\log(x^2 - x) + c$   
 (b)  $\log(x^2 + x) + c$   
 (c)  $\log(x^2 + 1) + c$   
 (d) None of these

**INTEGRAL  
 CALCULUS**

40. Evaluate  $\int_0^2 x^5 dx$

- (a) 32/3
- (b) 1/3
- (c) 1/2
- (d) 1

**INTEGRAL  
CALCULUS**

41. Find the missing term of the series 27,32,30,35, 33, ?

- (a) 28
- (b) 31
- (c) 36
- (d) 38

**NUMBER SERIES**

42. Find out the letter series AZY, EXW, IVU, ?

- (a) MTS
- (b) MQR
- (c) NRQ
- (d) LST

**NUMBER SERIES**

43. Find wrong number of the series 22,37, 52,67, 84, 97

- (a) 52
- (b) 84
- (c) 97
- (d) 67

**NUMBER SERIES**

44. If TWENTY is written as 863985 and ELEVEN is written as 323039 , then TWELVE can be coded

- (a) 863203
- (b) 863302
- (c) 863320
- (d) 683302

**NUMBER SERIES**

45. If 'LOSE' is coded 1357 and 'GAIN' is coded as 2468 What do the figure 82146 for

- (a) NGLAI
- (b) NGLIA
- (c) GNLIA
- (d) GNLAI

**NUMBER SERIES**

46. If B = 2 and BAG = 10, then BOX = ?

- (a) 36
- (b) 39
- (c) 41
- (d) 52

**NUMBER SERIES**

47. A man stands on a point and starts walking towards north then turns left then turns right and then left in which direction he is moving.

- (a) West
- (b) North
- (c) East
- (d) South

**DIRECTION TESTS**

48. One evening before sunset, two friends Ravi and Raj were talking to each other face to face. If Ravi's shadow was exactly to his left side, which direction was Raj facing ?

- (a) West
- (b) East
- (c) North
- (d) South

**DIRECTION TESTS**

49. If South-West becomes North, then what will be the North-East be ?

- (a) North
- (b) South-East
- (c) South
- (d) East

**DIRECTION TESTS**

50. Six children A, B, C, D, E and F are sitting in a row facing north. B is between F and D. E is between A and C. A does Not Stand next to F and D. C does not stand next to D. F is between which of the following pairs of children?

- (a) B and E
- (b) B and C
- (c) B and D
- (d) B and A

**SEATING  
ARRANGEMENT**

51. Five boys A, B, C, D and E are sitting in a row facing north. A is to the immediate right of B and E is on the immediate left of B but on the right of C and A is on the left of D. Who is second from the left end?

- (a) D
- (b) A
- (c) E
- (d) B

**SEATING  
ARRANGEMENT**

(Q. No 52-53) Read the following information carefully and answer the questions that follow.

Eight friends A, B, C, D, E, F, G and H are sitting in circle facing the center . B is sitting G and D. H is third to the left of B and second to the right of A. C is sitting between A and G and B and E are not sitting opposite to each other ?

52. who is third to left of D ?

- (a) F
- (b) E

**SEATING  
ARRANGEMENT**



- (c) A
- (d) Cannot be determined.

53. Who is sitting between H and D

- (a) F
- (b) E
- (c) A
- (d) Cannot be determined.

**SEATING  
ARRANGEMENT**

54. If A+B means A is the sister of B, A x B means A is the wife of B, A % B means A is the father of B and A – B means A is the brother of B. Which of the following means T is the daughter of P?

- (a) P x Q % R + S – T
- (b) P x Q % R – T + S
- (c) P x Q % R + T – S
- (d) P x Q % R – T + S

**BLOOD RELATION**

55. Anil said "This girl is the wife of the grandson of my mother". How is Anil related to the girl?

- (a) Brother
- (b) Grandfather
- (c) Husband
- (d) Father-in-law

**BLOOD RELATION**

56. P is the mother of K, K is the sister of D. D is the father of J. How is P related to J?

- (a) Mother
- (b) Grandmother
- (c) Aunt
- (d) Data is inadequate.

**BLOOD RELATION**

57. In a family, there are six members A, B, C, D, E and F. A and B are a married couple, A being the male member. D is the only son of C, who is the brother of A. E is the sister of D. B is the daughter-in-law of F, whose husband has died. How is E related to C?

- (a) Sister
- (b) Daughter
- (c) Cousin
- (d) Mother

**BLOOD RELATION**

~~(58-60) Each of the following questions contains two statements followed by two conclusions numbered I and II. You have to consider the two statements to be true, even if they seem to be at variance at the commonly known facts. You have to decide which of the given conclusions definitely follows from the given statements.~~

~~58. Statements: I. Some banks are colleges.~~

~~II: All colleges are schools.~~

Conclusions: I. ~~Atleast some banks are schools.~~

II. ~~All schools are colleges~~

(a) ~~only conclusion I follows~~

(b) ~~only conclusion II follows~~

(c) ~~either I or II follows~~

(d) ~~neither I and II follows.~~

59. Statements: I. ~~All bottles are glasses.~~

II. ~~No cup is a glass.~~

Conclusions: I. ~~No bottle is a cup.~~

II. ~~Atleast some glasses are bottles.~~

(a) ~~only conclusion I follows~~

(b) ~~only conclusion II follows~~

(c) ~~either I or II follows~~

(d) ~~Both I and II follows.~~

60. Statements: I. ~~Some cities are towns.~~

II. ~~Some villagers are cities.~~

Conclusions: I. ~~Atleast some villagers are towns.~~

II. ~~No village is a town.~~

(a) ~~only conclusion I follows~~

(b) ~~only conclusion II follows~~

(c) ~~either I or II follows~~

(d) ~~Both I and II follows.~~

### Part B Statistics (40 Marks)

61. Histogram is used for presentation of the following type of series

- (a) Time Service
- (b) Continuous Frequency Series
- (c) Discrete Series
- (d) Individual Series

**STATISTICAL  
REPRESENTATION  
OF DATA**

62. The graphical representation of cumulative frequency distribution is called–

- (a) Histogram
- (b) Pie Chart
- (c) Frequency Polygon
- (d) Ogive

**CENTRAL  
TENDENCY**

63.

No. of Accidents	0	1	2	3	4	5	6	7
Frequency	36	27	33	29	24	27	18	9

In how many cases 5 or more accidents occur?

- (a) 96
- (b) 133
- (c) 78
- (d) 54

**STATISTICAL  
REPRESENTATION  
OF DATA**

64. The difference between upper limit and lower limit of a class is called:

- (a) Class interval
- (b) Class boundaries
- (c) Mid-value
- (d) Frequency

**STATISTICAL  
REPRESENTATION  
OF DATA**

65. A man travels at a speed of 20km/hr and then returns at a speed of 30 km/ hr. His average speed of the whole journey is :

- (a) 25 km/ hr
- (b) 24.5 km/hr
- (c) 24 km/hr
- (d) None

**CENTRAL  
TENDENCY**

66. The sum of the squares of deviations of a set of observations has the smallest value, when the deviations are taken from their:

- (a) A.M.
- (b) H.M.
- (c) G.M.
- (d) None

**CENTRAL  
TENDENCY**

67. If two variables  $x$  and  $y$  are related by  $2x + 3y - 7 = 0$  and the mean and mean deviation about mean of  $x$  are 1 and 0.3 respectively, then the co-efficient of mean deviation of  $y$  about mean is:

- (a) -5
- (b) 4
- (c) 12
- (d) 50

**DISPERSSION**

68. If the A.M. and H.M. for two numbers are 5 and 3.2 respectively then the G.M. will be:

- (a) 4.05
- (b) 16
- (c) 4
- (d) 4.10

**CENTRAL  
TENDENCY**

69. What is the coefficient of range for the following distribution?

Class interval	10-19	20-29	30-39	40-49	50-59
Frequency	11	25	16	7	3

- (a) 22

- (b) 50  
(c) 75.82  
(d) 72.46
70. If there are two groups with 75 and 65 as harmonic means and containing 15 and 13 observations. Then the combined H.M. is given by:  
(a) 70  
(b) 80  
(c) 70.35  
(d) 69.48
71. If X and Y are two random variables then  $v(x+y)$ , when x is independent of y  
(a)  $v(x) + v(y)$   
(b)  $v(x) + v(y) - 2v(x,y)$   
(c)  $v(x) + v(y) + 2v(x,y)$   
(d)  $v(x) - v(y)$
72. G.M is a better measure than others when,  
(a) ratios and percentages are given  
(b) interval of scale is given  
(c) Both (a) and (b)  
(d) Either (a) or (b)
73. The sum of squares of deviation from mean of 10 observations is 250. Mean of the data is 10. Find the coefficient of variation.  
(a) 10%  
(b) 25%  
(c) 50%  
(d) 0%
74. The equation of a line is  $5x + 2y = 17$ . Mean deviation of y about mean is 5. Calculate mean deviation of x about mean.  
(a) -2  
(b) 2  
(c) -4  
(d) None
75. If variance of x is 5, then find the variance of  $(2-3x)$   
(a) 10  
(b) 45  
(c) 5  
(d) -13

DISPERSSION

CENTRAL  
TENDENCY

CORRELATION

CENTRAL  
TENDENCY

DISPERSSION

DISPERSSION

DISPERSSION

76. Let the mean of the variable 'x' be 50, then the mean of  $u=10+5x$  will be:

- (a) 250
- (b) 260
- (c) 265
- (d) 273

**CENTRAL  
TENDENCY**

77. If sum of squares of the values = 3390,  $N = 30$  and standard deviation = 7, find out the mean.

- (a) 113
- (b) 210
- (c) 8
- (d) None of these

**DISPERSION**

78. Which of the following measures of central tendency cannot be calculated by graphical method?

- (a) Mean
- (b) Mode
- (c) Median
- (d) Quartile

**CENTRAL  
TENDENCY**

79. In a non-leap year, the probability of getting 53 Sundays or 53 Tuesday or 53 Thursday is :

- (a)  $4/7$
- (b)  $2/7$
- (c)  $3/7$
- (d)  $1/7$

**PROBABILITY**

80. If A and B are two events and  $P(A) = 2/3$ ,  $P(B) = 3/5$ ,  $P(A \cup B) = 5/6$ , then the value of  $P(A' \cap B')$  is :

- (a)  $1/4$
- (b)  $5/12$
- (c)  $5/8$
- (d)  $5/4$

**PROBABILITY**

81. The odds are 9:5 against a person who is 50 years living till he is 70 and 8:6 against a person who is 60 living till he is 80. Find the probability that at least one of them will be alive after 20 years.

- (a)  $11/14$
- (b)  $22/49$
- (c)  $31/49$
- (d)  $35/49$

**PROBABILITY**

82. What is the chance of throwing at least 7 in a single cast with two dices?

- (a)  $5/12$
- (b)  $7/12$
- (c)  $1/4$

**PROBABILITY**

- (d) 17/36
83. Correlation coefficient  $r$ ,  $b_{xy}$  and  $b_{yx}$  are all have \_\_\_ signs
- (a) different  
(b) same  
(c) both  
(d) none
84. The covariance between two variables is
- (a) Strictly Positive  
(b) Strictly negative  
(c) Always Zero  
(d) Either Positive or Zero or Negative
85. If  $u+5x = 6$  and  $3y-7v = 20$  and correlation coefficient between  $x$  and  $y$  is 0.58 then what be the correlation coefficient between  $U$  and  $V$  ?
- (a) 0.58  
(b) -0.58  
(c) -0.84  
(d) 0.84
86. The coefficient of two variables is 0.9, then coefficient of non-determination is
- (a) 0.9  
(b) 0.19  
(c) 0.81  
(d) 0.1
87. If  $y = 3x+4$  is the regression line  $y$  on  $x$  and the arithmetic mean of  $x$  is -1, what is the arithmetic mean of  $y$
- (a) 1  
(b) -1  
(c) 7  
(d) none of these
88. if the sum of squares in difference of ranks, given by two judges A and B of 8 students is 21, What is the value of rank correlation coefficient?
- (a) 0.7  
(b) 0.65  
(c) 0.75  
(d) 0.8
89. In normal distribution what is the ratio of QD:MD:SD
- (a) 12:10:15

CORRELATION

CORRELATION

CORRELATION

REGRESSION

CORRELATION

- (b) 15:10:12  
 (c) 10:15:12  
 (d) 10:12:15
90. Area covered normal curve by  $\mu \pm 3\sigma$
- (a) 68.28%  
 (b) 95.96%  
 (c) 99.73%  
 (d) 99.23%
91. If  $x$  is binomial variate with parameter 15 and  $1/3$  what is the value of mode of the distribution.
- (a) 5 & 6  
 (b) 5.5  
 (c) 5  
 (d) 6
92. In Poisson distribution which of the following is same.
- (a) Mean and variance.  
 (b) Mean and SD  
 (c) Both  
 (d) None of these
93. The Quartile Deviation of Normal Distribution with mean is 10 and variance is 16 is
- (a) 54.24  
 (b) 23.20  
 (c) 0.275  
 (d) 2.70
94. What is the standard deviation of number recoveries among 48 patients when the probability of recovering is 0.75 ?
- (a) 36  
 (b) 81  
 (c) 9  
 (d) 3
95. Fishers Price Index number is equal is
- (a) G. M of Kelly's Price Index number and Paasche's Price Index number  
 (b) G.M of Laspyres and Paaches Price Index number  
 (c) G.M of Bowley's price index number and Paasche's Index number.  
 (d) None of these
96. The prices of commodity in the year 2015 and 2020 were 25 and 30 respectively taking 2015 as base year the price relative is
- (a) 109.8

**PROBABILITY  
DISTRIBUTION**

**PROBABILITY  
DISTRIBUTION**

**PROBABILITY  
DISTRIBUTION**

**PROBABILITY  
DISTRIBUTION**

**PROBABILITY  
DISTRIBUTION**

**PROBABILITY  
DISTRIBUTION**

**INDEX NUMBER**

(b) 110.25

INDEX NUMBER

(c) 113.25

(d) 83.33

97. For year 2015, price index was 267% with base year 2005. The percentage increase in price index over base year 2005 is:

(a) 267%

(b) 67%

INDEX NUMBER

(c) 167%

(d) None of these

98. ~~In time Series Seasonal variations can occur within a period of~~

~~(a) one year~~~~(b) Three years~~~~(c) Nine years~~~~(d) Five years~~

99. ~~Damages due to floods, droughts, strikes fires and political disturbances are called in time series~~

~~(a) Trend~~~~(b) Seasonal~~~~(c) Cyclical~~~~(d) Irregular~~

100. ~~The Multiplicative Time Series Model is~~

~~(a)  $Y = T+S+C+I$~~ ~~(b)  $Y = T.S.C.I$~~ ~~(c)  $Y = a+bx$~~ ~~(d)  $Y = a+bx +Cx^2$~~



## Paper 3: Business Mathematics, Logical Reasoning and Statistics

## Key Part A: Business Mathematics and Logical Reasoning

1	(c)	2	(a)	3	(b)	4	(b)	5	(c)
6	(c)	7	(c)	8	(b)	9	(b)	10	(a)
11	(a)	12	(b)	13	(b)	14	(b)	15	(c)
16	(b)	17	(a)	18	(a)	19	(a)	20	(a)
21	(b)	22	(a)	23	(d)	24	(a)	25	(a)
26	(d)	27	(a)	28	(a)	29	(a)	30	(c)
31	(c)	32	(c)	33	(c)	34	(b)	35	(a)
36	(d)	37	(a)	38	(a)	39	(b)	40	(a)

41	(d)	42	(a)	43	(b)	44	(a)	45	(a)
46	(c)	47	(a)	48	(c)	49	(c)	50	(b)
51	(c)	52	(a)	53	(b)	54	(b)	55	(d)
56	(b)	57	(b)	58	(a)	59	(d)	60	(c)

## Key Part B: Statistics

61	(b)	62	(d)	63	(d)	64	(a)	65	(c)
66	(a)	67	(c)	68	(c)	69	(d)	70	(a)
71	(a)	72	(a)	73	(c)	74	(b)	75	(b)
76	(b)	77	(c)	78	(a)	79	(c)	80	(b)
81	(c)	82	(b)	83	(b)	84	(d)	85	(b)
86	(b)	87	(a)	88	(c)	89	(d)	90	(d)
91	(c)	92	(a)	93	(d)	94	(d)	95	(b)
96	(d)	97	(c)	98	(a)	99	(d)	100	(b)

## MOCK TEST PAPER SERIES -2

## FOUNDATION COURSE

## PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 hours

Marks: 100

## SECTION A: BUSINESS MATHEMATICS AND LOGICAL REASONING

1. The ratio of the number of boys and girls in a school is 2:5. if there are 280 students in the school, find number of girls in the school

- (a) 200  
(b) 250  
(c) 150  
(d) 100

RATIO

2. The third proportional to 9 and 25

- (a)  $80/3$   
(b) 80  
(c)  $80/7$   
(d) None of these

PROPORTION

3.  $\left(\frac{\sqrt{3}}{9}\right)^{5/2} \left(\frac{9}{3\sqrt{3}}\right)^{7/2} \times 9$  is equal to :

- (a) 1  
(b)  $\sqrt{3}$   
(c)  $3\sqrt{3}$   
(d)  $\frac{3}{9\sqrt{3}}$

INDICES

4. The value  $\frac{\log_3 8}{\log_9 16 \cdot \log_4 10}$  is:

- (a)  $3 \log_{10} 2$   
(b)  $7 \log_{10} 3$   
(c)  $3 \log_e z$   
(d) None.

LOG

5. If  $\frac{p}{q} = -\frac{2}{3}$  then the value of  $\frac{2p+q}{2p-q}$  is:

- (a) 1  
(b)  $-1/7$

LINEAR EQUATION

(c)  $1/7$ 

(d) 7

6. Roots of the equation  $3x^2 - 14x + k = 0$  will be reciprocal of each other if :(a)  $k = -3$ (b)  $k = 0$ (c)  $k = 3$ (d)  $k = 14$ **QUADRATIC  
EQUATION**7. If one root of the equation  $x^2 - 3x + k = 0$  is 2, then value of k will be

(a) -10

(b) 0

(c) 2

(d) 10

**QUADRATIC  
EQUATION**

8. On the average an experienced person does 7 units of work while a fresh one work 5 units of work daily but the employer has to maintain an output of atleast 35 units of work per day. The situation can be expressed as:

(a)  $7x + 5y < 35$ (b)  $7x + 5y \leq 35$ (c)  $7x + 5y > 35$ (d)  $7x + 5y \geq 35$ **INEQUALITIES**

9. If arithmetic mean between roots of a quadratic equation is 8 and the geometric mean between them is 5, the equation is \_\_\_\_\_

(a)  $x^2 - 16x - 25 = 0$ (b)  $x^2 - 16x + 25 = 0$ (c)  $x^2 + 16x + 25 = 0$ 

(d) None of these

**QUADRATIC  
EQUATION**10. Solution space of the inequalities  $2x + y \leq 10$  and  $x - y \leq 5$ :

(i) includes the origin

(ii) includes the point (4,3)

Which one is correct?

(a) Only (i)

(b) Only (ii)

(c) Both (i) and (ii)

(d) None of the above.

**INEQUALITIES**

11. If  $A = \frac{1}{\sqrt{2}} \begin{bmatrix} 1 & -1 \\ 1 & 1 \end{bmatrix}$  then  $A^T \cdot A = A \cdot A^T =$

- (a) ~~Identity matrix~~
- (b) ~~Null matrix~~
- (c)  ~~$A^2$~~
- (d) ~~none of these~~

12. Find the Inverse of matrix  $\begin{bmatrix} a & b \\ c & d \end{bmatrix}$

(a)  ~~$\begin{bmatrix} a & -b \\ -c & d \end{bmatrix}$~~

(b)  ~~$\begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$~~

(c)  ~~$\frac{1}{ad-bc} \begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$~~

(d)  ~~$\frac{1}{ad-bc} \begin{bmatrix} a & -b \\ -c & d \end{bmatrix}$~~

13. Two equal sums were lent out at 7% and 5% simple interest respectively. The interest earned on the two loans adds upto Rs.960 for four years. Find the sum lent out.

- (a) Rs. 4000
- (b) Rs.3000
- (c) Rs. 5000
- (d) Rs. 6000

**TIME VALUE AND MONEY**

14. A sum of money amounts to Rs. 20,800 in 5 years and Rs. 22720 in 7 years. Find the principle and rate of interest.

- (a) Rs. 5000, 6%
- (b) Rs.16000, 6%
- (c) Rs.80000, 8%
- (d) Rs. 10000, 10%

**TIME VALUE AND MONEY**

15. A machine can be purchased for Rs. 50,000. Machine will contribute Rs. 12,000 per year for the next five years. Assume borrowing cost is 10% per annum. Determine whether machine should be purchased or not: ( $P(5,0.10) = 3.79079$ )

- (a) Should be purchased
- (b) Should not be purchased
- (c) Can't say about purchase
- (d) None of the above

**TIME VALUE AND MONEY**

16. The annual birth and death rates per 1000 are 39.4 and 19.4 respectively. The number of years in which the population will be doubled assuming there is no immigration or emigration is:
- (a) 35 years  
(b) 30 years  
(c) 25 years  
(d) None of these.
- TIME VALUE AND MONEY**
17. The effective annual rate of interest corresponding to nominal rate 6% p.a. payable half yearly is
- (a) 6.06  
(b) 6.07  
(c) 6.08  
(d) 6.09
- TIME VALUE AND MONEY**
18. The cost of machinery Rs.1,25,000 if its useful life estimated to be 20 years and the rate of depreciation of its cost is 10% p.a. Then scrap value of machinery is (given that  $(0.9)^{20} = 0.1215$ )
- (a) Rs. 15,187  
(b) Rs. 15,400  
(c) Rs. 15,300  
(d) Rs. 15,250
- TIME VALUE AND MONEY**
19. How much amount is required to be invested every year so as to accumulate Rs. 3,00,000 at the end of 10 years, if interest is compounded annually at 10%?  
{Give  $(1.1)^{10} = 2.5937$ }
- (a) Rs. 18,823.65  
(b) Rs. 18,828.65  
(c) Rs. 18,832.65  
(d) Rs. 18,182.65
- TIME VALUE AND MONEY**
20. Rs. 5000 is paid every year for 10 years to pay off a loan. What is the loan amount if interest be 14% per annum compounded annually? ( $P(10,0.14) = 5,21611$ )
- (a) Rs.26000.33  
(b) Rs.26080.55  
(c) Rs.27080.55  
(d) Rs.28080.55
- TIME VALUE AND MONEY**
21. Rs.2000 is invested at the end of each month in account paying interest 6% per compounded monthly, What is the future value of this annuity after 10th payment ?
- (a) Rs. 20,440  
(b) Rs.52,200  
(c) Rs.53,300  
(d) Rs.54,500
- TIME VALUE AND MONEY**

22. If a simple interest on a sum of money at 6% p.a for 7 years is equal to twice of simple interest on another Sum for 9 years at 5% p.a . The ratio will be
- (a) 2:15
  - (b) 7: 15
  - (c) 15: 7
  - (d) 1:7
23. In what will be a sum of money double itself at 6.25% p.a . Simple interest?
- (a) 5 years
  - (b) 8 years
  - (c) 12 years
  - (d) 16 years
24. What will be population after 3 years when present population is 25,000 and population increase at the rate of 3% in first year , at 4% in second year and at 5 % in third year ?
- (a) 28,119
  - (b) 29,118
  - (c) 30,100
  - (d) 27,100
25. A sum amount to Rs. 1331 at a principal of Rs.1000 at 10% compounded annually. Find the time
- (a) 3.31 years
  - (b) 4 years
  - (c) 3 years
  - (d) 2 years
26. A boy has 3 library tickets and 8 books of his interest in the library of these 8, he does not want to borrow mathematics part II unless mathematics part-1 is also borrowed? In how many ways can he choose the three books to be borrowed?
- (a) 41
  - (b) 51
  - (c) 61
  - (d) 71
27. An examination paper consists of 12 questions divided into two parts A and B. Part A contains 7 questions and Part B contains 5 questions. A candidate is required to attempt 8 questions selecting at least 3 from each part, in how many maximum ways can the candidate select the questions?
- (a) 35
  - (b) 175
  - (c) 210
  - (d) 420

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

**PERMUTATIONS &  
COMBINATIONS**

**PERMUTATIONS &  
COMBINATIONS**

28. A Supreme Court Bench consists of 5 judges. In how many ways, the bench can give a majority division?

- (a) 10
- (b) 5
- (c) 15
- (d) 16

**PERMUTATIONS &  
COMBINATIONS**

29. Given :  $P(7, k) = 60 P(7, k-3)$ . Then:

- (a)  $k = 9$
- (b)  $k = 8$
- (c)  $k = 5$
- (d)  $k = 0$

**PERMUTATIONS &  
COMBINATIONS**

30. If  $a^{1/x} = b^{1/y} = c^{1/z}$  and a,b,c are in G.P; the x,y,z are in:

- (a) A.P.
- (b) G.P.
- (c) Both (a) & (b)
- (d) None of these

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

31. If the  $p^{\text{th}}$  term of a G.P. is x and the  $q^{\text{th}}$  term is y, then find the  $n^{\text{th}}$  term:

(a)  $\left[ \frac{x^{(n-q)}}{y^{(n-p)}} \right]$

(b)  $\left[ \frac{x^{(n-q)}}{y^{(n-p)}} \right]^{(p-q)}$

(c) 1

(d)  $\left[ \frac{x^{(n-q)}}{y^{(n-p)}} \right]^{\frac{1}{p-q}}$

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

32. The sum of the series:  $0.5+0.55+0.555+\dots$  to n term is:

(a)  $\frac{5n}{9} + \frac{5}{9} [1 - (0.1)^n]$

(b)  $\frac{5n}{9} - \frac{5}{81} [1 - (0.1)^n]$

(c)  $\frac{5n}{9} + \frac{5}{81} [1 - (0.1)^n]$

(d)  $\frac{5n}{9} + \frac{5}{81} [1 + (0.1)^n]$

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

33. Let  $R$  is the set of real numbers such that the function  $f : R \rightarrow R$  and  $g : R \rightarrow R$  are defined by  $f(x) = x^2 + 3x + 1$  and  $g(x) = 2x - 3$ . Find  $(f \circ g)$ :

- (a)  $4x^2 + 6x + 1$   
 (b)  $x^2 + 6x + 1$   
 (c)  $4x^2 - 6x + 1$   
 (d)  $x^2 - 6x + 1$ .

FUNCTIONS

34. In a survey of 300 companies, the number of companies using different Media - Newspapers (N), Radio (R) and Television (T) are as follows:

$n(N) = 200$ ,  $n(R) = 100$ ,  $n(T) = 40$ ,  $n(N \cap R) = 50$ ,  $n(R \cap T) = 20$ ,  $n(N \cap T) = 25$ , and  $n(N \cap R \cap T) = 5$ , Find the numbers of companies using none of these media:

- (a) 20 companies  
 (b) 250 companies  
 (c) 30 companies  
 (d) 50 companies

SETS

35. If  $A = \{1, 2, 3, 4\}$ ,  $B = \{2, 4, 6, 8\}$ ,  $f(1) = 2$ ,  $f(2) = 4$ ,  $f(3) = 6$  and  $f(4) = 8$ , and  $f : A \rightarrow B$  then  $f^{-1}$  is:

- (a)  $\{(2, 1), (4, 2), (6, 3), (8, 4)\}$   
 (b)  $\{(1, 2), (2, 4), (3, 6), (4, 8)\}$   
 (c)  $\{(1, 4), (2, 2), (3, 6), (4, 8)\}$   
 (d) None of these

SETS

36.  $\int (x^2 - 1) dx$  is equal to:

- (a)  $\frac{x^3}{5} - \frac{2}{3}x^3 + x + k$   
 (b)  $\frac{x^3}{3} - x + k$   
 (c)  $2x$   
 (d) none of these

INTEGRAL  
CALCULUS

37. If  $y = 2x + \frac{4}{x}$ , then  $x^2 \frac{d^2 y}{dx^2} + x \frac{dy}{dx} - y$  yields

- (a) 3  
 (b) 1  
 (c) 0  
 (d) 4

DIFFERENTIAL  
CALCULUS

38.  $\int x^2 e^{3x} dx$  is:

- (a)  $x^2 \cdot e^{3x} - 2xe^{3x} + 2e^{3x} + C$

INTEGRAL  
CALCULUS



(b)  $\frac{e^{3x}}{3} - \frac{x.e^{3x}}{9} + 2e^{3x} + C$

(c)  $\frac{x^2.e^{3x}}{3} - \frac{2x.e^{3x}}{9} + \frac{2}{27}e^{3x} + C$

(d) None of these

39. If  $x^3 - 2x^2y^2 + 5x + y = 5$ , then  $\frac{dy}{dx}$  at  $x = 1$  and  $y = 1$  is:

(a)  $4/3$

(b)  $-5/4$

(c)  $4/5$

(d)  $-4/3$

**DIFFERENTIAL  
CALCULUS**

40. Six seats of articled clerks are vacant in a 'Chartered Accountant Firm'. How many different batches of candidates can be chosen out of ten candidates?

(a) 216

(b) 210

(c) 220

(d) None

**PERMUTATIONS &  
COMBINATIONS**

41. Find next number in the following series 7, 11, 13, 17, 19, 23, 25, 29, ?

(a) 30

(b) 31

(c) 32

(d) 33

**NUMBER SERIES**

42. Find odd man out of the following series 15, 21, 63, 81, 69

(a) 15

(b) 21

(c) 63

(d) 81

**NUMBER SERIES**

43. If DELHI is coded as 73541 and CALCUTTA as 82589662, then CALICUT be coded as?

(a) 8251896

(b) 82518 69

(c) 8521896

(d) 8258196

**NUMBER SERIES**

44. Which of the following is odd one

(a) CEHL

- (b) KMPT
- (c) OQTX
- (d) NPSV

**NUMBER SERIES**

45. Kiran walks 2 km towards North then he turns East and walks 10 km. After this he turns North and walks 3 km .Again he turns towards East and walks 2 km. How far from the starting point?

- (a) 10 km
- (b) 13km
- (c) 15 km
- (d) 17 km

**DIRECTION TESTS**

46. Ramu moved a distance of 75 meters towards North. He then turned to left and walking for about 25 m, turned left again and walks 80m. Finally, he turned to the right at an angle of  $45^{\circ}$ . In which direction was he moving finally?

- (a) South-East
- (b) South-West
- (c) North-West
- (d) North- East

**DIRECTION TESTS**

47. If a man on motor bike starts from a point and rides 4 km South then turns left and rides 2 km and turn again to the right to ride in which direction is he moving?

- (a) North
- (b) West
- (c) South
- (d) North

**DIRECTION TESTS**

48. I stand with my right hand extended side-ways towards south. Towards which direction will my back be?

- (a) North
- (b) West
- (c) East
- (d) South

**DIRECTION TESTS**

49. Six flats on a floor in two rows facing North and South are allotted to P, Q, R, S, T and U. If Q gets a North facing flat and is not next to S. S and U get diagonally opposite flat. R is next to U gets a south facing flat and T gets North facing flat. Whose falt is between Q and S?

- (a) T
- (b) U
- (c) R
- (d) P

**SEATING ARRANGEMENTS**

50. In a straight line there are six person sitting in a row? B is between F and D. E is between A and C. A does not stand next to either F or D, C does not stand next to D. F is between which of the following?
- B and E
  - B and C
  - B and D
  - B and A

**SEATING  
ARRANGEMENTS**

51. Five boys A, B, C, D and E are sitting in a row. A is to the right of B and E is to the left of B but to the right of C. A is to the left of D. Who is second from left end
- A
  - B
  - D
  - E

**SEATING  
ARRANGEMENTS**

52. Directions to solve

- P, Q, R, S, T, U, V and W are sitting round the circle and are facing the Centre
- P is second to the right of T who is the neighbor of R and V.
- S is not neighbour of P
- V is neighbour of U
- Q is not between S and W, W is not between U and S

Who is two of the following are not neighbour

- RV
- UV
- RP
- QW

**SEATING  
ARRANGEMENTS**

53. Pointing to a photograph of a boy Ravi said, "He is son of the only son of my mother ". How is Ravi related to that boy?
- Brother
  - Uncle
  - Cousin
  - Father

**BLOOD RELATION**

54. If 'A +B means A is brother of B', A-B means A is sister of B, and A × B means A is the father of B. Which of the following means that C is the son of M?
- M-N×C+F
  - F-C+ N×M
  - N+M-F×C
  - M×N-C+F

**BLOOD RELATION**

55. If D is brother of B and B is related C. To answer this question which of the following statements are necessary?

I. The son of D is the grandson of C.

II. B is the sister of D.

(a) Only I

(b) Only II

(c) Either I or II

(d) I and II

**BLOOD RELATION**

56. A, B, C, D, E and F are members of the family. B is the son A but A is not mother B, A and C are married couple. F is brother of A. D is the sister of B. E is son of C.

How many male members are in the family?

(a) 1

(b) 2

(c) 3

(d) 4

**BLOOD RELATION**

57. ~~Statements I: Some actors are singers.~~

~~II: All singers are directors.~~

~~Conclusions I: Some actors are directors.~~

~~II: No singer is actor.~~

~~(a) If only Conclusion I follows.~~

~~(b) If only Conclusion II follow.~~

~~(c) If both I and II follow.~~

~~(d) If neither I nor II follow.~~

58. ~~Statements I: All actors are girls.~~

~~II: All the girls are beautiful~~

~~Conclusions I: All the actors are beautiful.~~

~~II: Some girls are actors.~~

~~(a) If only Conclusion I follows.~~

~~(b) If only Conclusion II follow.~~

~~(c) If both I and II follow.~~

~~(d) If neither I nor II follow.~~

59. ~~Statement I: Some players are singers.~~

~~II: All singers are tall.~~

~~Conclusion I: Some players are tall.~~

~~II: All players are tall.~~

(a) ~~If only Conclusion I follow~~

(b) ~~If only conclusion II follow~~

(c) ~~If either I or II follow.~~

(d) ~~If neither I nor II follow.~~

60. ~~Statement I: Some books are pens.~~

~~II: No pen is pencil.~~

~~Conclusion I: Some books are pencil.~~

~~II: No book is pencil~~

(a) ~~If only Conclusion I follow~~

(b) ~~If only conclusion II follow~~

(c) ~~If either I or II follow.~~

(d) ~~If neither I nor II follow.~~

## PART B – STATISTICS

61. The best method to collect data in case of natural calamity is

- (a) Personal interview.
- (b) Telephone interview.
- (c) Mailed questionnaire method.
- (d) Indirect interview.

**STATISTICAL  
REPRESENTATION  
OF DATA**

62. Which of the following statements is true?

- (a) Usually mean is the best measure of central tendency.
- (b) Usually median is the best measure of central tendency.
- (c) Usually mode is the best measure of central tendency.
- (d) Normally, GM is the best measure of central tendency

**CENTRAL  
TENDENCY**

63. The mean salary for a group of 40 female workers is 5000 per month and that for a group of 60 male workers is 6000 per month. What is the combined mean salary?

- (a) 6500
- (b) 6200
- (c) 6160
- (d) 5600

**CENTRAL  
TENDENCY**

64. The standard deviation of 10, 16, 10, 16, 10, 10, 16, 16 is

- (a) 4
- (b) 6
- (c) 3
- (d) 0

**DISPERSION**

65. When mean is 3.57 and mode is 2.13 then the value of the median is

- (a) 3.09
- (b) 5.01
- (c) 4.01
- (d) None of these.

**CENTRAL  
TENDENCY**

66. The variance of the data 3, 4, 5, 8 is

- (a) 4.5
- (b) 3.5
- (c) 5.5
- (d) 6.5

**DISPERSION**

67. If the profits of a company remains the same for the last ten months, then the standard deviation of profits for these ten months would be ?

- (a) Positive
- (b) Negative
- (c) Zero
- (d) (a) or (c)

**DISPERSION**

68. The point of intersection of less than ogive and greater than ogive curve is gives us

- (a) Mean
- (b) Mode
- (c) Median
- (d) Harmonic Mean

**CENTRAL  
TENDENCY**

69. The following frequency distribution

x	12	17	24	36	45
F	2	5	3	9	8

Is classified as:

- (a) Continuous distribution
- (b) Discrete distribution
- (c) Cumulative frequency distribution.
- (d) None of the above

**STATISTICAL  
REPRESENTATION  
OF DATA**

70. The median of the data 13, 8, 11, 6, 4, 15, 2, 18 is

- (a) 5
- (b) 8
- (c) 11
- (d) 9.5

**CENTRAL  
TENDENCY**

71. The A.M and H.M for two numbers are 5 and 3.2 respectively then the G.M will be

- (a) 4.05
- (b) 16
- (c) 4
- (d) 4.10

**CENTRAL  
TENDENCY**

72. What is the value of the first quartile for observations 15, 18, 10, 20, 23, 28, 12, 16?

- (a) 17
- (b) 16
- (c) 12.75
- (d) 12

**CENTRAL  
TENDENCY**

73. What is the coefficient of range for the following for the following distribution?

Class Interval	10-19	20-29	30-39	40-49	50-59
Frequency	11	25	16	7	3

- (a) 22
- (b) 50
- (c) 75.82
- (d) 72.46

**DISPERSSION**

74. Which measure of dispersion is based on all the observations?

- (a) Mean deviation
- (b) Standard deviation
- (c) Quartile deviation
- (d) (a) and (b) but not (c)

**DISPERSSION**

75. Interval Quartile Range is \_\_\_\_ of Quartile Deviation

- (a) Half
- (b) Double
- (c) Triple
- (d) Equal

**DISPERSSION**

76. The Sum of the squares of the deviations from mean of 10 observations is 250. Mean of the data is 10. Find coefficient of variation.

- (a) 10 %
- (b) 25%
- (c) 50 %
- (d) 0 %

**DISPERSSION**

77. The mean of the variable  $x$  is 50, then the mean of  $u = 10+5x$  will be

- (a) 250
- (b) 260
- (c) 265
- (d) 273

**CENTRAL  
TENDENCY**

78. The Standard Deviation of a variable  $x$  is known to be 10. The Standard deviation of  $50+5x$

- (a) 50
- (b) 100
- (c) 10
- (d) 500

**DISPERSSION**

79. The of mean and SD of a series is  $a + b$ , if we add 2 to each observations of the series then the sum of the mean and SD is

- (a)  $a+b+2$
- (b)  $6-a+b$
- (c)  $4+a-b$
- (d)  $a+b+4$

**DISPERSSION**

80. Which of the following is affected by shifting of scale

- (a) SD
- (b) MD
- (c) QD
- (d) All the above

**DISPERSSION**

81.  $P(A) = 0.45$ ,  $P(B) = 0.36$  and  $P(A \cap B) = 0.25$  then  $P(A/B) = ?$

- (a) 1.40
- (b) 1.80
- (c) 0.714
- (d) 0.556

**PROBABILITY**

82. If a card is drawn at random from a pack of 52 cards, what is the chance of getting a Spade or an ace?

- (a)  $4/13$
- (b)  $5/13$
- (c) 0.25
- (d) 0.20

**PROBABILITY**

83. From the following probability distribution table, find  $E(x)$ .

$x:$	1	2	3
$f(x):$	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{6}$

- (a) 1
- (b) 1.50

**PROBABILITY**



- (c) 1.67  
(d) None of these
84. The mean of a binomial distribution with parameter  $n$  and  $p$  is  
(a)  $n(1-p)$ .  
(b)  $np(1-p)$ .  
(c)  $np$ .  
(d)  $\sqrt{np(1-p)}$ .
85. The total area of the normal curve is  
(a) One.  
(b) 50 per cent.  
(c) 0.50.  
(d) Any value between 0 and 1.
86. For a normal distribution with mean 150 and SD is 45, Find Q1 and Q3  
(a) 119.35 and 190.65  
(b) 119.65 and 180.35  
(c) 180.35 and 119.65  
(d) 123.45 and 183.65
87. The Binomial distribution  $n = 9$  and  $p = 1/3$ . What is the value of the variance?  
(a) 8  
(b) 4  
(c) 2  
(d) 16
88. A bag contains 12 balls of which 3 are red and 5 balls are drawn at random. Find the probability that 5 balls 3 are red  
(a)  $3/132$   
(b)  $5/396$   
(c)  $1/36$   
(d)  $1/22$
89. A card is drawn from a pack of playing cards at random. What is the probability that the card drawn a king or red colour?  
(a)  $1/4$   
(b)  $4/13$   
(c)  $7/13$   
(d)  $1/2$

PROBABILITY  
DISTRIBUTIONPROBABILITY  
DISTRIBUTIONPROBABILITY  
DISTRIBUTIONPROBABILITY  
DISTRIBUTION

PROBABILITY

PROBABILITY

90. If  $x$  &  $y$  are two independent variables such that  $x \sim B(n_1, P)$  and  $y \sim B(n_2, p)$  then the parameter of  $Z = x+y$  is
- $(n_1+n_2), P$
  - $(n_1-n_2), P$
  - $(n_1+n_2), 2P$
  - None of these

**PROBABILITY  
DISTRIBUTION**

91. If the coefficient of correlation between two variables is 0.8 then the percentage of variation unaccounted for is
- 70%
  - 30%
  - 51%
  - 36%

**CORRELATION**

92. The correlation coefficient ( $r$ ) is the \_\_\_\_\_ of the two regression coefficients
- AM
  - GM
  - HM
  - Median

**CORRELATION**

93. The coefficient of correlation between  $x$  and  $y$  is 0.6. If  $x$  and  $y$  values are multiplied by  $-1$ , then coefficient of correlation will be
- $-0.6$
  - $1/0.6$
  - $0.6$
  - $0.4$

**CORRELATION**

94. The regression equation  $x$  and  $y$  is  $3x + 2y = 100$ , the value of  $b_{xy}$
- $-2/3$
  - $100/3$
  - $3/2$
  - $2/3$

**REGRESSION**

95. price and Demand are the example of
- No Correlation
  - Positive Correlation
  - Negative Correlation
  - None of these

**CORRELATION**

96. If an increase of 10% in prices. The rise in wages is 20% then the real wage has increased by \_\_\_\_\_ An index time series is a list of \_\_\_\_\_ numbers for two or more periods of time.
- (a) 20% **INDEX NUMBER**  
 (b) 10 %  
 (c) Less than 10 %  
 (d) More than 20%
97. Purchasing power of money is
- (a) Reciprocal of the Price Index Number. **INDEX NUMBER**  
 (b) Equal to price index number.  
 (c) Unequal to price index number.  
 (d) None of these.
98. The cost of living index numbers in years 2015 and 2021 were 97.5 and 115 respectively. The salary of a worker in 2015 was Rs. 19,500. How much additional salary is required for him in 2021 to maintain living standard of 2015?
- (a) Rs. 3,000 **INDEX NUMBER**  
 (b) Rs. 4,000  
 (c) Rs. 3,500  
 (d) Rs. 4,500
99. ~~A time series has~~
- ~~(a) Two Components~~  
~~(b) Three Components~~  
~~(c) Four Components~~  
~~(d) Five Components~~
100. ~~In a time series seasonal variations can occur within a period of~~
- ~~(a) Four years~~  
~~(b) Three years~~  
~~(c) One year~~  
~~(d) Nine years~~

## MOCK TEST PAPER SERIES –II

## Paper 3: Business Mathematics, Logical Reasoning and Statistics

## Key Part A: Business Mathematics and Logical Reasoning

1	(a)	2	(a)	3	(a)	4	(a)	5	(c)
6	(c)	7	(c)	8	(d)	9	(b)	10	(a)
11	(a)	12	(c)	13	(a)	14	(b)	15	(b)
16	(a)	17	(d)	18	(a)	19	(a)	20	(b)
21	(a)	22	(c)	23	(d)	24	(a)	25	(c)
26	(a)	27	(d)	28	(d)	29	(c)	30	(a)
31	(d)	32	(b)	33	(c)	34	(d)	35	(a)
36	(b)	37	(c)	38	(c)	39	(a)	40	(b)
41	(b)	42	(d)	43	(a)	44	(d)	45	(b)
46	(c)	47	(c)	48	(b)	49	(a)	50	(b)
51	(d)	52	(a)	53	(d)	54	(d)	55	(d)
56	(d)	57	(a)	58	(c)	59	(a)	60	(c)

## Key Part B: Statistics

61	(a)	62	(a)	63	(d)	64	(c)	65	(a)
66	(b)	67	(c)	68	(c)	69	(b)	70	(d)
71	(c)	72	(c)	73	(d)	74	(d)	75	(b)
76	(c)	77	(b)	78	(a)	79	(a)	80	(d)
81	(c)	82	(a)	83	(c)	84	(c)	85	(a)
86	(b)	87	(c)	88	(d)	89	(c)	90	(a)
91	(d)	92	(b)	93	(c)	94	(a)	95	(c)
96	(a)	97	(a)	98	(c)	99	(c)	100	(c)

## MOCK TEST PAPER 1

## FOUNDATION COURSE

## PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 Hours

Marks: 100

## Part A: Business Mathematics and Logical Reasoning

1. If  $x:y = 3:5$ , then find  $\left(\frac{1}{x} + \frac{1}{y}\right) : \left(\frac{1}{x} - \frac{1}{y}\right)$

- (a) 2  
(b) 4  
(c) 6  
(d) 8

RATIO

2. If  $A:B = 3:4$  and  $B:C = 7:9$ ,  $C:D = 2:3$  and  $D$  is 50% more than  $E$ , find the ratio between  $A$  and  $E$

- (a) 2:3  
(b) 3:4  
(c) 3:5  
(d) 4:5

RATIO

3. Find the value of  $\sqrt{6561} + \sqrt[4]{6561} + \sqrt[8]{6561}$

- (a) 81  
(b) 93  
(c) 121  
(d) 243

INDICES

4. Find the value of  $\log \frac{x^n}{y^n} + \log \frac{y^n}{z^n} + \log \frac{z^n}{x^n}$

- (a) -1  
(b) 0  
(c) 1  
(d) 2

LOG

5. If  $\frac{8^n \times 2^3 \times 16^{-1}}{2^n \times 4^2} = \frac{1}{4}$  then the value of  $n$

- (a) 1  
(b) 3  
(c)  $\frac{3}{2}$

INDICES

(d)  $\frac{2}{3}$

6. Given the Quadratic Equation  $\frac{x+1}{x} - \frac{x}{x+1} = \frac{3}{2}$

- (a) 1 and -2/3  
 (b) -1 and 2/3  
 (c) -1 and -2/3  
 (d) 1 and 2/3

**QUADRATIC  
EQUATION**

7. A dealer has only ₹ 5760 to invest in fans (x) and sewing machines (y). The cost per unit of fan and sewing machine is ₹360 and ₹ 240 respectively. This can be shown by:

- (a)  $360x + 240y \geq 5760$   
 (b)  $360x + 240y \leq 5760$   
 (c)  $360x + 240y = 5760$   
 (d) none of these

**LINEAR EQUATION**8. The point of intersection between the lines  $3x + 4y = 7$  and  $4x - y = 3$  lie in the

- (a) 1<sup>st</sup> quadrant.  
 (b) 2<sup>nd</sup> quadrant.  
 (c) 3<sup>rd</sup> quadrant  
 (d) 4<sup>th</sup> quadrant.

**LINEAR EQUATION**9. The roots of equation  $9^{x+2} - 6.3^{x+1} + 1 = 0$  are

- (a) -2  
 (b) 2  
 (c)  $\sqrt{2}$   
 (d) 0

**QUADRATIC  
EQUATION**10. The roots of the equation  $x^2 - x + 1 = 0$  are

- (a) Imaginary and unequal  
 (b) Real and unequal  
 (c) Real and equal  
 (d) Imaginary and equal

**QUADRATIC  
EQUATION**11. If one root of the quadratic equation is  $2 + \sqrt{3}$ , the equation is \_\_\_\_\_

- (a)  $x^2 - 4x + 1 = 0$   
 (b)  $x^2 + 4x + 1 = 0$   
 (c)  $x^2 - 4x - 1 = 0$   
 (d) none of these

**QUADRATIC  
EQUATION**

12. If  $\sqrt{1 + \frac{25}{144}} = 1 + \frac{x}{12}$ , then x is

- (a) 1
- (b) 2
- (c) 3
- (d) 0

**LINEAR EQUATION**

13. A sum of ₹46,875 was lent out at simple interest and at the end of 1 year 8 months, the total amount was ₹ 50,000. Find the rate of interest per annum.

- (a) 8%
- (b) 10%
- (c) 12%
- (d) None

**TIME VALUE AND MONEY**

14. A sum of money amount to ₹ 6,200 in 2 years and ₹ 7,400 in 3 years. The principal and rate of interest are

- (a) ₹ 3,800, 31.57%
- (b) ₹ 3,000, 20%
- (c) ₹ 3,500, 15%
- (d) none of these

**TIME VALUE AND MONEY**

15. The effective rate of interest corresponding to a nominal rate 3% p.a payable half yearly is

- (a) 3.2% p.a
- (b) 3.25% p.a
- (c) 3.0225% p.a
- (d) none of these

**TIME VALUE AND MONEY**

16. A sum of money gets doubled in 5 years at X% simple interest. If the interest was Y%, the sum of money would have become ten-fold in thirty years. What is Y – X (in %)

- (a) 10
- (b) 5
- (c) 8
- (d) None of the above

**TIME VALUE AND MONEY**

17. The nominal rate of growth is 17% and inflation is 9% for the five years. Let P be the Gross Domestic Product (GDP) amount at the present year then the projected real GDP after 6 years is

- (a) 1.587P
- (b) 1.921 P
- (c) 1.403 P
- (d) 2.51 P

**TIME VALUE AND MONEY**

18. The difference between Compound Interest and Simple Interest on a certain sum for 2 years at 6% p.a. is ₹ 13.50. Find the sum

- (a) 3750

**TIME VALUE AND MONEY**

- (b) 2750  
(c) 4750  
(d) none
19. The sum required to earn a monthly interest of Rs 1200 at 18% per annum Simple Interest is  
(a) ₹ 50,000  
(b) ₹ 60,000  
(c) ₹ 80,000  
(d) none of these
20. The compound interest earned by a money lender on ₹ 7,000 for 3 years if the rate of interest for 3 years are 7%, 8% and 8.5% respectively is  
(a) ₹ 1750  
(b) ₹ 1800  
(c) ₹ 1776  
(d) none of these
21. Find the present value of an annuity of ₹ 1,000 payable at the end of each year for 10 years, if the money is worth 5% effective.  
(a) ₹ 7,724  
(b) ₹ 7000  
(c) ₹ 8000  
(d) none of these
22. The present value of annuity of ₹3,000 per annum for 15 years at 4.5% p.a C.I. annually is  
(a) ₹ 23,809.41  
(b) ₹ 32,214.60  
(c) ₹ 32,908.41  
(d) none of these
23. A person desires to create a fund to be invested at 10% CI per annum to provide for a prize of ₹ 300 every year. Using  $V = a/i$  find V and V will be  
(a) ₹ 2,000  
(b) ₹ 2,500  
(c) ₹ 3,000  
(d) none of these
24. The future value of annuity of ₹2000 for 5 years at 5 % compounded annually is given (in nearest ₹) as  
(a) ₹ 11, 051  
(b) ₹ 21,021  
(c) ₹ 1,56,24  
(d) ₹ 61254

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**



25. A Maruti Zen cost ₹ 3,60,000. Its price depreciates at the rate of 10% of a year during the first two years and at the rate of 20% in third year. What will be the price of car of the car after 3 years? Also find the total depreciation.

- (a) ₹ 1,26,720
- (b) ₹ 1,15,620
- (c) ₹ 1,25,000
- (d) ₹ 1,10,520

**TIME VALUE AND  
MONEY**

26. Find the value of n if  $(n+1)! = 42(n-1)!$

- (a) 6
- (b) -7
- (c) 7
- (d) -6

**PERMUTATIONS &  
COMBINATIONS**

27. If  ${}^n P_{13} : {}^{n+1} P_{12} = 3 : 4$  then value of n is

- (a) 15
- (b) 14
- (c) 13
- (d) 12

**PERMUTATIONS &  
COMBINATIONS**

28. A question paper contains 6 questions, each having an alternative. The number of ways an examiner can answer one or more questions is

- (a) 720
- (b) 728
- (c) 729
- (d) none of these

**PERMUTATIONS &  
COMBINATIONS**

29.  ${}^5 C_1 + {}^5 C_2 + {}^5 C_3 + {}^5 C_4 + {}^5 C_5$  is equal to \_\_\_\_\_

- (a) 30
- (b) 31
- (c) 32
- (d) 35

**PERMUTATIONS &  
COMBINATIONS**

30. The second term of a G P is 24 and the fifth term is 81. The series is

- (a) 16, 36, 24, 54.....
- (b) 24, 36, 53... ..
- (c) 16, 24, 36, 54,.....
- (d) none of these

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

31. The sum of progression  $(a+b)$ ,  $a$ ,  $(a-b)$ .....n term is

- (a)  $\frac{n}{2} [2a+(n-1)b]$

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

(b)  $\frac{n}{2} [2a+(3-n)b]$

(c)  $\frac{n}{2} [2a+(3-n)]$

(d)  $\frac{n}{2} [2a+ (n-1)]$

32. The series  $1+10^{-1}+10^{-2}+10^{-3}....$  to  $\infty$  is

(a)  $9/10$

(b)  $1/10$

(c)  $10/9$

(d) none of these

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**33. Find the sum of first twenty-five terms of A.P. series whose  $n^{\text{th}}$  term is  $\left(\frac{n}{5}+2\right)$ .

(a) 105

(b) 115

(c) 125

(d) 135

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**34. Find  $g \circ f$  for the functions  $f(x) = \sqrt{x}$ ,  $g(x) = 2x^2+1$ 

(a)  $2x^2+1$

(b)  $2x+1$

(c)  $2x^2+1) (\sqrt{x})$

(d)  $\sqrt{x}$

**FUNCTIONS**35. If  $f(x)=x^2-1$  and  $g(x) = \frac{x+1}{2}$ , then  $\frac{f(3)}{f(3)+g(3)}$  is

(a)  $5/4$

(b)  $4/5$

(c)  $3/5$

(d)  $5/3$

**FUNCTIONS**36. If  $A = \{4,5\}$ ,  $B = \{2,3\}$ ,  $C = \{5,6\}$  then  $A \times (B \cap C)$  is

(a)  $\{(2,5), (3,5)\}$

(b)  $\{(4,2), (4,6)\}$

(c)  $\{(4,3), (4,2)\}$

(d) none of these

**SETS**37. if  $f(x) = x^2/e^x$ , then  $f'(-1)$  is equal to

(a)  $-3e$

(b)  $1/e$

**DIFFERENTIAL  
CALCULUS**

- (c) e  
(d) none of these

38. If  $y = e^{\sqrt{2x}}$ ,  $\frac{dy}{dx}$  is calculated as

(a)  $\frac{e^{\sqrt{2x}}}{\sqrt{2x}}$

(b)  $e^{\sqrt{2x}}$

(c)  $\frac{e^{\sqrt{2x}}}{\sqrt{2x}}$

- (d) none of these

**DIFFERENTIAL  
CALCULUS**

39. Evaluate:  $\int_0^5 \frac{x^2}{x^2 + (5-x)^2} dx$

(a) 1

(b) 0

(c) -1

(d) 2

**INTEGRAL  
CALCULUS**

40. Evaluate:  $\int \left\{ \frac{1}{\log x} - \frac{1}{(\log x)^2} \right\} dx$

(a)  $\frac{1}{\log x} + c$

(b)  $\frac{x}{\log x} + c$

(c)  $-\frac{x}{\log x} + c$

- (d) None of these

**INTEGRAL  
CALCULUS**

41. Find next term of the series 3, 10, 29, 66, 127, ?

(a) 164

(b) 187

(c) 216

(d) 218

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

42. Which number should come next 7, 26, 63, 124, 215, 342, ?

(a) 391

(b) 421

(c) 481

**NUMBER SERIES**

- (d) 511
- 43 Find out the wrong number. 10,14,28,32,64,68,132
- (a) 28
- (b) 32
- (c) 64
- (d) 132

**NUMBER SERIES**

44. In a certain code 'SOUTHERN' is written as 'UVPTMQDG'. How is 'MARIGOLD' written in that code?
- (a) JSBCNFKS
- (b) JSBNHPME
- (c) JSBNCKNF
- (d) NBSKCJNF

**NUMBER SERIES**

45. In a certain code 'PRISM' is written as 'OSHTL' and 'RUBLE' is written as 'QVAMD'. How will 'WHORL' be written in that code?
- (a) XISPM
- (b) VINSK
- (c) UINSK
- (d) XGPQM

**NUMBER SERIES**

- 46 A is the son of C; C and Q are the sisters; Z is the mother of Q and P is the son of Z. Which of the following statements is true?
- (a) A and P are cousins
- (b) C and P are sisters
- (c) P is the maternal uncle of A
- (d) A is the maternal uncle of P

**BLOOD RELATION**

47. 'X @ Y' means 'X is the mother of Y';  
 'X \$ Y' means 'X is the husband of Y';  
 'X # Y' means 'X is the sister of Y'.  
 'X \* Y' means 'X is the son of Y'.  
 Which of the following indicates the relationship 'A is daughter of P'?

- (a) P @ B # F \* A
- (b) P @ B # A \* F
- (c) A # F \* B @ P
- (d) A # F \* B \$ P

**BLOOD RELATION**

(From Q.48 to Q.49) Read the following information carefully and answer the questions given below?

There are six children playing football, namely P, Q, R, S, T and U. P and T are brothers, U is sister of T, R is the only son of P's uncle, Q and S are the daughters of the only brother of R's father

48. How many female players are there?
- (a) one
- (b) two

**BLOOD RELATION**

- (c) three  
(d) Four
49. How is S is related to P  
(a) Uncle  
(b) Sister  
(c) Niece  
(d) Cousin
50. Pointing towards photograph. Vinod said, "she is the daughter of my wife's mother's only daughter". How is Vinod is related to the girl in the Photograph?  
(a) Cousin  
(b) Uncle  
(c) Father  
(d) None
51. Raju walks northwards. After a while, he turns to his right and a little further to his left. Finally, after walking a distance of one kilometre, he turns to his left again. In which direction is he moving now?  
(a) North  
(b) South  
(c) East  
(d) West
52. Ravi wants to go to the College. He starts from his home, which is in the East and comes to a crossing. The road to the left ends in a theatre, straight ahead is the hospital. In which direction is the College?  
(a) North  
(b) South  
(c) East  
(d) West
53. A man is facing south. He turns  $135^\circ$  in the anticlockwise direction and then  $180^\circ$  in the clockwise direction. Which direction is he facing now?  
(a) North-East  
(b) North-West  
(c) South-East  
(d) South-West
54. Rakesh moves towards South-east a distance of 7 km, then he moves towards West and travels a distance of 14 m. From here he moves towards North-west a distance of 7 m and finally he moves a distance of 4 m towards East and stood at that point. How far is the starting point from where he stood?  
(a) 3 m  
(b) 4 m  
(c) 10 m  
(d) 11 m

**BLOOD RELATION****BLOOD RELATION****DIRECTION TESTS****DIRECTION TESTS****DIRECTION TESTS****DIRECTION TESTS**

55. A and B start moving towards each other from two places 200 m apart. After walked 60 m, B turns left and goes 20 m, then he turns right and goes 40 m. He then turns right again and comes back to the road on which he had started walking. If A and B walk with the same speed, what is the distance between them now?

- (a) 20 m  
(b) 30 m  
(c) 40 m  
(d) 50 m

**DIRECTION TESTS**

(56-58) Study the following information carefully to answer the questions given below. P, T, V, R, M, D, K and W are sitting around a circle table facing the centre. V is second to the left of T. T is fourth to the right of M. D and P are not immediate neighbours of T. D is third to the right of P. W is not an immediate neighbour P. P is to the immediate left of K.

56. Who is Second to the left of K?

- (a) P  
(b) R  
(c) M  
(d) W

**SEATING  
ARRANGEMENTS**

57. Who is the immediate left of V?

- (a) D  
(b) M  
(c) W  
(d) None of these

**SEATING  
ARRANGEMENTS**

58. What is R's Position with respect to V?

- (a) Third to the right  
(b) Fifth to the right  
(c) Third to the left  
(d) Second to the left

**SEATING  
ARRANGEMENTS**

59. 8 Persons A, B, C, D, E, F, G and H are sitting in two rows opposite to each other. Each row has four persons. B and C are sitting in front of each other. C is between D and E. H is sitting immediate left of E. H and F are diagonally opposite. G and B are not near to each other. Who is in front of A?

- (a) E  
(b) D  
(c) C  
(d) B

**SEATING  
ARRANGEMENTS**

60. A group of seven singers, facing the audience, are standing in a line on the stage as follow.

- (i) D is the right of C.  
(ii) F is stand beside G.  
(iii) Bis to the left of F.  
(iv) C and B are one person between them.  
(vi) And D have one person between them.

**SEATING  
ARRANGEMENTS**

Who is sitting on the second from extreme left?

- (a) D
- (b) F
- (c) G
- (d) E

**SEATING  
ARRANGEMENTS**

**Part B: Statistics**

61. Statistics is concerned with

- (a) Qualitative information
- (b) Quantitative information
- (c) (a) or (b)
- (d) Both (a) and (b).

**STATISTICAL  
REPRESENTATION  
OF DATA**

62. The primary data are collected by

- (a) Interview method
- (b) Observation method
- (c) Questionnaire method
- (d) All these.

**STATISTICAL  
REPRESENTATION  
OF DATA**

63. The following data relate to the incomes of 86 persons:

Income in ₹	:	500–999	1000–1499	1500–1999	2000–2499
No. of persons	:	15	28	36	7

What is the percentage of persons earning more than Rs? 1500?

- (a) 50
- (b) 45
- (c) 40
- (d) 60

**STATISTICAL  
REPRESENTATION  
OF DATA**

64. The following data relate to the marks of a group of students:

Marks:	Below 10	Below 20	Below 30	Below 40	Below 50
No. of students:	15	38	65	84	100

How many students got marks more than 30?

- (a) 65
- (b) 50
- (c) 35
- (d) 43

**STATISTICAL  
REPRESENTATION  
OF DATA**

65. The curve obtained by joining the points, whose x- coordinates are the upper limits of the class-intervals and y coordinates are corresponding cumulative frequencies is called

- (a) Ogive
- (b) Histogram
- (c) Frequency Polygon

**CENTRAL  
TENDENCY**

- (d) Frequency Curve
66. If  $x$  and  $y$  are related by  $x - y - 10 = 0$  and mode of  $x$  is known to be 23, then the mode of  $y$  is
- (a) 20  
(b) 13  
(c) 3  
(d) 23
- CENTRAL TENDENCY**
67. If there are two groups with 75 and 65 as harmonic means and containing 15 and 13 observations then the combined HM is given by
- (a) 65  
(b) 70.36  
(c) 70  
(d) 71
- CENTRAL TENDENCY**
68. If the quartile deviation of  $x$  is 6 and  $3x + 6y = 20$ , what is the quartile deviation of  $y$ ?
- (a) 3  
(b) 4  
(c) 5  
(d) 6
- DISPERSION**
69. Which one is an absolute measure of dispersion?
- (a) Range  
(b) Mean Deviation  
(c) Standard Deviation  
(d) All these measures
- DISPERSION**
70. The median of 27, 30, 26, 44, 42, 51, 37 is
- (a) 30  
(b) 42  
(c) 44  
(d) 37
- CENTRAL TENDENCY**
71. Mean of 25, 32, 43, 53, 62, 59, 48, 31, 24, 33 is
- (a) 44  
(b) 43  
(c) 42  
(d) 41
- CENTRAL TENDENCY**
72. If the A.M of any distribution be 25 & one term is 18. Then the deviation of 18 from A.M is
- (a) 7  
(b) -7  
(c) 43  
(d) none
- CENTRAL TENDENCY**



73. The algebraic sum of the deviations of a frequency distribution from its mean is always,
- (a) greater than zero
  - (b) less than zero
  - (c) zero
  - (d) a non-zero number
- CENTRAL TENDENCY**
74. Pooled Mean is also called
- (a) Mean
  - (b) Geometric Mean
  - (c) Grouped Mean
  - (d) none
- CENTRAL TENDENCY**
75. If  $x$  and  $y$  are related by  $y = 2x + 5$  and the SD and AM of  $x$  are known to be 5 and 10 respectively, then the coefficient of variation is
- (a) 25
  - (b) 30
  - (c) 40
  - (d) 20
- DISPERSSION**
76. Following are the wages of 8 workers in rupees: 50, 62, 40, 70, 45, 56, 32, 45. If one of the workers is selected at random, what is the probability that his wage would be lower than the average wage?
- (a) 0.625
  - (b) 0.500
  - (c) 0.375
  - (d) 0.450
- PROBABILITY**
77. Given that for two events A and B,  $P(A) = 3/5$ ,  $P(B) = 2/3$  and  $P(A \cap B) = 3/4$ , what is  $P(A/B)$ ?
- (a) 0.655
  - (b) 13/60
  - (c) 31/60
  - (d) 0.775
- PROBABILITY**
78. A problem in probability was given to three CA students A, B and C whose chances of solving it are  $1/3$ ,  $1/5$  and  $1/2$  respectively. What is the probability that the problem would be solved?
- (a)  $4/15$
  - (b)  $7/8$
  - (c)  $8/15$
  - (d)  $11/15$
- PROBABILITY**
79. A packet of 10 electronic components is known to include 2 defectives. If a sample of 4 components is selected at random from the packet, what is the probability that the sample does not contain more than 1 defective?
- (a)  $1/3$
  - (b)  $2/3$
- PROBABILITY**

- (c) 13/15  
(d) 3/15

80. The probability that there is at least one error in an account statement prepared by 3 persons A, B and C are 0.2, 0.3 and 0.1 respectively. If A, B and C prepare 60, 70 and 90 such statements, then the expected number of correct statements

- (a) 170  
(b) 176  
(c) 178  
(d) 180

**PROBABILITY**

81. A bag contains 6 white and 4 red balls. If a person draws 2 balls and receives ₹ 10 and ₹ 20 for a white and red balls respectively, then his expected amount is

- (a) ₹ 25  
(b) ₹ 26  
(c) ₹ 29  
(d) ₹ 28

**PROBABILITY**

82. What is the first quartile of X having the following probability density function?

$$f(x) = \frac{1}{\sqrt{72\pi}} e^{-\frac{(x-10)^2}{72}} \quad \text{for } -\infty < x < \infty$$

- (a) 4  
(b) 5  
(c) 5.95  
(d) 6.75

**PROBABILITY  
DISTRIBUTION**

83. If the points of inflexion of a normal curve are 40 and 60 respectively, then its mean deviation is

- (a) 40  
(b) 45  
(c) 50  
(d) 60

**PROBABILITY  
DISTRIBUTION**

84. If X follows normal distribution with  $\mu = 50$  and  $\sigma = 10$ , what is the value of  $P(x \leq 60 / x > 50)$ ?

- (a) 0.8413  
(b) 0.6828  
(c) 0.1587  
(d) 0.7256

**PROBABILITY  
DISTRIBUTION**

85. For a normal distribution with mean as 500 and SD as 120, what is the value of k so that the interval [500, k] covers 40.32 per cent area of the normal curve? [Given  $\phi(1.30) = 0.9032$ .]

- (a) 740  
(b) 750  
(c) 656

**PROBABILITY  
DISTRIBUTION**

- (d) 800
86. If the mean deviation of a normal variable is 16, what is its quartile deviation?
- (a) 10.00.  
(b) 13.50.  
(c) 15.00.  
(d) 12.05.
87. For a Poisson variate  $X$ ,  $P(X = 1) = P(X = 2)$ . What is the mean of  $X$ ?
- (a) 1.00.  
(b) 1.50.  
(c) 2.00.  
(d) 2.50.
88. For a Poisson distribution,
- (a) mean and standard deviation are equal.  
(b) mean and variance are equal.  
(c) standard deviation and variance are equal.  
(d) both (a) and (b).
89. The variance of a binomial distribution with parameters  $n$  and  $p$  is
- (a)  $np^2(1-p)$ .  
(b)  $\sqrt{np(1-p)}$   
(c)  $nq(1-q)$   
(d)  $n^2p^2(1-p)^2$
90. For a  $p \times q$  classification of bivariate data, the maximum number of conditional distributions is
- (a)  $p$   
(b)  $p + q$   
(c)  $pq$   
(d)  $p$  or  $q$
91. For a  $p \times q$  bivariate frequency table, the maximum number of marginal distributions is
- (a)  $p$   
(b)  $p + q$   
(c) 1  
(d) 2
92. If the coefficient of correlation between two variables is 0.7 then the percentage of variation unaccounted for is
- (a) 70%  
(b) 30%  
(c) 51%  
(d) 49%

**PROBABILITY  
DISTRIBUTION**

**PROBABILITY  
DISTRIBUTION**

**PROBABILITY  
DISTRIBUTION**

**PROBABILITY  
DISTRIBUTION**

**CORRELATION**

**CORRELATION**

**CORRELATION**

93. If the covariance between two variables is 20 and the variance of one of the variables is 16, what would be the variance of the other variable?

- (a)  $S^2y \geq 25$
- (b) More than 10
- (c) Less than 10
- (d) More than 1.25

CORRELATION

94. If the regression line of y on x and of x on y are given by  $2x + 3y = -1$  and  $5x + 6y = -1$  then the arithmetic means of x and y are given by

- (a) (1, -1)
- (b) (-1, 1)
- (c) (-1, -1)
- (d) (2, 3)

REGRESSION

95. \_\_\_\_\_ satisfies circular test

- (a) G.M. of price relatives or the weighted aggregate with fixed weights
- (b) A.M. of price relatives or the weighted aggregate with fixed weights
- (c) H.M. of price relatives or the weighted aggregate with fixed weights
- (d) none

INDEX NUMBER

96. From the following data for the 5 groups combined

Group	Weight	Index Number
Food	35	425
Cloth	15	235
Power & Fuel	20	215
Rent & Rates	8	115
Miscellaneous	22	150

The general Index number is

- (a) 270
- (b) 269.2
- (c) 268.5
- (d) 272.5

INDEX NUMBER

97. Laspyres formula does not satisfy

- (a) Factor Reversal Test
- (b) Time Reversal Test
- (c) Circular Test
- (d) All the above

INDEX NUMBER

98. If  $\sum P_0Q_0 = 1360$ ,  $\sum P_nQ_0 = 1900$ ,  $\sum P_nQ_n = 1880$  then the Laspeyre's Index number is

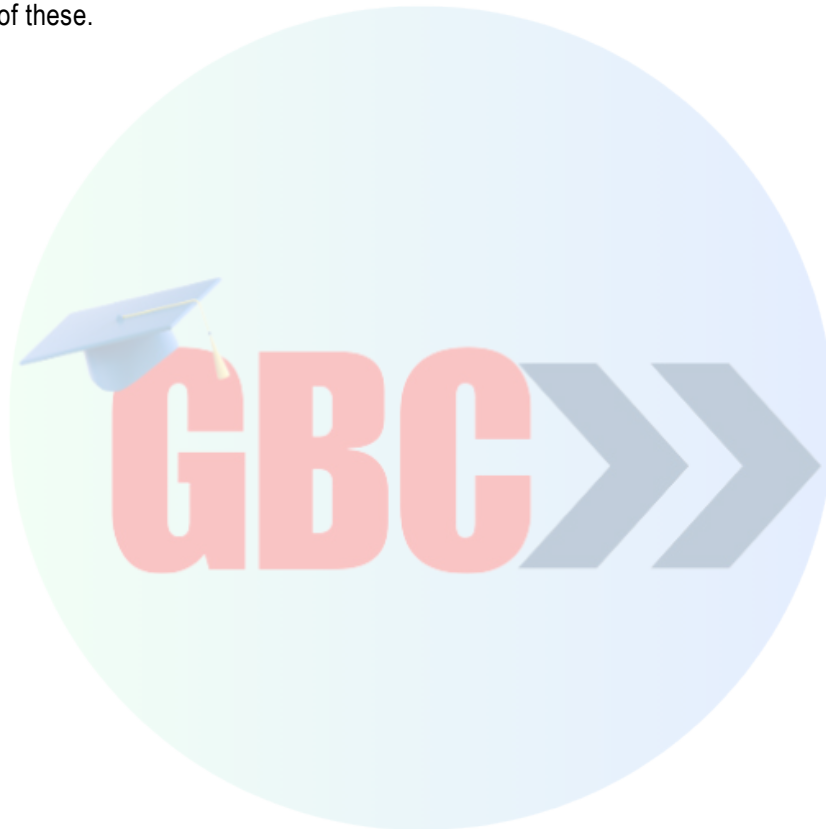
- (a) 71
- (b) 139
- (c) 175

INDEX NUMBER

- (d) None of these.
99. The consumer price Index for April 1985 was 125. The food price index was 120 and other items index was 135. The percentage of the total weight of the index is
- (a) 66.67  
(b) 68.28  
(c) 90.25  
(d) None of these.
100. Net monthly salary of an employee was ₹ 3000 in 1980. The consumer price index number in 1985 is 250 with 1980 as base year. If the has to be rightly compensated then, 7<sup>th</sup> dearness allowances to be paid to the employee is :
- (a) ₹ 4,800.00  
(b) ₹ 4,700.00  
(c) ₹ 4,500.0  
(d) None of these.

**INDEX NUMBER**

**INDEX NUMBER**



## MOCK TEST PAPER SERIES –I

## Paper 3: Business Mathematics, Logical Reasoning and Statistics

## Key Part A: Business Mathematics and Logical Reasoning

1	(b)	2	(b)	3	(b)	4	(b)	5	(c)
6	(b)	7	(b)	8	(a)	9	(a)	10	(a)
11	(a)	12	(a)	13	(b)	14	(a)	15	(c)
16	(a)	17	(a)	18	(a)	19	(c)	20	(c)
21	(a)	22	(b)	23	(c)	24	(a)	25	(a)
26	(a)	27	(a)	28	(b)	29	(b)	30	(c)
31	(b)	32	(c)	33	(b)	34	(b)	35	(b)
36	(d)	37	(a)	38	(a)	39	(a)	40	(b)
41	(d)	42	(d)	43	(d)	44	(c)	45	(b)
46	(c)	47	(d)	48	(c)	49	(b)	50	(c)
51	(d)	52	(d)	53	(d)	54	(c)	55	(c)
56	(b)	57	(a)	58	(a)	59	(a)	60	(b)

## Key Part B: Statistics

61	(d)	62	(d)	63	(a)	64	(c)	65	(a)
66	(b)	67	(c)	68	(b)	69	(d)	70	(d)
71	(d)	72	(b)	73	(c)	74	(c)	75	(c)
76	(b)	77	(d)	78	(d)	79	(c)	80	(c)
81	(d)	82	(c)	83	(d)	84	(b)	85	(c)
86	(b)	87	(c)	88	(b)	89	(c)	90	(b)
91	(d)	92	(c)	93	(a)	94	(a)	95	(a)
96	(b)	97	(d)	98	(b)	99	(a)	100	(c)

## MOCK TEST PAPER TEST SERIES -II

## FOUNDATION COURSE

## PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 Hours

Marks: 100

## Part A: Business Mathematics and Logical Reasoning

1. If  $\log_{10}5 + \log_{10}(5x + 1) = \log_{10}(x + 5) + 1$ , then x is equal to:
- (a) 1  
(b) 3  
(c) 5  
(d) 10
- LOG**
2. If  $xy + yz + zx = -1$ , then the value of  $\left( \frac{x+y}{1+xy} + \frac{z+y}{1+zy} + \frac{x+z}{1+zx} \right)$  is
- (a) xyz  
(b)  $-\frac{1}{yz}$   
(c)  $\frac{1}{xyz}$   
(d)  $\frac{1}{x+y+z}$
- INDICES**
3. The salaries of A, B and C are of ratio 2:3:5. if the increments of 15%, 10% and 20% are done their respective salaries, then find new salaries.
- (a) 23: 33: 60  
(b) 33:23:60  
(c) 23: 60:33  
(d) 33: 60: 23
- RATIO & PROPORTION**
4. If A: B = 5:3, B:C = 6:7 and C: D = 14:9 then the value of A: B:C:D
- (a) 20:14:12:9  
(b) 20:9:12:14  
(c) 20:9:14:12  
(d) 20:12:14:9
- RATIO & PROPORTION**
5. The salary of P is 25% lower than that of Q and the salary of R is 20% higher than Q , the ratio of salary of R and P will be :
- (a) 5:8  
(b) 8:5
- RATIO & PROPORTION**

- (c) 5:3  
(d) 3:5
6. The cab bill is partly fixed and partly varies on the distance covered. For 456 km the bill is Rs.8252, for 484 km the bill is Rs. 8728. What will the bill be for 500km?  
(a) Rs. 8876  
(b) Rs.9156  
(c) Rs.9472  
(d) Rs.9000
- LINEAR EQUATION**
7.  $(x + 4)$  is a factor of  $x^4 + 4x^3 - ax^2 - bx + 24$ . Also,  $a + b = 29$ . Find the value of  $b$ .  
(a) 7  
(b) 16  
(c) 22  
(d) 13
- QUADRATIC EQUATION**
8. X and Y have their present ages in the ratio 6:7. 14 years ago, the ratio of the ages of the two was 4:5. What will be the ratio of their ages 21 years from now?  
(a) 7: 11  
(b) 9: 10  
(c) 8: 11  
(d) 11: 13
- LINEAR EQUATION**
9. The equation  $3x^2 + mx + n = 0$  has roots that are double that of the equation  $x^2 + 10x + 12 = 0$ . What is the value of  $m + n$ ?  
(a) 104  
(b) 204  
(c) 102  
(d) 202
- QUADRATIC EQUATION**
10. What is the smallest integral value of  $n$  for which  $n^3 + 7n^2 - 50n - 336 > 0$   
(a) 8  
(b) 6  
(c) 7  
(d) None of the above
- QUADRATIC EQUATION**
11. If  $\alpha$  and  $\beta$  are the roots of the equation  $x^2+7x+12 = 0$ , then the equation whose roots  $(\alpha+\beta)^2$  and  $(\alpha-\beta)^2$  will be  
(a)  $x^2-14x+49 = 0$   
(b)  $x^2-24x+144 = 0$   
(c)  $x^2-50x+49 = 0$   
(d)  $x^2-19x+49 = 0$
- QUADRATIC EQUATION**
12. The value of 'k' for system of equations  $kx+2y = 5$  and  $3x+y = 1$  has no solution is:  
(a) 5  
(b)  $2/3$
- LINEAR EQUATION**



- (c) 6  
(d)  $3/2$
13. On the average, experienced person does 5 units of work while a fresh one 3 units of work daily, but the employer have to maintain the output at least 30 units of work per day. The situation can be expressed as
- (a)  $5x+3y \leq 30$   
(b)  $5x+3y \geq 30$   
(c)  $5x+3y = 30$   
(d) None of these
14. The sum of money doubles itself in 10 years. The number of years it would be treble itself is:
- (a) 25 years  
(b) 15 years  
(c) 20 years  
(d) None
15. Arun purchased a vaccum cleaner by giving ₹1700 as cash down payment, which will be followed by five EMIs of ₹480 each. The vaccum cleaner can also be bought by paying ₹3900 cash. What is the approx. rate of interest p.a. (at simple interest) under this instalment plan?
- (a) 18%  
(b) 19%  
(c) 22%  
(d) 20%
16. Present Value of a five year annuity is Rs. 2,000. If the rate of interest is 8% p.a., what is the amount of each annuity payment?
- (a) Rs.500.9  
(b) Rs.463.8  
(c) Rs.363.1  
(d) Rs.486.4
17. Abdul has taken a loan from Bahadur at 7% p.a. The loan has to be repaid in three equal yearly instalments of Rs. 10,000 each. What is the amount of loan taken?
- (a) Rs.25,467  
(b) Rs.26,897  
(c) Rs.26,243  
(d) None of the above
18. A took a loan from B. The loan is to be repaid in annual installments of Rs. 2,000 each. The first instalment is to be paid three years from today and the last one is to be paid 8 years from today? What is the value of loan today, using a discount rate of eight percent?
- (a) Rs.9,246  
(b) Rs.7,927  
(c) Rs.8,567  
(d) None of the above

INEQUALITIES

LINEAR EQUATION

TIME VALUE AND MONEY

TIME VALUE AND MONEY

TIME VALUE AND MONEY

TIME VALUE AND MONEY

19. If the cost of capital be 12% per annum, then the Net Present Value (in nearest Rs.) from the given cash flow is given as

Year	0	1	2	3
Operating Profit (in thousand Rs.)	(100)	60	40	50

- (a) Rs.34048  
 (b) Rs.34185  
 (c) Rs.51048  
 (d) Rs.21048

**TIME VALUE AND MONEY**

20. Let the operating profit of a manufacturer for five years is given as

Year	1	2	3	4	5	6
Operating Profit (in lakh Rs. )	90	100	106.4	107.14	120.24	157.35

- (a) 9%  
 (b) 12%  
 (c) 11%  
 (d) 13%

**TIME VALUE AND MONEY**

21. If a sum triples itself in 15 years at simple rate of interest, the rate of interest per annum will be:

- (a) 13%  
 (b) 13.3%  
 (c) 13.5%  
 (d) 18.0%

**TIME VALUE AND MONEY**

22. What will be population after 3 years when present population is 25, 000 and population increases at the rate of 3% in I year, at 4% in II year and 5% in III year?

- (a) Rs.28,119  
 (b) Rs.29,118  
 (c) Rs.27, 000  
 (d) Rs.30, 000

**TIME VALUE AND MONEY**

23. The future value of an annuity of Rs.1500 made annually for five years at interest of 10% compounded annually is (Given that  $(1.1)^5 = 1.61051$ )

- (a) Rs.9517.56  
 (b) Rs.9157.65  
 (c) Rs.9715.56  
 (d) Rs.9175.65

**TIME VALUE AND MONEY**

24. The effective rate of interest equivalent to the nominal rate of 7% converted monthly:

- (a) 7.26%  
 (b) 7.22%

**TIME VALUE AND MONEY**

- (c) 7.02%  
(d) 7.20%
25. How much will be Rs.25,000 to in 2 years at compound interest if the rates for the successive years are at 4% and 5% per year
- (a) Rs.27,300  
(b) Rs.27,000  
(c) Rs.27,500  
(d) Rs.27,900
26. A box contains 3 pink caps, 2 purple caps and 4 orange caps. In how many ways they can be arranged so that the caps of the same colour come together. (Assume all caps of same colour are not identical)
- (a) 1724  
(b) 1728  
(c) 1732  
(d) 1764
27.  ${}^{15}C_3 + {}^{15}C_{13}$  is equal to:
- (a)  ${}^{16}C_3$   
(a)  ${}^{30}C_{16}$   
(c)  ${}^{15}C_8$   
(d)  ${}^{15}C_{15}$
28. There are 12 questions to be answered in Yes or No. How many ways can these be answered?
- (a) 1024  
(b) 2048  
(c) 4096  
(d) None
29. In how many ways 3 Prizes can be distributed among 3 students equally
- (a) 10  
(b) 45  
(c) 60  
(d) 120
30. The sum of the first 3 terms in an AP is 18 and that of the last 3 is 28. If the AP has 13 terms, what is the sum of the middle three terms?
- (a) 23  
(b) 18  
(c) 19  
(d) None of the above
31. The ratio of sum of first n natural numbers to that of sum of cubes of first n natural numbers is
- (a) 3:16  
(b)  $n(n+1) / 2$

**TIME VALUE AND  
MONEY**

**PERMUTATIONS &  
COMBINATIONS**

**PERMUTATIONS &  
COMBINATIONS**

**PERMUTATIONS &  
COMBINATIONS**

**PERMUTATIONS &  
COMBINATIONS**

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

- (c)  $2 / n(n+1)$   
 (d) None of the above
32. If the sum of 'terms of an Arithmetic Progression is  $2n^2$ , the fifth term is.  
 (a) 20  
 (b) 50  
 (c) 18  
 (d) 25
33. The number of words that can be formed out of the letters of the word "ARTICLE" so that vowels occupy even places is  
 (a) 36  
 (b) 144  
 (c) 574  
 (d) 754
34. Let Z be the universal set for two sets – A and B. If  $n(A) = 300$ ,  $n(B) = 400$  and  $n(A \cap B) = 200$ , then  $n(A' \cap B')$  is equal to 400 provided  $n(Z)$  is equal to  
 (a) 900  
 (b) 800  
 (c) 700  
 (d) 600
35. In a group of students 80 can speak Hindi, 60 can speak English and 40 can speak Hindi and English both, then number of students is:  
 (a) 100  
 (b) 140  
 (c) 180  
 (d) 60
36. if  $f(x) = x^2-1$  and  $g(x) = 2x+3$  then  $g \circ f(3)$   
 (a) 71  
 (b) 61  
 (c) 41  
 (d) 19
37.  $\int 2^{3x} \cdot 3^{2x} \cdot 5^x dx =$   
 (a)  $\frac{2^{3x} \cdot 3^{2x} \cdot 5^x}{\log(270)} + C$   
 (b)  $\frac{2^{3x} \cdot 3^{2x} \cdot 5^x}{\log(360)} + C$

**ARITHMETIC &  
 GEOMETRIC  
 PROGRESSIONS**

**PERMUTATIONS &  
 COMBINATIONS**

**SETS**

**SETS**

**FUNCTIONS**

**INTEGRAL  
 CALCULUS**

$$(c) \frac{2^{3x} \cdot 3^{2x} \cdot 5^x}{\log(180)} + C$$

$$(d) \frac{2^{3x} \cdot 3^{2x} \cdot 5^x}{\log(90)} + C$$

38. Marginal cost and marginal revenue of a commodity is  $C'(x)=6+2x$  and  $R'(x)=30$ . Fixed cost is 0. Find the total profit.

- (a)  $22x + 3x^2$   
 (b)  $22x - 3x^2$   
 (c)  $22x - x^2$   
 (d)  $x + 3x^2$

**INTEGRAL  
CALCULUS**

39. Find the value of  $\int_0^1 (2x - 4)dx$

- (a) 3  
 (b) -3  
 (c) 0  
 (d) 1

**INTEGRAL  
CALCULUS**

40. A total cost function of a company RXL Ltd is  $C(x) = 10+50x-30x^2+x^3/3$  Where x denotes the output. Find the output level at which the profit is maximum if price function is given by  $450-30x$

- (a) 30  
 (b) 40  
 (c) 50  
 (d) 20

**DIFFERENTIAL  
CALCULUS**

41. Find out the next term of the series 4, 25, 121, 289, \_\_\_\_\_

- (a) 529  
 (b) 441  
 (c) 625  
 (d) None of the above

**NUMBER SERIES**

42. Which number should come next  $\rightarrow 7, 13, 13, 14, 19, 15 ?$

- (a) 15  
 (b) 25  
 (c) 19  
 (d) None of the above

**NUMBER SERIES**

43. Find out the wrong number. 2,10,18,54,162,486,1458

- (a) 18  
 (b) 10  
 (c) 54  
 (d) 162

**NUMBER SERIES**

44. In a certain code, „Delhi is capital” is coded as „7 5 9”, „capital are beautiful” is coded as „3 6 9”, „Delhi is beautiful” is coded as „6 7 5”, „Patna also capital” is coded as „9 2 4”. What is code for „beautiful” ?

- (a) 2
- (b) 4
- (c) 6
- (d) 9

**NUMBER SERIES**

45. If 'SYSTEM' is coded as 131625 then 'TERMS' will be coded as ?

- (a) 62251
- (b) 62451
- (c) 64251
- (d) 62415

**NUMBER SERIES**

46. Pointing to a photograph Lalita says, “He is the son of the only son of my grandfather.” How is the man in the photograph related to Lalita?

- (a) Brother
- (b) Uncle
- (c) Cousin
- (d) Data is inadequate

**BLOOD RELATION**

47. Pointing to a photograph. Ram said, “He is the son of the only daughter of the father of my brother.” How is Ram related to the man in the photograph?

- (a) Nephew
- (b) Brother
- (c) Father
- (d) Maternal Uncle

**BLOOD RELATION**

**(48-49) Read the following information carefully and answer the questions given below ? There are six children playing football, namely P, Q, R, S, T and U. P and T are brothers, U is sister of T, R is the only son of P's uncle, Q and S are the daughters of the only brother of R's father**

48. Ho many female players are there?

- (a) one
- (b) two
- (c) three
- (d) Four

**BLOOD RELATION**

49. How is S is related to P

- (a) Uncle
- (b) Sister
- (c) Niece
- (d) Cousin

**BLOOD RELATION**

50. Pointing towards photograph. Vinod said “she is the daughter of my wife's mother's only daughter “. How is Vinod is related to the girl in the Photograph?

- (a) Cousin

**BLOOD RELATION**

- (b) Uncle
- (c) Father
- (d) None

51. Kamal starts from point 'O' and moved towards North 2 km, then he turns right and moved 4 km again he turned towards North and walked up to 1 km reached at A. Find the distance between OA.

- (a) 6
- (b) 7
- (c) 4
- (d) 5

**DIRECTION TESTS**

52. When a person faces north and walks 25 m right, and he turns left and walks 20 m and again he turns right and walks 25 m and turns right 25 m and turns right and walks 40 m in which direction is he now from his starting point.

- (a) North-West
- (b) North –East
- (c) South- East
- (d) South-West

**DIRECTION TESTS**

53. Sanjay started from his house towards west. After a walking a distance 15 km he turned to the right and walked 10 km, he again turned to the right and walked 5 km. After this he turns left at  $135^\circ$  and covered 10 km in which direction should he is going?

- (a) South
- (b) South-West
- (c) South-East
- (d) North –West

**DIRECTION TESTS**

54. Raju Walked from A to B in the east 10 m, then he turns towards right and walked 3 m. Again, he turned to the right and walked 14 m. how far is from is she from point A?

- (a) 4 feet
- (b) 5 feet
- (c) 12 feet
- (d) 13 feet

**DIRECTION TESTS**

55. Mamtha moved a distance of 75 m towards north, then she turns to the left and walked to about 25 m, turned left again and walks 80 m. Finally, she turns to the right at angle of  $45^\circ$ . In which direction was she is moving finally?

- (a) South-East
- (b) South-West
- (c) North-West
- (d) North-East

**DIRECTION TESTS**

56. Five students A, B, C, D, and E are standing in a row. D is right on the E; B is on the left of E but on the right of A. D is next to C on his left. The student in middle is

- (a) B
- (b) E

**SEATING  
ARRANGEMENT**

- (c) C  
(d) A

57. Five children are sitting in row. S is sitting next to P but not T. K is sitting next to R, who is sitting on the extreme left and t is not sitting next to K . Who are adjacent to S.

- (a) K+P  
(b) R+P  
(c) Only P  
(d) P and T

**SEATING  
ARRANGEMENT**

**(58-60) Directions to solve**

- (a) p, Q, R, S, T, U, V and W are sitting round the circle and facing the centre.  
(b) P is second to the right of T who is neighbour of R and V.  
(c) S is not the neighbour of U.  
(d) V is neighbour of U.  
(e) Q is not between S and W. W is not between u and S

**SEATING  
ARRANGEMENT**

58. Who is immediate left of V?

- (a) P  
(b) U  
(c) R  
(d) T

**SEATING  
ARRANGEMENT**

59. What is the position of R

- (a) Between P and T  
(b) Second to the right of S  
(c) to the immediate right of W  
(d) inadequate data

**SEATING  
ARRANGEMENT**

60. Which are not following are not neighbour

- (a) UV  
(b) VT  
(c) RV  
(d) PQ

**SEATING  
ARRANGEMENT**

**Part B: Statistics**

61. Salaries of employees working in ABC limited is as follows:

Salaries (In thousands)	below 10	below 20	below 50	below 100	below 1000
Number of employees	28	34	65	84	123

Find the number of employees with salaries more than 50k?

- (a) 65  
(b) 84  
(c) 39  
(d) 58

**STATISTICAL  
REPRESENTATION  
OF DATA**



62. Which of the following is not a criteria for ideal measure of central tendency?
- It should be ambiguously defined
  - It should be simple to compute
  - It should be based on all the observations
  - None of these
- CENTRAL  
TEDENCY**
63. Which of the following is not an example of continuous variable?
- Temperature in India
  - Profit of Company X
  - Number of road accidents
  - A person's height
- STATISTICAL  
REPRESENTATION  
OF DATA**
64. At ABC Ltd, the average age of employees is 36. Average age of male employees is 38 and that of females is 32. Find the ratio of female to male in the company.
- 1:3
  - 2:1
  - 1:2
  - 3:1
- CENTRAL  
TEDENCY**
65. The mean height of girls in class is 162cm while for boys is 182cm. The ratio of number of girls: boys is 1:2. Find the mean height of the whole class
- 170 cm
  - 180 cm
  - 154 cm
  - None of these
- CENTRAL  
TEDENCY**
66. In the equation  $4x+2y = 3$ , quartile deviation for y is 3. Find the quartile deviation for x.
- 4.5
  - 6
  - 1.5
  - None of these
- DISPERSION**
67. The Standard deviation is independent of change of
- Scale
  - Origin
  - Both (a) and (b)
  - None of these
- DISPERSION**
68. Find D6 for the following observations. 7, 9, 5, 4, 10, 15, 14, 18, 6, 20
- 11.40
  - 12.40
  - 13.40
  - 13.80
- CENTRAL  
TEDENCY**
69. If all the observations are decreased by 4, find the relation between new SD and old SD.

- (a) New SD = Old SD/2  
 (b) New SD = Old SD - 2  
 (c) New SD = Old SD - 4  
 (d) Remains unchanged
70. Standard deviation of first n natural number is 2. What is the value of n?  
 (a) 7  
 (b) 6  
 (c) 5  
 (d) 8
71. Find the variance of  $3x+2$  if standard deviation of x is 4  
 (a) 9  
 (b) 160  
 (c) 16  
 (d) 144
72. If the variance of x = 148.6 and mean of x = 40, then the coefficient of variation is  
 (a) 37.15  
 (b) 30.48  
 (c) 33.75  
 (d) None of these
73. The average of 10 observations is 14.4. If the average of first four observations is 16.5. The average of remaining 6 observations is :  
 (a) 13.6  
 (b) 13.0  
 (c) 13.2  
 (d) 12.5
74. If the rates return from three different shares are 100%, 200% and 400% respectively. The average rate of return will be.  
 (a) 350%  
 (b) 233.33%  
 (c) 200%  
 (d) 300%
75. For a 4 x 7 classification of bivariate data, the maximum number of conditional distributions is :  
 (a) 11  
 (b) 28  
 (c) 35  
 (d) None
76. The coefficients of correlation between two variables x and y is the simple \_\_\_\_\_ of two regression coefficients.  
 (a) Harmonic Mean
- DISPERSION**
- DISPERSION**
- DISPERSION**
- DISPERSION**
- DISPERSION**
- CENTRAL TENDENCY**
- CENTRAL TENDENCY**
- CORRELATION**
- CORRELATION**

(b) Arithmetic Mean

(c) Geometric Mean

(d) None of the above

77. There are two equations:  $m + 3p = 2$  and  $6n + 2q = 1$ . Correlation coefficients for  $p$  and  $q$  is 0.5. Find the correlation coefficients of  $m$  and  $n$

(a) 0.6

(b) 0.5

(c) -0.5

(d) None of these

**CORRELATION**

78. If  $r=0$ , regression lines are:

(a) Perpendicular

(b) Parallel

(c) They coincide

(d) Cannot be determined

**REGRESSION**

79. Below scatter diagram shows what type of correlation



**CORRELATION**

(a) Perfect negative correlation

(b) Negative correlation

(c) Positive correlation

(d) Perfect positive correlation

80. Number of defects in clothes a garments showroom will form a

(a) Poisson distribution

(b) Normal distribution

(c) Binomial distribution

(d) Cannot be determined

**PROBABILITY  
DISTRIBUTION**

81. If  $X$  and  $Y$  are two random variables and if  $E(X) = 3$  and  $E(Y) = 6$ , then  $E(XY) = ?$

(a) 3

(b) 6

(c) 18

(d) 24

**PROBABILITY**

82. An unbiased coin is tossed 6 times. Find the probability that the tosses result in heads only,  
 (a)  $1/64$   
 (b)  $5/64$   
 (c)  $10/64$   
 (d) None of these  
**PROBABILITY**
83. Find the two numbers if AM and GM is 10 and 6 respectively  
 (a) 6, 6  
 (b) 12, 8  
 (c) 9, 4  
 (d) 18, 2  
**CENTRAL TENDENCY**
84. Probability distribution may be  
 (a) Discrete  
 (b) Continuous  
 (c) Infinite  
 (d) (a) or (b)  
**PROBABILITY DISTRIBUTION**
85. In a certain Poisson frequency distribution, the probability corresponding to two success is half the probability corresponding to three successes. The mean of the distribution is  
 (a) 6  
 (b) 12  
 (c) 3  
 (d) 2.45  
**PROBABILITY DISTRIBUTION**
86. The normal curve is  
 (a) Positively skewed  
 (b) Negatively skewed  
 (c) Symmetrical  
 (d) All these  
**PROBABILITY DISTRIBUTION**
87. An example of a bi-parametric discrete Probability distribution is  
 (a) Binomial distribution  
 (b) Poisson Distribution  
 (c) Normal Distribution  
 (d) Both (a) and (b)  
**PROBABILITY DISTRIBUTION**
88. For a normal distribution  $Q_1 = 54.32$  and  $Q_3 = 78.86$ , then the median of the distribution is  
 (a) 12.17  
 (b) 39.43  
 (c) 66.69  
 (d) None of these  
**PROBABILITY DISTRIBUTION**

89. What is the mean of X having the following density function  $f(x) = \frac{1}{4\sqrt{2\pi}} e^{-\frac{(x-10)^2}{32}}$  for  $-\infty < x < \infty$

(a) 10

(b) 4

(c) 40

(d) None of these

**PROBABILITY  
DISTRIBUTION**90. In a Binomial Distribution  $B(n, p)$ ,  $n = 4$ , then  $P(x=2) = 3 P(x=3)$  find  $P$ (a)  $1/3$ (b)  $2/3$ (c)  $6/4$ (d)  $4/3$ **PROBABILITY  
DISTRIBUTION**

90. One card is drawn from a pack of 52, what is the probability that is a king or queen ?

(a)  $11/13$ (b)  $2/13$ (c)  $1/13$ 

(d) None of these

**PROBABILITY**

91. The probability that a leap year has 53 Wednesday is

(a)  $2/7$ (b)  $5/3$ (c)  $2/3$ (d)  $1/7$ **PROBABILITY**

92. A coin is tossed six times, then the probability of obtaining heads and tails alternatively is

(a)  $\frac{1}{2}$ (b)  $1/64$ (c)  $1/32$ (c)  $1/16$ **PROBABILITY**

93. Two different dice are thrown simultaneously, then the probability, that the sum of two numbers appearing on the top of dice 9 is

(a)  $8/9$ (b)  $1/9$ (c)  $7/9$ 

(d) None of these

**PROBABILITY**

94. The probability distribution of the demand for a commodity is given below

Demand (x)	5	6	7	8	9	10
Probability: P(x)	0.05	0.10	0.30	0.40	0.10	0.05

The expected value of demand will be :

(a) 7.55

(b) 7.85

(c) 1.25

(d) 8.35

**PROBABILITY**

95. A bag contains 4 Red and 5 Black balls. Another bag contains 5 Red and 3 Black balls. If one ball is drawn at random each bag. Then the probability that one Red and One Black is

- (a)  $12/72$
- (b)  $25/72$
- (c)  $37/72$
- (d)  $13/72$

**PROBABILITY**

96. If Laspyres index number is 250 and Paschees index number is 160, then Fishers Index number is

- (a) 200
- (b) 120
- (c) 150
- (d) 170

**INDEX NUMBER**

97. Which is called an ideal index number

- (a) Laspyres Index number
- (b) Pasches Index number
- (c) Fishers Index number
- (d) Marshall- Edgeworth Index number

**INDEX NUMBER**

98. The circular test is an extension of

- (a) The time reversal test
- (b) The factor reversal test
- (c) The Unit test
- (d) None of these

**INDEX NUMBER**

99. Circular test is satisfied by

- (a) Laspyres Index number
- (b) Paschhes index number
- (c) The simple geometric mean of price geometric mean of price relatives and price relatives and weighted aggregative with fixed weights.
- (d) None of these

**INDEX NUMBER**

100. If the price of a commodity in a place have decreased by 30% over the based period places, then the index number of that place is

- (a) 30
- (b) 60
- (c) 70
- (d) 80

**INDEX NUMBER**

## MOCK TEST PAPER SERIES –II

## Paper 3: Business Mathematics, Logical Reasoning and Statistics

## Key Part A: Business Mathematics and Logical Reasoning

1	(b)	2	(c)	3	(a)	4	(d)	5	(b)
6	(d)	7	(c)	8	(b)	9	(b)	10	(d)
11	(c)	12	(c)	13	(b)	14	(c)	15	(c)
16	(a)	17	(c)	18	(b)	19	(d)	20	(b)
21	(b)	22	(a)	23	(b)	24	(b)	25	(a)
26	(b)	27	(a)	28	(c)	29	(c)	30	(d)
31	(c)	32	(c)	33	(b)	34	(a)	35	(a)
36	(d)	37	(b)	38	(b)	39	(b)	40	(d)
41	(a)	42	(b)	43	(b)	44	(d)	45	(b)
46	(a)	47	(d)	48	(c)	49	(b)	50	(c)
51	(d)	52	(b)	53	(d)	54	(b)	55	(c)
56	(b)	57	(d)	58	(b)	59	(a)	60	(c)

## Key Part B: Statistics

61	(d)	62	(a)	63	(c)	64	(c)	65	(d)
66	(c)	67	(b)	68	(a)	69	(d)	70	(a)
71	(d)	72	(b)	73	(b)	74	(c)	75	(b)
76	(c)	77	(b)	78	(a)	79	(a)	80	(a)
81	(c)	82	(a)	83	(c)	84	(d)	85	(a)
86	(c)	87	(a)	88	(c)	89	(a)	90	(a)
91	(a)	92	(c)	93	(b)	94	(a)	95	(c)
96	(a)	97	(c)	98	(a)	99	(c)	100	(c)

## MOCK TEST PAPER 1

## FOUNDATION COURSE

## PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 Hours

Marks: 100

## Part A: Business Mathematics and Logical Reasoning

1. Find the value of  $\left[ \log_{10} \sqrt{25} - \log_{10} (2^3) + \log_{10} (4)^2 \right]$
- (a) x  
(b) 10  
(c) 1  
(d) None
2. If A: B = 2:5, then (10A + 3B): (5A + 2B) is equal to
- (a) 7:4  
(b) 7:3  
(c) 6:5  
(d) 7:9
3. The ratio compounded of 4:5 and sub-duplicate of a:9 is 8:15. Then value of "a" is
- (a) 2  
(b) 3  
(c) 4  
(d) 5
4. If  $\frac{1}{2}$ ,  $\frac{1}{3}$ ,  $\frac{1}{5}$  and  $\frac{1}{x}$  are in proportion, then the value of x will be
- (a)  $\frac{15}{2}$   
(b)  $\frac{6}{5}$   
(c)  $\frac{10}{3}$   
(d)  $\frac{5}{6}$
5. If  $P = x^{1/3} + x^{-1/3}$  then find value of  $3p^3 - 9p$
- (a) 3  
(b)  $\frac{1}{2}(x+1/x)$   
(c)  $(x+1/x)$   
(d)  $2((x+1/x))$
6. Fourth proportional to x, 2x, (x+1) is:
- (a) (x+2)  
(b) (x-2)  
(c) (2x+2)

LOG

RATIO

RATIO

PROPORTION

INDICES

PROPORTION



(d)  $(2x-2)$ 

7. The value of  $\frac{(3^{n+1} + 3^n)}{(3^{n+3} - 3^{n+1})}$  is equal to

(a)  $1/5$ (b)  $1/6$ (c)  $1/4$ (d)  $1/9$ 

INDICES

8. The value of  $\frac{x^2 - (y-z)^2}{(x+z)^2 - y^2} + \frac{y^2 - (x-z)^2}{(x+y)^2 - z^2} + \frac{z^2 - (x-y)^2}{(y+z)^2 - x^2}$

(a) 0

(b) 1

(c) -1

(d)  $\infty$ 

INDICES

9. If  $abc = 2$  then the value of  $\frac{1}{1+a+2b^{-1}} + \frac{1}{1+\frac{1}{2}b+c^{-1}} + \frac{1}{1+c+a^{-1}}$  is

(a) 1

(b) 2

(c) 3

(d)  $1/2$ 

INDICES

10. If  $\frac{3x-2}{5x-6}$  is the duplicate ratio of  $2/3$  then the value of 'x' is

(a) 2

(b) 6

(c) 5

(d) 9

RATIO

11. If  $\alpha$  and  $\beta$  are the roots of the equation  $x^2 + 7x + 12 = 0$ , then the equation whose roots  $(\alpha + \beta)^2$  and  $(\alpha - \beta)^2$  will be:

(a)  $x^2 - 14x + 49 = 0$ (b)  $x^2 - 24x + 144 = 0$ (c)  $x^2 - 50x + 49 = 0$ (d)  $x^2 - 19x + 144 = 0$ QUADRATIC  
EQUATION

12. Roots of the equation  $2x^2+3x+7 = 0$  are  $\alpha$  and  $\beta$  then the value of  $\alpha \beta^{-1} + \beta \alpha^{-1}$  is

(a) 2

(b)  $3/7$ (c)  $7/2$ (d)  $-19/14$ QUADRATIC  
EQUATION

13. On solving the inequalities  $5x + y \leq 100$ ,  $x + y \leq 60$ ,  $x \geq 0$ ,  $y \geq 0$ , we get the following situation:
- (a) (0,0), (20,0), (10,50), & (0,60)  
 (b) (0,0), (60,0), (10,50), & (0,60)  
 (c) (0,0), (20,0), (0,100) & (10,50)  
 (d) none of these
- INEQUALITIES**
14. The rules and regulations demand that the employer should employ not more than 5 experienced hands to 1 fresh one and this fact is represented by (Taking experienced person as x and fresh person as y)
- (a)  $y \geq \frac{x}{5}$   
 (b)  $5y \leq x$   
 (c)  $5y \geq x$   
 (d) none of these
- INEQUALITIES**
15. In what time will be a sum of money doubles itself at 6.25% p.a simple interest ?
- (a) 5 years  
 (b) 8 years  
 (c) 12 years  
 (d) 16 years
- TIME VALUE AND MONEY**
16. Mr. X invests ₹ 10,000 every year starting from today for next 10 years suppose interest rate is 8% per annum compounded annually. Calculate future value of the annuity: (Given that  $(1+0.08)^{10} = 2.158925$ )
- (a) ₹ 156454.88  
 (b) ₹ 144865.625  
 (c) ₹ 156554.88  
 (d) none of these
- TIME VALUE AND MONEY**
17. The difference between the simple and compound interest on a certain of 3 years at 5% p.a is ₹ 228.75. The compound interest on the sum of for 2 years at 5% per annum is
- (a) ₹ 3175  
 (b) ₹ 3075  
 (c) ₹ 3275  
 (d) ₹ 2975
- TIME VALUE AND MONEY**
18. How much time would the simple interest on a certain sum be 0.125 times the principal at 10% per annum
- (a)  $1\frac{1}{4}$  years  
 (b)  $1\frac{3}{4}$  years  
 (c)  $2\frac{1}{4}$  years  
 (d)  $2\frac{3}{4}$  years
- TIME VALUE AND MONEY**

19. The time in by which a sum of money is 8 times of itself if it doubles itself in 15 years interest compounded annually.
- (a) 42 years  
(b) 43 years  
(c) 45 years  
(d) 46 years
- TIME VALUE AND MONEY**
20. Present value of a scooter is ₹7290, if its value decreases every year by 10% then the value before 3 years is equal to
- (a) 10,000  
(b) 10,500  
(c) 20,000  
(d) 20,500
- TIME VALUE AND MONEY**
21. Find the effective rate of interest at 10% p.a when the interest is payable quarterly.
- (a) 10.38%  
(b) 5%  
(c) 5.04%  
(d) 4%
- TIME VALUE AND MONEY**
22. The difference between in simple interest on a sum invested of ₹1500 for 3 years is ₹18. The difference in their rate is
- (a) 0.4  
(b) 0.6  
(c) 0.8  
(d) 0.10
- TIME VALUE AND MONEY**
23. What will be the population after 3 years . When the population increases at the rate 3 % in I year, 4 % in II year and 5% in III year.
- (a) 28,119  
(b) 29,118  
(c) 27,000  
(c) 30,000
- TIME VALUE AND MONEY**
24. If ₹10,000 is invested at 8 % per annum, then compounded quarterly. Then value of investment after 2 years is
- (a) ₹11,716.59  
(b) ₹10,716.59  
(c) ₹12,715.59  
(d) none of these
- TIME VALUE AND MONEY**
25. In how many years will a sum of money become double at 5% p.a compound interest
- (a) 14 years  
(b) 15 years  
(c) 16 years
- TIME VALUE AND MONEY**

- (d) 14.3 years
26. The future value of an annuity of ₹ 1,000 is made annually for 5 years at interest rate of 14% compounded annually [Given that  $(1.14)^5 = 1.92541$ ] is \_\_\_\_\_
- (a) ₹ 5610  
 (b) ₹ 6610  
 (c) ₹ 6160  
 (d) ₹ 5160

**TIME VALUE AND  
MONEY**

27. The number of ways of arranging 6 boys and 4 girls in a row so that all 4 girls are together is:
- (a)  $6! \cdot 4!$   
 (b)  $2 (7! 4!)$   
 (c)  $7! 4!$   
 (d)  $2 \cdot (6! 4!)$

**PERMUTATIONS &  
COMBINATIONS**

28.  $15C_3 + 15C_{r+3}$  then 'r' is equal to
- (a) 2  
 (b) 3  
 (c) 4  
 (d) 5

**PERMUTATIONS &  
COMBINATIONS**

29. If  ${}^n P_2 = 20 ({}^n P_2)$  then the value of 'n' is \_\_\_\_\_
- (a) -2  
 (b) 7  
 (c) -2 and 7 both  
 (d) None of these.

**PERMUTATIONS &  
COMBINATIONS**

30. How many different words can be formed with the letters of the word "LIBERTY"
- (a) 4050  
 (b) 5040  
 (c) 5400  
 (d) 4500

**PERMUTATIONS &  
COMBINATIONS**

31. If x, y and z are the terms in G.P, then the term  $x^2+y^2$ ,  $xy + yz$ ,  $y^2+z^2$  are in
- (a) AP  
 (b) GP  
 (c) HP  
 (d) none of the above

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

32. In a GP .if fourth term is 3 then the product of first seven terms is
- (a)  $3^5$   
 (b)  $3^7$   
 (c)  $3^6$   
 (d)  $3^8$

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

33. In a G.P. If the third term of a GP is  $\frac{2}{3}$  and 6<sup>th</sup> term is  $\frac{2}{81}$ , then the first term is

- (a) 6
- (b)  $\frac{1}{3}$
- (c) 9
- (d) 2

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

34. Sum upto infinity series  $\frac{1}{2} + \frac{1}{3^2} + \frac{1}{2^3} + \frac{1}{3^4} + \frac{1}{2^5} + \dots$

- (a)  $\frac{19}{24}$
- (b)  $\frac{24}{19}$
- (c)  $\frac{5}{24}$
- (d) none of these

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

35. If  $f(x) = \frac{2+x}{2-x}$ , then  $f^{-1}(x)$  :

- (a)  $\frac{2(x-1)}{x+1}$
- (b)  $\frac{2(x+1)}{x-1}$
- (c)  $\frac{x+1}{x-1}$
- (d)  $\frac{x-1}{x+1}$

**FUNCTIONS**

36. If  $f : \mathbb{R} \rightarrow \mathbb{R}$  is a function, defined by  $f(x) = 2^x$ ; then  $f(x+y)$  is

- (a)  $f(x) + f(y)$
- (b)  $f(x) \cdot f(y)$
- (c)  $f(x) \div f(y)$
- (d) none

**FUNCTIONS**

37. If  $f(x) = x+2$ ,  $g(x) = 7^x$ , then  $g \circ f(x) = \underline{\hspace{2cm}}$

- (a)  $7^x \cdot x + 2 \cdot 7^x$
- (b)  $7^{x+2}$
- (c)  $49(7^x)$
- (d) none of these

**FUNCTIONS**

38. Given  $x = 2t + 5$ ;  $y = t^2 - 2$ , then  $\frac{dy}{dx}$  is calculated as:

- (a)  $t$
- (b)  $\frac{1}{t}$
- (c)  $-\frac{1}{t}$
- (d) none of these

**DIFFERENTIAL  
CALCULUS**

39.  $\int e^x (x^2 + 2x) dx$

- (a)  $x^2 \cdot e^{x+c}$
- (b)  $x \cdot e^{x+c}$
- (c)  $-x \cdot e^{x+c}$
- (d)  $e^{-x+c}$

**INTEGRAL  
CALCULUS**

40. if  $xy = 1$  then  $y^2 + \frac{dy}{dx} = ?$

- (a) 1
- (b) 0
- (c) 2
- (d) none of these

**DIFFERENTIAL  
CALCULUS**

41. The missing term of the series 11, 10 \_\_27, 66.5, 198.5

- (a) 14
- (b) 16
- (c) 21
- (d) 19

**NUMBER SERIES**

42. What comes at last place in R, U, X, A, D, ?

- (a) E
- (b) F
- (c) G
- (d) H

**NUMBER SERIES**

43. If Z = 52 and ACT = 48, then BAT will be equal to

- (a) 39
- (b) 41
- (c) 44
- (d) 46

**NUMBER SERIES**

44. If ROSE is coded as 6821, CHAIR is coded as 73456 and PREACH is coded as 961473, what will be the code for SEARCH?

- (a) 246173
- (b) 214673
- (c) 214763
- (d) 216473

**NUMBER SERIES**

45. If E = 5 and READ is coded as 7, then what is the code of 'DEAR' ?

- (a) 6
- (b) 7
- (c) 8
- (d) 9

**NUMBER SERIES**

46. M is to the East of D, F is to the South of D and K is to the West of F. M is in which direction with respect to K?

- (a) South-West
- (b) North-West
- (c) North-East
- (d) South-East

**DIRECTION TESTS**

47. A cyclist goes 30 km to North and then turning to goes 40 km. Again he turns to his right and goes 20 km. After this he turns to his right and goes 40 km. How far is he from his starting point?

- (a) 0 km.
- (b) 10 km.
- (c) 25 km.
- (d) 40 km.

**DIRECTION TESTS**

48. A boy from his home, first walks 20 m in North-West direction then 20 m in South - West direction. Next, he walks 20m South - East direction. Finally, he turns towards his house. In which direction is he moving?

- (a) North - West
- (b) North-East
- (c) South - West
- (d) South - East

**DIRECTION TESTS**

49. Raju leaves his house and walks 12 km towards North. He turns right and walks another 12 km. He turns right, walks 12 km more and turns left to walk 5 km. How far is he from his home and in which direction?

- (a) 7 km east
- (b) 10 km east
- (c) 17 km east
- (d) 24 km east

**DIRECTION TESTS**

50. A child goes 50 meter towards South and then turning to his right, he goes 50 meter. Then, turning to his left, he goes 30 meter. Again he turns to his left and goes 50 meter. How far is he from his initial position?

- (a) 30 m
- (b) 40 m
- (c) 50 m
- (d) 80 m

**DIRECTION TESTS**

51. D is daughter of E . A is son of D . C is brother of A and B is sister of A . F is brother of D . How F is related to B ?

- (a) Father-in -Law
- (b) Uncle
- (c) Brother
- (d) Mother-in-law

**BLOOD RELATION**

52. Introducing a boy a girl said, "He is the son of the daughter of the father of my uncle ". Who is the boy to the girl ?
- (a) Brother  
(b) Nephew  
(c) Uncle  
(d) Son-in-law
- BLOOD RELATION**
53. It is given that "A is the mother of B; B is the sister of C; C is the father of D". How is A related to D?
- (a) Mother  
(b) Grandmother  
(c) Aunt  
(d) Sister
- BLOOD RELATION**
54. Rita told Mani, "The girl I met yesterday at the beach was the youngest daughter of the brother-in-law of my friend's mother." How is the girl related to Rita's friend ?
- (a) Cousin  
(b) Daughter  
(c) Niece  
(d) Aunt
- BLOOD RELATION**
55. Sanjay has three daughters, and each daughter has a brother. How many male members are there in the family?
- (a) 4  
(b) 2  
(c) 3  
(d) 1
- BLOOD RELATION**

**Directions (Q 56-57):** Study the following information carefully and answer the questions given below.

- I. P, Q, R, S, T, U and V are sitting on a wall and all of them are facing West.
- II. S is on the immediate left of R.
- III. T is at an extreme end and has Q as his neighbor.
- IV. V is between Q and U.
- V. S is sitting third from the north end.
56. Who is sitting to the left of S ?
- (a) Q  
(b) U  
(c) T  
(d) R
- BLOOD RELATION**
- SEATING ARRANGEMENT**
57. Which of the following pairs of people are sitting at the extreme ends ?
- (a) QV  
(b) PR  
(c) TP
- SEATING ARRANGEMENT**



(d) ST

58. Five girls are sitting on a bench to be photographed. Seema is to the left of Rani and to the right of Bindu. Mary is to the right of Rani. Reeta is between Rani and Mary. Who is sitting immediate right to Reeta ?

(a) Bindu

(b) Rani

(c) Mary

(d) Seema

**SEATING  
ARRANGEMENT**

**(Directions 59-60)** . Four ladies A, B, C and D and four gentlemen E, F, G and H are sitting in circle around a table facing each other

(i) No two ladies or gentlemen are sitting side by side

(ii) C, who is sitting between G and E , facing D

(iii) F is between D and A and facing G

(iv) H is to the right of B

**SEATING  
ARRANGEMENT**

59. Who is immediate neighbor of B ?

(a) G and H

(b) E and F

(c) A and B

**SEATING  
ARRANGEMENT**

60. Who is sitting left of A

(a) F

(b) E

(c) C

(d) D

**SEATING  
ARRANGEMENT**

61. Median of a distribution can be obtained from

(a) Frequency polygon

(b) Histogram

(c) ogives

(d) None of these.

**CENTRAL  
TEDENCY**

62. Cost of sugar in a month under the heads raw Materials, labour, direct production and others were 12, 20, 35 and 23 units respectively. What is the difference between the central angles for the largest and smallest components of the cost of sugar?

(a)  $72^\circ$

(b)  $48^\circ$

(c)  $56^\circ$

(d)  $92^\circ$

**STATISTICAL  
REPRESENTATION  
OF DATA**

63. In a study relating to the labourers of a jute mill in West Bengal, the following information was collected.

'Twenty per cent of the total employees were females and forty per cent of them were married. Thirty female workers were not members of Trade Union. Compared to this, out of 600 male workers 500 were members

of Trade Union and fifty per cent of the male workers were married. The unmarried non-member male employees were 60 which formed ten per cent of the total male employees. The unmarried non-members of the employees were 80'. On the basis of this information, the ratio of married male non-members to the married female non-members is

- (a) 1: 3  
 (b) 3: 1  
 (c) 4: 1  
 (d) 5: 1
64. For the non-overlapping classes 0—19 , 20—39 , 40—59 the class mark of the class 0—19 is  
 (a) 0  
 (b) 19  
 (c) 9.5  
 (d) none of these
65. For open-end classification, which of the following is the best measure of central tendency?  
 (a) AM  
 (b) GM  
 (c) Median  
 (d) Mode
66. The quartiles of a variable are 45, 52 and 65 respectively. Its quartile deviation is  
 (a) 10  
 (b) 20  
 (c) 25  
 (d) 8.30
67. If x and y are related by  $y = 2x + 5$  and the SD and AM of x are known to be 5 and 10 respectively, then the coefficient of variation is  
 (a) 25  
 (b) 30  
 (c) 40  
 (d) 20
68. For a moderately skewewd distribution, the median is twice the mean , then the mode is \_\_\_\_ times the median.  
 (a) 3  
 (b) 2  
 (c)  $\frac{2}{3}$   
 (d)  $\frac{3}{2}$

**STATISTICAL  
REPRESENTATION  
OF DATA**

**CENTRAL  
TENDENCY**

**DISPERSION**

**DISPERSION**

**DISPERSION**

69. If average marks for a group of 30 girls is 80, a group of boys is 70 and combined average is 76, then how many boys are in the group ?
- (a) 21  
(b) 20  
(c) 22  
(d) 19
- CENTRAL TENDENCY**
70. The median value of the set of observations 48, 36, 72, 87, 19, 66, 56 and 91
- (a) 53  
(b) 87  
(c) 61  
(d) 19
- CENTRAL TENDENCY**
71. If two variables  $a$  and  $b$  are related by  $c = ab$  then GM. of  $c =$
- (a) GM of  $a +$ GM of  $b$   
(b) GM of  $a \times$ GM of  $b$   
(c) GM of  $a -$ GM of  $b$   
(d) GM of  $a /$ GM of  $b$
- CENTRAL TENDENCY**
72. If there are three observations 15, 20, 25 then the sum of deviation of the observations from their AM is.
- (a) 0  
(b) 5  
(c) -5  
(d) 10
- CENTRAL TENDENCY**
73. The mean weight of 15 students is 110 kg. The mean weight of 5 of them is 100 kg. and of another five students is 125 kg. then the mean weight of the remaining students is :
- (a) 120  
(b) 105  
(c) 115  
(d) None of these
- CENTRAL TENDENCY**
74. If the Arithmetic mean between two numbers is 64 and the Geometric mean between them is 16. The Harmonic Mean between them is \_\_\_\_\_.
- (a) 64  
(b) 4  
(c) 16  
(d) 40
- CENTRAL TENDENCY**
75. The regression coefficients remain unchanged due to
- (a) Shift to origin  
(b) Shift to scale  
(c) Always  
(d) Never
- REGRESSION**

76. If the plotted points in a scatter diagram lie from upper left to lower right, then the correlation is

- (a) Positive
- (b) Zero
- (c) Negative
- (d) none of these.

CORRELATION

77. The covariance between two variables is

- (a) Strictly positive
- (b) Strictly negative
- (c) Always 0
- (d) Either positive or negative or zero.

CORRELATION

78. If the coefficient of correlation between two variables is  $-0.9$ , then the coefficient of determination is

- (a) 0.9
- (b) 0.81
- (c) 0.1
- (d) 0.19.

CORRELATION

79. For a probability of a random variable  $x$  is given below :

X:	1	2	4	5	6
P:	0.15	0.25	0.2	0.3	0.1

What is the Standard deviation of  $x$  ?

- (a) 1.49
- (b) 1.56
- (c) 1.69
- (d) 1.72

PROBABILITY

80. Given that for two events  $A$  and  $B$ ,  $P(A) = 3/5$ ,  $P(B) = 2/3$  and  $P(A \cap B) = 3/4$ , what is  $P(A/B)$ ?

- (a) 0.655
- (b) 13/60
- (c) 31/60
- (d) 0.775

PROBABILITY

81. If  $2x + 3y + 4 = 0$  and  $V(x) = 6$  then  $V(y)$  is

- (a)  $8/3$
- (b) 9
- (c) 9
- (d) 6

DISPERSION

82.  $X$  and  $Y$  stand in a line with 6 other people. What is the probability that there are 3 persons between them?

- (a)  $1/5$
- (b)  $1/6$
- (c)  $1/7$

PROBABILITY

(d)  $1/3$ 

83. Four unbiased coins are tossed simultaneously. The expected number of heads is :

X:	0	1	2	3	4
P(x)	$1/16$	$4/16$	$6/16$	$4/16$	$1/16$

- (a) 1  
 (b) 2  
 (c) 3  
 (d) 4

84. Assume that the probability for rain on a day is 0.4 . An umbrella salesman can earn ₹ 400 per day in case of rain on that day will lose ₹ 100 per day if there is no rain . The expected earnings (in ₹) per day of the salesman is

- (a) 400  
 (b) 200  
 (c) 100  
 (d) 0

**PROBABILITY**

85. The covariance between two variables X and Y is 8.4 and their variances are 25 and 36 respectively .Calculate Karl Pearson's coefficient of correlation between them.

- (a) 0.82  
 (b) 0.28  
 (c) 0.01  
 (d) 0.09

**CORRELATION**

86. What is the probability of getting 3 heads if 6 unbiased coins are tossed simultaneously ?

- (a) 0.3125  
 (b) 0.25  
 (c) 0.6825  
 (d) 0.50

**PROBABILITY**

87. The mode of the binomial distribution for which the mean is 4 variance 3 is equal to ?

- (a) 4  
 (b) 4.5  
 (c) 4.25  
 (d) 4.1

**PROBABILITY  
DISTRIBUTION**

88. For Poisson Distribution :

- (a) Mean and Standard Deviation are equal  
 (b) Mean and Variance are equal  
 (c) Standard Deviation and Variance are equal  
 (d) Both (a) and (b) are equal

**PROBABILITY  
DISTRIBUTION**

89. If a variate x has , mean > variance , then the distribution will be \_\_\_\_\_

- (a) Binomial Distribution

- (b) Poisson Distribution  
 (c) Normal Distribution  
 (d) T-Distribution
90. An example of a bi-parametric continuous probability distribution
- (a) Binomial  
 (b) Poisson  
 (c) Normal  
 (d) Chi-square
91. For a poisson variate X,  $P(x=2) = 3 P(x=4)$ , then the standard deviation of X is
- (a) 2  
 (b) 4  
 (c)  $\sqrt{2}$   
 (d) 3
92. What is the mean of X having the following density function ?
- $$f(x) = \frac{1}{4\sqrt{2\pi}} e^{-\frac{(x-10)^2}{32}} \text{ for } -\infty < x < \infty$$
- (a) 10  
 (b) 4  
 (c) 40  
 (d) none of these
93. The deviations are minimum when taken from
- (a) Mean  
 (b) Median  
 (c) Mode  
 (d) GM
94. Histogram is useful to determine graphically the value of
- (a) Arithmetic Mean  
 (b) Median  
 (c) Mode  
 (d) HM
95. If x and y are related as  $3x-4y= 20$  then the Quartile deviation of x is 12, then the Quartile deviation of y is :
- (a) 14  
 (b) 15  
 (c) 16  
 (d) 9

**PROBABILITY  
DISTRIBUTION**

**PROBABILITY  
DISTRIBUTION**

**PROBABILITY  
DISTRIBUTION**

**PROBABILITY  
DISTRIBUTION**

**CENTRAL  
TENDENCY**

**CENTRAL  
TENDENCY**

**DISPERSION**

96. The index number for the year 2012 taking 2011 as the base year from the data given below by using simple average of price relative method is

Commodity	A	B	C	D	E
Price in 2011	115	108	95	80	90
Price in 2012	125	117	108	95	95

- (a) 112  
(b) 117  
(c) 120  
(d) 111

**INDEX NUMBER**

97. Suppose a business executive was earning ₹ 2,050 in the base period. What should be his salary in the current period if his standard of living is to remain the same? Given  $\sum W = 25$  and  $\sum IW = 3544$ :

- (a) ₹ 2096  
(b) ₹ 2906  
(c) ₹ 2106  
(d) ₹ 2306

**INDEX NUMBER**

98. Find the Paasche's Index number for prices from the following

Commodity	Base year		Current year	
	Price	Commodity	Price	Commodity
A	1	6	3	5
B	3	5	8	5
C	4	8	10	6

- (a) 261.36  
(b) 265.48  
(c) 274.32  
(d) 282

**INDEX NUMBER**

99. Index numbers are not helpful in

- (a) Framing Economic Policies  
(b) Revealing Trend  
(c) Forecasting  
(d) Identifying errors

**INDEX NUMBER**

100. The weight average of price relatives of commodities when the weight is equal to the value of commodities in base year yields \_\_\_\_\_ index number

- (a) Fisher's Ideal  
(b) Laspyres  
(c) Paasches  
(d) Marshall-Edgeworth

**INDEX NUMBER**

**Paper 3: Business Mathematics, Logical Reasoning and Statistics**

**Key Part A: Business Mathematics and Logical Reasoning**

1	(c)	2	(a)	3	(c)	4	(a)	5	(c)
6	(c)	7	(b)	8	(b)	9	(a)	10	(b)
11	(c)	12	(d)	13	(a)	14	(a)	15	(d)
16	(a)	17	(b)	18	(a)	19	(c)	20	(a)
21	(a)	22	(a)	23	(a)	24	(a)	25	(d)
26	(b)	27	(c)	28	(b)	29	(b)	30	(b)
31	(b)	32	(b)	33	(a)	34	(a)	35	(a)
36	(b)	37	(c)	38	(a)	39	(a)	40	(b)
41	(a)	42	(c)	43	(d)	44	(b)	45	(b)
46	(c)	47	(b)	48	(b)	49	(c)	50	(a)
51	(b)	52	(a)	53	(b)	54	(a)	55	(b)
56	(b)	57	(c)	58	(c)	59	(a)	60	(a)

**Key Part B: Statistics**

61	(c)	62	(d)	63	(c)	64	(c)	65	(c)
66	(a)	67	(c)	68	(b)	69	(b)	70	(c)
71	(b)	72	(a)	73	(b)	74	(b)	75	(a)
76	(c)	77	(d)	78	(b)	79	(c)	80	(d)
81	(a)	82	(c)	83	(b)	84	(c)	85	(b)
86	(a)	87	(a)	88	(b)	89	(a)	90	(c)
91	(c)	92	(a)	93	(b)	94	(c)	95	(d)
96	(d)	97	(b)	98	(a)	99	(d)	100	(b)



**MOCK TEST PAPER II**  
**FOUNDATION COURSE**

**PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS**

Time: 2 Hours

Marks: 100

**Part A: Business Mathematics and Logical Reasoning**

1. If  $x : y = 2 : 3$ , then  $(5x+2y) : (3x-y) =$ 
  - (a) 19:3
  - (b) 16:3
  - (c) 7:2
  - (d) 7:3

**RATIO**
  
2. If  $(25)^{150} = (25x)^{50}$ , then the value of  $x$  will be:
  - (a)  $5^3$
  - (b)  $5^4$
  - (c)  $5^2$
  - (d) 5

**INDICES**
  
3. The value of  $\left(\frac{y^a}{y^b}\right)^{a^2+ab+b^2} \times \left(\frac{y^b}{y^c}\right)^{b^2+bc+c^2} \times \left(\frac{y^c}{y^a}\right)^{c^2+ca+a^2}$  is equal to
  - (a)  $y$
  - (b) -1
  - (c) 1
  - (d) None of these

**INDICES**
  
4. If  $x = \log_{24} 12, y = \log_{36} 24, z = \log_{48} 36$  then  $xyz + 1 =$ 
  - (a)  $2xy$
  - (b)  $2xz$
  - (c)  $2yz$
  - (d) 2

**LOG**
  
5. A person has asset worth of ₹ 1,48,200. He wish to divide it amongst his wife, son and daughter in the ratio 3:2:1 respectively . From this assets share of his wife son will be :
  - (a) ₹ 24,700
  - (b) ₹ 49,400
  - (c) ₹ 74,100
  - (d) ₹ 37,050

**RATIO**

6. X, Y, Z together starts a business, if X invests 3 times as much as Y invests and Y invests two third of what Z invests, then the ratio of capitals of X,Y, Z is

- (a) 3:9:2  
(b) 6:3:2  
(c) 3:6:2  
(d) 6:2:3

RATIO

7. If the ratio of the roots of the equation  $4x^2-6x+p=0$  is 1:2 then the value of p is:

- (a) 1  
(b) 2  
(c) -2  
(d) -1

QUADRATIC  
EQUATION

8. If roots of equation  $x^2+x+r=0$  are  $\alpha$  and  $\beta$  and  $\alpha^3+\beta^3=-6$ . Find the value of 'r'

- (a)  $-5/3$   
(b)  $7/3$   
(c)  $-4/3$   
(d) 1

QUADRATIC  
EQUATION

9. If  $2^{x+y} = 2^{2x+y} = \sqrt{8}$  then the respective values of x and y are \_\_\_\_

- (a)  $1, \frac{1}{2}$   
(b)  $\frac{1}{2}, 1$   
(c)  $\frac{1}{2}, \frac{1}{2}$   
(d) None of these

INDICES

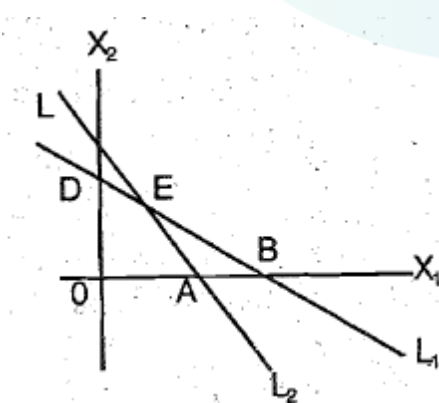
10. If  $a^2 + b^2 = 45$  and  $ab = 18$ , the  $\frac{1}{a} + \frac{1}{b}$  is:

- (a)  $\pm 1/3$   
(b)  $\pm 2/3$   
(c)  $\pm 1/2$   
(d) None of these

QUADRATIC  
EQUATION

11. The common region represented by the following in qualities

$$L_1: X_1 + X_2 < 4; L_2: 2X_1 - X_2 > 6$$



- (a) OABC  
 (b) outside of OAB  
 (c)  $\Delta BCE$   
 (d)  $\Delta ABE$
12. An employer recruits experienced (x) and fresh workmen(y) for his under the condition that he can not employ more than 11 people and y can be related by the inequality.
- (a)  $x+y \neq 11$   
 (b)  $x+y \leq 11, x \geq 0, y \geq 0$   
 (c)  $x+y \geq 11, x \geq 0, y \geq 0$   
 (d) none of these
13.  $6x + y \geq 18, x + 4y \geq 12, 2x + y \geq 10$  On solving the inequalities; we get:
- (a) (0, 18), (12, 0), (4, 2) & (7, 6)  
 (b) (3, 0), (0, 3), (4, 2) & (7, 6)  
 (c) (5, 0), (0, 10), (4, 2) & (7, 6)  
 (d) (0, 18), (12, 0), (4, 2), (0, 0) & (7, 6)
14. Find the effective rate of interest if an amount of 30,000 deposited in a bank. For 1 year at the rate of 10% per annum compounded semi-annually.
- (a) 10.05%  
 (b) 10.10%  
 (c) 10.20%  
 (d) 10.25%
15. The present population of a town is 25,000. If it grows at the rate of 4%, 5%, 8% during 1<sup>st</sup> year, 2<sup>nd</sup> year, 3<sup>rd</sup> year respectively. Then find the population after 3 years.
- (a) 29,484  
 (b) 29,844  
 (c) 29,448  
 (d) 28,944
16. The present value of a scooter is ₹ 7290. The rate of depreciation is 10%. What was its value 3 years ago?
- (a) 10000  
 (b) 10010  
 (c) 9990  
 (d) 12000
17. The rate of interest for the first 2 year is 3% per annum, for next 3 years is 8% per annum and for the period beyond 5 years, 10% per annum. If a man gets ₹ 1520 as a simple interest for 6 years; how much money did he deposit?
- (a) ₹ 3800

INEQUALITIES

INEQUALITIES

INEQUALITIES

TIME VALUE AND  
MONEYTIME VALUE AND  
MONEYTIME VALUE AND  
MONEYTIME VALUE AND  
MONEY

- (b) ₹ 3000  
(c) ₹ 4000  
(d) None of these
18. Suppose your parent decides to open a PPF account in a bank towards your name with ₹ 10,000 every year starting from today for next 15 years. When you receive and get 8.5% per annum interest rate compounded annually. What is the present value of this annuity?  
(a) 83,042  
(b) 80,900  
(c) 90,100  
(d) None of these
19. In what rate % per annum will ₹ 1,000 amounts to ₹ 1331 in 3 years? The interest is compounded yearly is:  
(a) 10%  
(b) 12%  
(c) 11%  
(d) None of these
20. The difference between simple interest and compound interest on a certain for 2 years at 10% p.a. is ₹ 10. Find the Sum  
(a) ₹ 1010  
(b) ₹ 1095  
(c) ₹ 1000  
(d) ₹ 990
21. The future value of an annuity of ₹ 5,000 is made annually for 8 years at interest rate of 9% compounded annually [ Given that  $(1.09)^8 = 1.99256$  ] is  
(a) ₹ 55,142.22  
(b) ₹ 65,142.22  
(c) ₹ 65,532.22  
(d) ₹ 57,425.22
22. In how many years will a sum of money becomes four times at 12% p.a. simple interest?  
(a) 18 years  
(b) 21 years  
(c) 25 years  
(d) 28 years
23. The effective rate of interest does not depend upon  
(a) Amount of Principal  
(b) Amount of Interest  
(c) Number of Conversion periods

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

- (d) None of these
24. Find the effective rate of interest at 10% p.a. When interest is payable quarterly.
- (a) 10.38%  
 (b) 5%  
 (c) 5.04%  
 (d) 4%
- TIME VALUE AND MONEY**
25. In simple interest if the principle is ₹ 2,000 and the rate and time are roots of the equation  $x^2 - 11x + 30 = 0$
- (a) ₹ 500  
 (b) ₹ 600  
 (c) ₹ 700  
 (d) ₹ 800
- TIME VALUE AND MONEY**
26. Determine the present value of perpetuity of ₹ 50,000 per month at the rate interest 12% per annum is
- (a) ₹ 45,00,000  
 (b) ₹ 50,00,000  
 (c) ₹ 55,00,000  
 (d) ₹ 60,00,000
- TIME VALUE AND MONEY**
27. Find the number of even numbers greater than 100 that can be formed with the digits 0,1,2,3?
- (a) 10  
 (b) 15  
 (c) 20  
 (d) None of these
- ARITHMETIC & GEOMETRIC PROGRESSIONS**
28. In how many ways can the letters of the word "ALEGEBRA" be arranged without changing the relative order of the vowels?
- (a) 82  
 (b) 70  
 (c) 72  
 (d) None of these
- PERMUTATIONS & COMBINATIONS**
29. In how many ways can the letters of the word "DIRECTOR" be arranged so that the three vowels are never together?
- (a) 180  
 (b) 18,000  
 (c) 18,002  
 (d) None of these
- PERMUTATIONS & COMBINATIONS**
30. The first and fifth term of an A.P. of 40 terms are -29 and -15 respectively. Find the sum of all positive terms of this A.P.
- (a) 1605
- ARITHMETIC & GEOMETRIC PROGRESSIONS**

- (b) 1705  
(c) 1805  
(d) None of these
31. If the common difference of an AP equals to the first term, then the ratio of its  $m^{\text{th}}$  term and  $n^{\text{th}}$  term is:  
(a)  $n:m$   
(b)  $m:n$   
(c)  $m^2:n^2$   
(d) None of these
32. Find the value of  $1 + 2 + 3 + \dots + 105$   
(a) 5000  
(b) 5560  
(c) 5565  
(d) None of these
33. In a G. P sixth term is 729 and the common ratio is 3, then the first term of G.P is  
(a) 2  
(b) 3  
(c) 4  
(d) 7
34. The number ways in which 4 persons can occupy 9 vacant seats is  
(a) 6048  
(b) 3024  
(c) 1512  
(d) 4536
35. If  $A = \{1, 2, 3\}$ ,  $B = \{3, 4\}$  and  $C = \{4, 5, 6\}$ , then  $A \times (B \cap C) =$   
(a)  $\{(1, 4), (2, 4), (3, 4)\}$   
(b)  $\{(4, 4), (4, 3), (4, 1)\}$   
(c)  $\{(3, 4), (2, 4)\}$   
(d)  $\{(1, 2), (1, 4), (1, 6), (3, 4)\}$
36. Let R be a relation on N defined by  $x + 2y = 8$ . The domain of R is:  
(a)  $\{2, 4, 8\}$   
(b)  $\{2, 4, 6, 8\}$   
(c)  $\{2, 4, 6\}$   
(d)  $\{1, 2, 3, 4\}$
37. The domain of the function  $f(x) = \frac{x^2 + 3x + 5}{x^2 - 5x + 4}$  is:  
(a) R

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

**PERMUTATIONS &  
COMBINATIONS**

**SETS**

**FUNCTIONS**

(b)  $\mathbb{R} - \{1, 4\}$

(c)  $\mathbb{R} - \{1\}$

(d)  $(1, 4)$

FUNCTIONS

38. If  $y = x^x$ , then  $\frac{dy}{dx}$  is :

(a)  $x^x(2 + \log x)$

(b)  $x^x \log(ex)$

(c)  $x^x \log\left(\frac{e}{x}\right)$

(d) None of these

DIFFERENTIAL  
CALCULUS39. If  $y = \sqrt{x} + \frac{1}{\sqrt{x}}$  then  $2x \frac{dy}{dx}$  is

(a)  $\sqrt{x} - \frac{1}{\sqrt{x}}$

(b)  $\sqrt{x} + \frac{1}{\sqrt{x}}$

(c)  $x - \frac{1}{x}$

(d) None of these

DIFFERENTIAL  
CALCULUS40. Evaluate  $\int 2^x x^2 dx$ 

(a)  $\frac{2^x \cdot x^2}{2} - \frac{x \cdot 2^{x+1}}{(\log 2)^2} + \frac{2^{x+1}}{(\log 2)^2} + c$

(b)  $\frac{2^x \cdot x^3}{3} - \frac{x^2 \cdot 2^{x+1}}{(\log 2)^2} + \frac{2^{x+1}}{(\log 3)^2} + c$

(c)  $\frac{2^x \cdot x^2}{3} - \frac{x^3 \cdot 2^x}{3} + \frac{2^{x+1}}{(\log 2)^3} + c$

(d) None of these

INTEGRAL  
CALCULUS

41. Find missing term of the series 2, 3, 3, 5, 10, 13, ?, 43, 172, 177

(a) 23

(b) 38

(c) 39

(d) 40

NUMBER SERIES

42. Find wrong number of the series 1, 5, 5, 9, 7, 11, 11, 15, 12, 17

(a) 11

- (b) 12
- (c) 17
- (d) 15

**NUMBER SERIES**

43. Find missing term of the letter series A, CD, GHI, UVWXY

- (a) LMNO
- (b) MNO
- (c) MNOP
- (d) NOPQ

**NUMBER SERIES**

44. In a certain code TELEPHONE is written as ENOHPELET. How is ALIGATOR written in that code?

- (a) ROTAGILA
- (b) ROTAGAIL
- (c) ROTAGILE
- (d) ROTEGILA

**NUMBER SERIES**

45. In a certain Code, 'CLOUD' is written as 'GTRKF'. How is 'SIGHT' written in that code?

- (a) UGHHT
- (b) UHJFW
- (c) WFJGV
- (d) WGJHV

**NUMBER SERIES**

46. Raju starts walking straight towards East. After walking 75 metres, he turns to the left and walks 25 metres straight. Again, he turns to the left, walks a distance of 40 metres straight, again he turns to the left and walks a distance of 25 metres. How far is he from the starting point?

- (a) 25 meters
- (b) 50 meters
- (c) 115 meters
- (d) 35 meters

**DIRECTION TETS**

47. Ravi started from the house towards West. After walking a distance of 30 metres, he turned towards right and walked 20 metres. He then turned left and moving a distance of 10 metres, turned to his left again and walked 40 metres. He now turned to the left and walked 5 metres. Finally, he turned to his left. In which direction was he walking now?

- (a) North
- (b) South
- (c) East
- (d) South-West

**DIRECTION TETS**

48. I am facing South. I turn right and walk 20 meters. Then I turn right again and walk 10 meters. Then I turn left and walk 10 meters and then turning right walk 20 meters. Then I turn right again and walk 60 meters. Which direction am I facing now?

- (a) North
- (b) North-West

**DIRECTION TETS**



- (c) East  
(d) North-East
49. Going 50 m to the south of her house Radhika turns left and goes another 20 m. Then turning to the North, she goes 30 m and then starts walking to her house. In which direction is she walking now?  
(a) North-West  
(b) North  
(c) South-East  
(d) East
- DIRECTION TETS**
50. A man is facing west. He turns  $45^{\circ}$  in the clockwise direction and then another  $180^{\circ}$  in the same direction and then  $270^{\circ}$  in the anticlockwise direction. Which direction is he facing now?  
(a) South  
(b) North-West  
(c) West  
(d) South-West
- DIRECTION TETS**
51. E is the son of A. D is the son of B. E is married to C. C is B's daughter. How is D related to E ?  
(a) Brother  
(b) Uncle  
(c) Brother-in-law  
(d) Husband
- BLOOD RELATION**
52. Pointing towards a girl in the photograph, Pooja said. "She is the mother of Janaki whose father is my son." How is Pooja related to the girl in the photograph?  
(a) Mother  
(b) Cousin  
(c) Aunt  
(d) Mother-in-Law
- BLOOD RELATION**
53. Following questions are based on the information given below.  
(i) 'P×Q' means 'P is the father of Q'.  
(ii) 'P-Q' means 'P is the sister of Q'.  
(iii) 'P+Q' means 'P is the mother of Q'.  
(iv) 'P÷Q' means 'P is the brother of Q'.  
In the expression  $B+D\times M\div N$ , how M is related to B  
(a) Granddaughter  
(b) Son  
(c) Grandson  
(d) Granddaughter or Grandson
- BLOOD RELATION**

54. There are six children playing football namely A, B, C, D, E and F. A and E are brothers. F is the sister of E. C is the only son of A's uncle. B and D are the daughters of the brother of C's father. How is C related to F ?

- (a) Cousin
- (b) Brother
- (c) Son
- (d) Uncle

**BLOOD RELATION**

55. Mr. Vimlesh said, "This girl is the wife of the grandson of my mother." How is the Mr. Vimlesh related to the girl?

- (a) Father
- (b) Grand Father
- (c) Husband
- (d) Father-in-Law

**BLOOD RELATION**

56. Six students are sitting in row in an examination hall. K is sitting between V and R. V is sitting next to M. M is sitting next to B. B is sitting extreme left and Q is sitting next to R . Who is sitting adjacent to V?

- (a) M and R
- (b) M and K
- (c) K and R
- (d) M and Q

**SEATING  
ARRANGEMENT**

(57-58) Read the following information carefully and answer the questions and answer the questions that follow.

There are 3 females A, B and E and 4 males C, D, F, and G standing in a straight line. No two females are together. B is to right of C, F and D are not together as A is placed between them. G is not near B or E but E and F are together. D is not to the right of B.

57. Who are in the extreme ends?

- (a) G and B
- (b) C and F
- (c) B and D
- (d) None of these

**SEATING  
ARRANGEMENT**

58. Who is exactly in the middle?

- (a) A
- (b) F
- (c) E
- (d) None of these

**SEATING  
ARRANGEMENT**

Study the following information carefully and answer the given Questions

Seven persons A, B, C, D, E, F and G are sitting in a straight line (not necessarily in the same order) facing North.

- I. Only two persons sit between F and G and G sits second to the left of B.
- II. D sits third to the left of C
- III. E sits exactly between G and B and B sits at the extreme right end of the row.

59. Who amongst the following sits at the extreme left of the line?

- (a) F
- (b) D
- (c) C
- (d) E

**SEATING  
ARRANGEMENT**

60. Who amongst the following sits exactly middle of the line?

- (a) A
- (b) C
- (c) E
- (d) G

**SEATING  
ARRANGEMENT**

### Part B: Statistics

61. Histogram is used for finding:

- (a) Mode
- (b) Mean
- (c) First Quartile
- (d) None

**CENTRAL  
TENDENCY**

62. Data are said to be \_\_\_\_\_ if the investigator himself is responsible for the collection of data.

- (a) Primary Data
- (b) Secondary Data
- (c) Mixed of Primary and Secondary Data
- (d) None of these

**STATISTICAL  
REPRESENTATION  
OF DATA**

63. The frequency of the Class 20-30 in the following data is;

Class	0-10	10-20	20-30	30-40	40-50
Cumulative Frequency	5	13	28	34	38

- (a) 5
- (b) 28
- (c) 15
- (d) 13

**STATISTICAL  
REPRESENTATION  
OF DATA**

64. There were 200 employees in an office in which 150 were married. Total male employees were 160 out of which 120 were married. What was the female unmarried employees?

- (a) 30
- (b) 10
- (c) 40
- (d) 50

**STATISTICAL  
REPRESENTATION  
OF DATA**

65. The quartile deviation from the following observations is 10,18,20,28,15,17,22,25,29,32,34 is equal to:

- (a) 8

- (b) 6  
(c) 10  
(d) 5
66. SD of first five consecutive natural numbers is:
- (a)  $\sqrt{10}$   
(b)  $\sqrt{8}$   
(c)  $\sqrt{3}$   
(d)  $\sqrt{2}$
67. If the profit of a company remains same for the last 10 months then the SD of profit of the company would be:
- (a) Positive  
(b) Negative  
(c) Zero  
(d) either (a) or (c)
68. A batsman in his 20<sup>th</sup> innings makes a score of 120 and thereby increases his average by 5. What is his average after 20<sup>th</sup> innings?
- (a) 60  
(b) 55  
(c) 65  
(d) 70
69. The sum of squares of the deviations of the given values from their ..... is minimum.
- (a) Arithmetic Mean  
(b) Median  
(c) Mode  
(d) None of these
70. When mean is 3.57 and mode is 2.13 then the value of median is
- (a) 3.09  
(b) 5.01  
(c) 4.01  
(d) None of these
71. The mean of first three terms is 14 and mean of next two terms is 18. The mean of all five terms is
- (a) 14.5  
(b) 15  
(c) 14

DISPERSION

DISPERSION

CENTRAL  
TENDENCYCENTRAL  
TENDENCYCENTRAL  
TENDENCYCENTRAL  
TENDENCY

- (d) 15.6
72. The Standard deviation of a variable  $x$  is to be 10. The Standard deviation of  $50+5x$  is
- (a) 50  
(b) 100  
(c) 10  
(d) 500
- DISPERSION**
73. The Quartile deviation is
- (a)  $\frac{2}{3}$  of SD  
(b)  $\frac{4}{5}$  of SD  
(c)  $\frac{5}{6}$  of SD  
(d) None of these
- DISPERSION**
74. The first Quartile is 142 and Semi-Inter Quartile Range is 18 , then the value of Median is:
- (a) 151  
(b) 160  
(c) 178  
(d) None of these
- DISPERSION**
75. Geometric Mean of 8,4, 2 is
- (a) 4  
(b) 2  
(c) 8  
(d) none of these
- CENTRAL TENDENCY**
76. If  $P(A) = \frac{1}{2}$  ;  $P(B) = \frac{1}{3}$  and  $P(A \cap B) = \frac{1}{4}$  then the value of  $P(\overline{A} \cup \overline{B})$  is:
- (a)  $\frac{1}{4}$   
(b)  $\frac{3}{4}$   
(c)  $\frac{2}{5}$   
(d) None of these
- PROBABILITY**
77. From the following probability distribution table, find  $E(x)$ .
- |         |               |               |               |
|---------|---------------|---------------|---------------|
| $x:$    | 1             | 2             | 3             |
| $f(x):$ | $\frac{1}{2}$ | $\frac{1}{3}$ | $\frac{1}{6}$ |
- (a) 1  
(b) 1.50  
(c) 1.67
- PROBABILITY**

- (d) None of these
78. A husband and a wife appear in an interview for two vacancies in the same post. The probability of husband's selection is  $\frac{3}{5}$  and that of wife's selection is  $\frac{1}{5}$ . Then the probability that only one of them is selected is:
- (a)  $\frac{16}{25}$   
 (b)  $\frac{17}{25}$   
 (c)  $\frac{14}{25}$   
 (d) None of these
79. A bag contains 5 Red and 4 Black balls. A ball is drawn at random from the bag and put into another bag contains 3 red and 7 black balls. A ball is drawn randomly from the second bag. What is the probability that it is red?
- (a)  $\frac{32}{99}$   
 (b)  $\frac{1}{3}$   
 (c)  $\frac{74}{99}$   
 (d) None of these
80. If  $x$  be a poisson variates with parameter 1; then find  $P(3 < X < 5)$ . (Given  $e^{-1} = 0.36783$ )
- (a) 0.015326  
 (b) 0.15326  
 (c) 0.012326  
 (d) None of these
81. The probability that a student is not a swimmer is  $\frac{1}{5}$ , then the probability that out of five students four are swimmers is:
- (a)  $\left(\frac{4}{5}\right)^4 \left(\frac{1}{5}\right)$   
 (b)  ${}^5C_1 \left(\frac{1}{5}\right)^4 \left(\frac{4}{5}\right)$   
 (c)  ${}^5C_4 \left(\frac{4}{5}\right)^4 \left(\frac{1}{5}\right)$   
 (d) None of these
82. In a Binomial distribution  $n = 9$  and  $P = \frac{1}{3}$ . What is the value of Variance.
- (a) 8  
 (b) 4  
 (c) 2  
 (d) 16
83. The variance of standard normal distribution is
- (a) 1  
 (b) 0

PROBABILITY

PROBABILITY

PROBABILITY

PROBABILITY

PROBABILITY

PROBABILITY

- (c)  $\sigma^2$   
 (d) 0
84. In a Poisson Distribution  $P(x=0) = P(x=2)$ . Find  $E(x)$   
 (a)  $\sqrt{2}$   
 (b) 2  
 (c) -1  
 (d) 0
85. Name of the distribution which has Mean= Variance  
 (a) Binomial  
 (b) Poisson  
 (c) Normal  
 (d) (a) and (b)
86. If the difference between mean and mode is 33, then the difference between Mean and Median will be \_\_\_\_\_  
 (a) 63  
 (b) 31.5  
 (c) 11  
 (d) None of the above
87. Relative frequency for a particular class lies between:  
 (a) 0 and 1  
 (b) 0 and 1, both inclusive  
 (c) -1 and 0  
 (d) -1 and 1
88. Less than type and more than type Ogives meet at a point known as:  
 (a) Mean  
 (b) Median  
 (c) Mode  
 (d) None
89. If mean and coefficient of variation of the marks of n students is 20 and 80 respectively. What will be variance of them  
 (a) 256  
 (b) 16  
 (c) 25  
 (d) None of these
90. A non-leap year, the probability of getting 53 Sundays or 53 Tuesdays or 53 Thursdays is  
 (a)  $4/7$   
 (b)  $2/7$   
 (c)  $3/7$

PROBABILITY

PROBABILITY

CENTRAL  
TENDENCYSTATISTICAL  
REPRESENTATION  
OF DATACENTRAL  
TENDENCY

DISPERSION

PROBABILITY  
DISTRIBUTION

- (d) 1/7
91. In a bivariate distribution if the rank correlation coefficient  $r = 0.12$ ;  $\Sigma D^2 = 146$ ; Then the no. of observed pairs (N) is
- (a) 9  
(b) 8  
(c) 7  
(d) 10.
- CORRELATION**
92. For 10 pairs of observations, number of concurrent deviations was found to be 4. What is the value of the coefficient of concurrent deviation?
- (a)  $\sqrt{0.2}$   
(b) 1/3  
(c) -1/3  
(d)  $-\sqrt{0.2}$
- CORRELATION**
93. Consider the two regression lines  $3x + 2y = 26$  &  $6x + y = 31$ , Find the mean values of x and y.
- (a)  $\bar{x} = 4$  and  $\bar{y} = 7$   
(b)  $\bar{x} = 7$  and  $\bar{y} = 4$   
(c)  $\bar{x} = 5$  and  $\bar{y} = 6$   
(d) None of these
- REGRESSION**
94. For a  $m \times n$  two way or bivariate frequency table, the maximum number of marginal distributions is coefficient
- (a) 1  
(b) 2  
(c)  $m+n$   
(d)  $mn$
- CORRELATION**
95. If the regression line of Y on X is given by  $Y = X + 2$  and Karl Pearson's coefficient of correlation is 0.5 then  $\frac{\sigma_y^2}{\sigma_x^2} = \underline{\hspace{2cm}}$ .
- (a) 3  
(b) 2  
(c) 4  
(d) None of these
- CORRELATION**
96. The number of tests of Adequacy is
- (a) 2  
(b) 3  
(c) 4  
(d) 5
- INDEX NUMBER**



97. Fishers Ideal formula for calculating Index number satisfies the

- (a) Unit Test
- (b) Factor Reversal Test
- (c) Time reversal Test
- (d) both (b) and (d)

**INDEX NUMBER**

98. Purchasing power of money is

- (a) Reciprocal of Price index number
- (b) Equal to Price Index number
- (c) Unequal to Price Index number
- (d) None of these

**INDEX NUMBER**

99. The simple index number for the current year using simple aggressive method for the following data

Commodity base	Base year Price ( $P_0$ )	Current Year Price ( $P_1$ )
Wheat	80	100
Rice	100	150
Gram	120	250
Pulses	200	300

- (a) 200
- (b) 150
- (c) 240
- (d) 160

**INDEX NUMBER**

100. The cost-of-living index number in year 2015 and 2018 were 97.5 and 115 respectively. The salary of CA Jitendra in 2015 was 195000. How much additional salary was required for him in 2018 to maintain the same standard of living as in 2015?

- (a) 30,000
- (b) 40,000
- (c) 35,000
- (d) 45,000

**INDEX NUMBER**

## Paper 3: Business Mathematics, Logical Reasoning and Statistics

## Key Part A: Business Mathematics and Logical Reasoning

1	(b)	2	(b)	3	(c)	4	(c)	5	(b)
6	(b)	7	(a)	8	(a)	9	(a)	10	(c)
11	(d)	12	(b)	13	(a)	14	(d)	15	(a)
16	(a)	17	(a)	18	(c)	19	(a)	20	(c)
21	(a)	22	(c)	23	(a)	24	(a)	25	(b)
26	(b)	27	(c)	28	(c)	29	(b)	30	(b)
31	(b)	32	(c)	33	(b)	34	(b)	35	(a)
36	(c)	37	(b)	38	(b)	39	(b)	40	(a)
41	(c)	42	(b)	43	(c)	44	(a)	45	(d)
46	(d)	47	(a)	48	(d)	49	(a)	50	(d)
51	(c)	52	(d)	53	(c)	54	(a)	55	(b)
56	(b)	57	(a)	58	(b)	59	(b)	60	(b)

## Key Part B: Statistics

61	(a)	62	(a)	63	(c)	64	(b)	65	(b)
66	(d)	67	(c)	68	(c)	69	(a)	70	(a)
71	(d)	72	(a)	73	(a)	74	(b)	75	(a)
76	(b)	77	(c)	78	(c)	79	(a)	80	(a)
81	(c)	82	(c)	83	(a)	84	(a)	85	(b)
86	(c)	87	(a)	88	(b)	89	(a)	90	(a)
91	(d)	92	(c)	93	(a)	94	(b)	95	(c)
96	(c)	97	(d)	98	(a)	99	(d)	100	(c)

## MOCK TEST PAPER 1

## FOUNDATION COURSE

## PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 Hours

Marks: 100

## Part A: Business Mathematics and Logical Reasoning

1.  $\left(\frac{\sqrt{3}}{9}\right)^{5/2} \left(\frac{9}{3\sqrt{3}}\right)^{7/2} \times 9$  is equal to

- (a) 1  
 (b)  $\sqrt{3}$   
 (c)  $3\sqrt{3}$   
 (d)  $\frac{3}{9\sqrt{3}}$

INDICES

2. If  $\frac{p}{q} = \frac{2}{3}$  then the value of  $\frac{2p+q}{2p-q}$  is

- (a)  $\frac{1}{7}$   
 (b)  $-\frac{1}{7}$   
 (c) 1  
 (d) 7

LINEAR EQUATION

3.  $\log_a \sqrt{3} = \frac{1}{6}$ , find the value of a

- (a) 9  
 (b) 81  
 (c) 27  
 (d) 3

LOG

4.  $\log \frac{p^2}{qr} + \log \frac{q^2}{pr} + \log \frac{r^2}{pq} =$

- (a) pqr  
 (b)  $\frac{1}{pqr}$   
 (c) 1  
 (d) 0

LOG

5. Find the value of  $\frac{3t^{-1}}{t^{\frac{1}{3}}}$

(a)  $\frac{3}{t^{\frac{2}{3}}}$

(b)  $\frac{3}{t^{\frac{2}{3}}}$

(c)  $\frac{3}{t^{\frac{1}{3}}}$

(d)  $\frac{3}{t^2}$

**INDICES**

6. A bag contains 25 paise, 10 paise and 5 paise coins in the ratio 3:2:1. The total value of ₹ 40, the number of 5 paise coins is

(a) 45

(b) 48

(c) 40

(d) 20

**RATIO**

7. If one root of  $5z^2 + 13z + y = 0$  is reciprocal of the other then the value of y is

(a)  $\frac{1}{5}$

(b)  $-\frac{1}{5}$

(c) 5

(d) -5

**QUADRATIC EQUATION**

8. If  $2^x \times 3^y \times 5^z = 720$  then the value of x, y, z ?

(a) 4, 2, 1

(b) 1, 2, 4

(c) 2, 4, 1

(d) 1, 4, 2

**INDICES**

9. A man wants to cut three lengths from a single piece of board of length 91 cm. The second length is to be 3 cm longer than the shortest and third length is to be twice as the shortest. What is the possible length for the shortest piece?

(a) 22

(b) 20

(c) 15

(d) 18

**LINEAR EQUATION**

10. A labour can be paid under two methods of given below :

- (i) ₹ 600 fixed and ₹ 50 per hour
- (ii) ₹ 170 per hour

If a labour job work takes 'r' hours to complete, findout the value of r for which the method (ii) gives the labour gets the better wages.

- (a)  $x=6$
- (b)  $x=4$
- (c)  $x=3$
- (d)  $x=2$

**LINEAR EQUATION**

11. The time required to produce a unit of product A is 3 hours and that for product B is 5 hours. The total available time is 220 hours. If x and y are the number of units of A and B that are produced then

- (a)  $3x+2y =220$
- (b)  $3x+5y \geq 220, x \geq 0, y \geq 0$
- (c)  $3x+5y \leq 220, x \geq 0, y \geq 0$
- (d)  $5x+2y \geq 220, x \geq 0, y \geq 0$

**INEQUALITIES**

12. What must be added to each term of the ratio 49:68. So that it becomes 3:4 ?

- (a) 3
- (b) 5
- (c) 8
- (d) 9

**RATION**

13. Find future value of annuity of ₹ 1000 made annually for seven yeras at interest rate 16% compounded annaually. [Given that  $(1.16)^7 = 2.8262$ ]

- (a) ₹ 11413.75
- (b) ₹ 11000.35
- (c) ₹ 8756
- (d) ₹ 9892.34

**TIME VALUE AND MONEY**

14. Assuming that the discount rate is 7% is p.a. How much would you pay to receive ₹ 500. Growing at 5% annually forever?

- (a) ₹ 2,500
- (b) ₹ 5,000
- (c) ₹ 7,500
- (d) ₹ 25,000

**TIME VALUE AND MONEY**

15. Rajesh deposits ₹ 3,000 at the start of each quarter in his savings account. If the accaount earns interest 5.75% per annum compounded quarterly, how much money (in ₹) while he have at the end of 4 years? [Given that  $(1.014375)^{16} = 1.25654$ ]

- (a) ₹ 54,308.6
- (b) ₹ 58,553.6
- (c) ₹ 68,353.6

**TIME VALUE AND MONEY**

- (d) ₹ 63,624.4
16. The annual rate of simple interest is 12.5%. In how many years does principal doubles?
- (a) 11 years  
(b) 9 years  
(c) 8 years  
(d) 7 years
- TIME VALUE AND MONEY**
17. ₹ 5000 is paid every year for 10 years to pay off a loan. What is the loan amount of interest rate be 14% p.a compounded annually?
- (a) ₹ 26,000.90  
(b) ₹ 26080.55  
(c) ₹ 15000.21  
(d) ₹ 16,345.11
- TIME VALUE AND MONEY**
18. ₹ 800 is invested at the end of each month in account paying interest 6% per year compounded monthly. What is the future value of annuity after 10<sup>th</sup> payment ? [Given that  $(1.005)^{10} = 1.0511$ ]
- (a) ₹ 4444  
(b) ₹ 8766  
(c) ₹ 3491  
(d) ₹ 8176
- TIME VALUE AND MONEY**
19. Certain sum of money borrowed at simple interest to ₹ 2688 in three years and to ₹ 2784 in four years at the rate per annum equal to
- (a) 4%  
(b) 6%  
(c) 5%  
(d) 7%
- TIME VALUE AND MONEY**
20. Ravi made of an investment of ₹ 15,000 in a scheme and at the time of maturity the amount was ₹ 25,000. If Compound Annual Growth Rate (CAGR) for this investment is 8.88%. Calculate the approximate number of years for which he has invested the amount.
- (a) 6  
(b) 7.7  
(c) 5.5  
(d) 7
- TIME VALUE AND MONEY**
21. Madhu takes a loan of ₹ 50,000 from ABC Bank LTD. The rate of interest is 10% per annum. The first instalment will be paid at the end of five year. Determine the amount (in ₹) of equal instalments, if Madhu wishes to repay the amount in five years.
- (a) ₹ 19,510  
(b) ₹ 19,430  
(c) ₹ 19,310  
(d) ₹ 16,630
- TIME VALUE AND MONEY**

22. Rajesh invests ₹ 20,000 per year in a stock index fund, with earns 9% per year, for the next ten years. What would be closest value of accumulated investment upon payment of the last installment?  
[Given:  $(1.09)^{10} = 2.36736$ ]

- (a) ₹ 3,88,764.968  
(b) ₹ 3,03,858.564  
(c) ₹ 2,68,728.484  
(d) ₹ 4,08,718.364

**TIME VALUE AND  
MONEY**

23. An investment is earning compounded interest ₹ 100 invested in the year 2 accumulated to ₹ 105 by year 4. If ₹ 500 invested in the year 5, will become ₹ \_\_\_\_\_ by year 10.

- (a) ₹ 364.80  
(b) ₹ 564.80  
(c) ₹ 464.80  
(d) ₹ 664.80

**TIME VALUE AND  
MONEY**

24. An investor is saving to pay off an obligation of ₹ 15,250 which will due in seven years, if the investor is earning 7.5% simple interest rate per annum, he must deposit ₹ \_\_\_\_\_ to meet the obligation.

- (a) ₹ 8,000  
(b) ₹ 9,000  
(c) ₹ 10,000  
(d) ₹ 11,000

**TIME VALUE AND  
MONEY**

25. The value of scooter is ₹ 1,00,000 find its depreciation is 10% p.a. Calculate total depreciation value at the end of seven years.

- (a) ₹ 47829.70  
(b) ₹ 47000.90  
(c) ₹ 42709  
(d) ₹ 42,000

**TIME VALUE AND  
MONEY**

26. Effective rate of interest does not depend upon

- (a) Amount of Principal  
(b) Amount of Interest  
(c) Number of conversion periods  
(d) none of these

**TIME VALUE AND  
MONEY**

27. The number of triangles that can be formed by choosing the vertices from a set of 12 points, Seven of which lie on the same lie on the same straight line is:

- (a) 185  
(b) 175  
(c) 115  
(d) 105

**PRMUTATIONS &  
COMBINATIONS**

28. Five bulbs of which three are defective are to be tired in two light-points in a dark-room. In how many trails the room shall be lightened ?

- (a) 10

**PRMUTATIONS &  
COMBINATIONS**

- (b) 7  
(c) 3  
(d) none of these
29. In how many ways can a party of 4 men and 4 women be seated at a circular table, so that no two women are adjacent ?
- (a) 164  
(b) 174  
(c) 144  
(d) 154
30. How many words can be formed with the letters of the word 'ORIENTAL'. So that A and E always occupy odd places:
- (a) 540  
(b) 8460  
(c) 8640  
(d) 8450
31. The number of ways of painting the faces of a cube by 6 different colours is
- (a) 30  
(b) 36  
(c) 24  
(d) 1
32. The sum of an AP, whose first is -4 and last term is 146 is 7171. Find the value of n
- (a) 99  
(b) 100  
(c) 101  
(d) 102
33. In a geometric progression , the second term is 12 and sixth term is 192. Find 11<sup>th</sup> term.
- (a) 3,072  
(b) 1,536  
(c) 12,288  
(d) 6,144
34. The first and last terms of an arithmetic progression are 5 and 905. Sum of the terms is 45,955. The number of terms is
- (a) 99  
(b) 100  
(c) 101  
(d) 102

**PRMUTATIONS &  
COMBINATIONS**

**PRMUTATIONS &  
COMBINATIONS**

**PRMUTATIONS &  
COMBINATIONS**

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**



35. The sum of first eight terms of geometric progression is five times the sum of the first four terms. The common ratio is

(a)  $\sqrt{3}$   
 (b)  $\sqrt{2}$   
 (c) 4  
 (d) 2

**ARITHMETIC &  
 GEOMETRIC  
 PROGRESSIONS**

36. If the sum of  $n$  terms of an AP is  $(3n^2 - n)$  and its common difference is 6, then its term is

(a) 3  
 (b) 2  
 (c) 4  
 (d) 1

**ARITHMETIC &  
 GEOMETRIC  
 PROGRESSIONS**

37. Two finite sets have  $m$  and  $n$  elements. The total number of sub sets of first set is 56 more than the total number of subsets of the second set. The value of  $m$  and  $n$  are

(a) 6,3  
 (b) 7,6  
 (c) 5,1  
 (d) 8,7

**SETS**

38. If  $f(p) = \frac{1}{1-p}$ , then  $f^{-1}$  is

(a)  $1-p$   
 (b)  $\frac{p-1}{p}$   
 (c)  $\frac{p}{p-1}$   
 (d)  $\frac{1}{p}$

**FUNCTIONS**

39. Determine  $f(x)$ , given that  $f'(x) = 12x^2 - 4x$  and  $f(-3) = 17$

(a)  $f(x) = 4x^3 - 2x^2 + 143$   
 (b)  $f(x) = 6x^3 - x^4 + 137$   
 (c)  $f(x) = 3x^4 - x^3 - 137$   
 (d)  $f(x) = 4x^3 - 2x^2 - 143$

**FUNCTIONS**

40.  $\int_0^1 x.e^x dx$

(a) -1  
 (b) 1  
 (c)  $e^1$   
 (d)  $1/e$

**INTEGRAL  
 CALCULUS**

### Logical Reasoning

41. Find the missing term in each of the following series : 6, 13, 25, 51, 101?  
 (a) 201  
 (b) 202  
 (c) 203  
 (d) 205  
**NUMBER SERIES**
42. Find the missing term in each of the following series : 28, 33,31,36, 34,?  
 (a) 48  
 (b) 39  
 (c) 54  
 (d) 62  
**NUMBER SERIES**
43. In a certain code, TEACHER is written as VGCEJGT, How is CHILDREN written in that code?  
 (a) EJKNEGTP  
 (b) EGKNEITP  
 (c) EJKNFGTO  
 (d) EJKNFTGP  
**NUMBER SERIES**
44. In a certain code language, '253' means 'books are old'; '546' means 'man is old' and '378' means 'buy good books'. What stands for 'are' in that code?  
 (a) 2  
 (b) 4  
 (c) 5  
 (d) 6  
**NUMBER SERIES**
45. If SUMMER is coded as RUNNER, the code for WINTER will be  
 (a) SUITER  
 (b) VIOUER  
 (c) WALKER  
 (d) SUFFER  
**NUMBER SERIES**
46. From home Neha goes towards North for her college and then she turns left and then turns right, and finally she turns left and reaches college. In which direction her college is situated with respect to her home ?  
 (a) South-West  
 (b) North-East  
 (c) North-West  
 (d) South-East  
**DIRECTION TESTS**
47. Y is in the East of X which is in the North of Z. If P is in the South of Z, then in which direction of Y, is P?  
 (a) North  
 (b) South  
**DIRECTION TESTS**

- (c) South-East  
(d) South-West
48. Five villages P, Q, R, S, and T are situated close to each other. P is to the west of Q, R is to the south of P. T is to the north of Q and S is to the east of T. Then, R is in which direction with respect to S?
- (a) North-West  
(b) South-East  
(c) South-West  
(d) Data inadequate
49. If South-West becomes North, then what will North-East be?
- (a) North  
(b) South-East  
(c) South  
(d) East
50. In a clock at 12 : 30, hour needle is in North direction while minute needle is in South direction. In which direction would be minute needle at 12:45?
- (a) North-West  
(b) South-East  
(c) West  
(d) East
51. Five students are standing in a circle. Abhinav is between Alok and Ankur. Apurva is on the left of Abhishek. Alok is on the left of Apurva. Who is sitting next to Abhinav on his right?
- (a) Apurva  
(b) Ankur  
(c) Abhishek  
(d) Alok

DIRECTION TESTS

DIRECTION TESTS

DIRECTION TESTS

SEATING  
ARRANGEMENT

**Directions(Questions 52-54)** Study the following information carefully and answer the questions given below.

Six friends A, B, C, D, E and F are sitting in a row facing towards North. C is sitting between A and E. D is not at the end. B is sitting at immediate right of E. F is not at the right end but D is sitting at 3<sup>rd</sup> left of E.

52. How many persons are there to the right of D?
- (a) One  
(b) Two  
(c) Three  
(d) Four
53. Which of the following is sitting to the left of D?
- (a) F  
(b) C  
(c) E

SEATING  
ARRANGEMENTSEATING  
ARRANGEMENT

- (d) A
54. Who is at the immediate left of C?
- (a) A  
(b) E  
(c) Either E or A  
(d) Cannot be determined
55. Five persons are sitting on a bench to be photo graphed, S is to the left of N and to the right of B. M is to the right of N. R is between N and M. Who is sitting immediate right to R.
- (a) B  
(b) N  
(c) M  
(d) S
56. B is the brother of A whose only sister is mother of C, D is maternal grandmother of C How is A related to D?
- (a) Aunt  
(b) Daughter-in-law  
(c) Daughter  
(d) Nephew
57. If  $X+Y$  means X is the mother of Y;  $X-Y$  means X is the brother of Y;  $X\%Y$  means X is the father of Y and  $X\times Y$  means X is the sister of Y, Which of the following shows that A is the maternal uncle of B?
- (a)  $B+D\times C-A$   
(b)  $B-D\%A$   
(c)  $A-C+D\times B$   
(d)  $A+C\times D-B$

SEATING  
ARRANGEMENTSEATING  
ARRANGEMENT

BLOOD RELATION

BLOOD RELATION

**Directions(Questions 58-60)** Read the following information and answer the questions given below.

Anita is the niece of Prateek's mother. Anita's mother is Prateek's aunt. Rohan is Anita's mother's brother. Rohan's mother is Anita's grandmother. From this information. deduce the relationship between.

58. Rohan's mother is \_\_\_\_\_ to Anita's mother.
- (a) Aunt  
(b) Mother  
(c) No relation  
(d) Sister
59. Prateek's and Anita's mother are \_\_\_\_\_
- (a) Cousin sister  
(b) Sister-in-law  
(c) Friends  
(d) Sisters

BLOOD RELATION

BLOOD RELATION

60. Rohan is Prateek's \_\_\_\_\_
- Brother
  - Brother-in-law
  - Uncle
  - Cousin brothers

**Part B: Statistics**

61. The distribution of profits of a company follows:

- J-shaped frequency curve
- U-shaped frequency curve
- Bell-shaped frequency curve
- Any of these

**STATISTICAL  
REPRESENTATION  
OF DATA**

62. Median of a distribution can be obtained from:

- Histogram
- Frequency Polygon
- Less than type ogives
- none of these

**STATISTICAL  
REPRESENTATION  
OF DATA**

63. Frequency density corresponding to a class interval is the ratio of

- Class Frequency to the Total Frequency
- Class Frequency to the class Length
- Class frequency to the class Frequency
- Class Frequency to the Cumulative Frequency.

**STATISTICAL  
REPRESENTATION  
OF DATA**

64. Cost of sugar in a month under the heads raw Materials, labour, direct production and others were 12, 20, 35 and 23 units respectively. What is the difference between the central angles for the largest and smallest components of the cost of sugar?

- 72°
- 48°
- 56°
- 92°

**STATISTICAL  
REPRESENTATION  
OF DATA**

65. In a group of persons, average weight is 60 kg. If the average of males and females taken separately is 80 kg and 50 kg respectively, find the ratio of the number of males to that of females.

- 2:3
- 3:2
- 2:1
- 1:2

**STATISTICAL  
REPRESENTATION  
OF DATA**

66. A train covered the first 5 km of its journey at a speed of 30km/hr and next 15 km at a speed of 45 km/hr. The average speed of the train was :

- 38 km/hr
- 40 km/hr

**CENTRAL  
TENDENCY**

- (c) 36 km/hr  
(d) 42 km/hr
67. If  $2x + 3y + 4 = 0$  and  $v(x) = 6$  then  $v(y)$  is:  
(a)  $8/3$   
(b) 9  
(c) -9  
(d) 6
68. If the standard deviation of 1, 2, 3, 4, ..... 10 is  $\sigma$ , then the standard deviation of 11, 12, 13, 14, ..... 20 is:  
(a)  $10\sigma$   
(b)  $10+\sigma$   
(c)  $\sigma$   
(d) None of these
69. What is the standard deviation of the following series :

Measurements	0-10	10-20	20-30	30-40
Frequency :	1	3	4	2

- (a) 81  
(b) 7.6  
(c) 9  
(d) 2.26
70. If the difference between Mean and Mode is 69, then the difference between Mean and Median will be \_\_\_\_\_:  
(a) 63  
(b) 31.5  
(c) 23  
(d) None of these
71. If all observations in a distribution are increased by 6, then the variance of the series will be \_\_\_\_\_  
(a) Increased  
(b) Decreased  
(c) Unchanged  
(d) None of these.
72. Which measure of dispersion is base on the absolute deviation only?  
(a) Range  
(b) Standard Deviation  
(c) Mean Devaition  
(d) Quartile Devation

DISPERSION

DISPERSION

CENTRAL  
TENDENCY

DISPERSION

DISPERSION

73. Calculate the value of 3<sup>rd</sup> quartile from the following data 40, 35, 51, 21, 25, 16, 29, 27, 32
- (a) 36.25  
(b) 30.25  
(c) 25  
(d) 35
- CENTRAL TENDENCY**
74. The mean of 100 students was 45 . Later on, it was discovered that the marks of two students were misread as 85 and 54 instead of 58 and 45. Find correct mean.
- (a) 68  
(b) 36  
(c) 44.64  
(d) 52
- CENTRAL TENDENCY**
75. The arithmetic mean and coefficient of variation of data set x are respectively, 10 and 30. The variance of  $30-2x$  is
- (a) 28  
(b) 32  
(c) 34  
(d) 36
- DISPERSION**
76. The approximate ratio of SD, MD, QD is
- (a) 2:3:4  
(b) 3:4:5  
(c) 15:12:10  
(d) 5:6:7
- DISPERSION**
77. The geometric mean of three numbers 40, 50 and x is 10, the value of x is
- (a) 5  
(b) 4  
(c) 2  
(d)  $\frac{1}{2}$
- CENTRAL TENDENCY**
78. Difference between upper limit and lower limit of class is known as
- (a) Range  
(b) Class Mark  
(c) Class Size  
(d) Class Boundary
- CENTRAL TENDENCY**
79. Let P be a probability function on  $S = \{X_1, X_2, X_3\}$  if  $P(X_1)=1/4$  and  $P(X_3) = 1/3$  then  $P(X_2)$  is equal to:
- (a)  $5/12$   
(b)  $7/12$   
(c)  $3/4$   
(d) none of these
- PROBABILITY**

80. A speaks truth in 60% of the cases and B in 90% of the cases. In what percentage of cases are they likely to contradict each other in stating the same fact:

- (a) 36%
- (b) 42%
- (c) 54%
- (d) none of these.

**PROBABILITY**

81. A candidate is selected for interview for 3 posts. For the first there are 3 candidates, for the second there are 4 and for the third there are 2. What are the chances of his getting at least one post?

- (a)  $\frac{3}{4}$
- (b)  $\frac{2}{3}$
- (c)  $\frac{1}{10}$
- (d) 1

**PROBABILITY**

82. A card is drawn from a pack of playing cards and then another card is drawn without the first being replaced. What is the probability of getting two kings:

- (a)  $\frac{7}{52}$
- (b)  $\frac{1}{221}$
- (c)  $\frac{3}{221}$
- (d) none of these.

**PROBABILITY**

83. The probability of a man hitting the target is  $\frac{1}{4}$ . If he fires 7 times, the probability of hitting the target at least twice is :

- (a)  $1 - \left(\frac{5}{2}\right)\left(\frac{3}{4}\right)^6$
- (b)  $1 - \frac{15}{2}\left(\frac{3}{4}\right)^6$
- (c)  $1 - \frac{5}{6}, 3^5$
- (d)  $1 - \left(\frac{3}{4}\right)^6$

**PROBABILITY**

84. If 5% of the electric bulbs manufactured by a company are defective, use Poisson distribution to find the probability that in a sample of 100 bulbs, 5 bulbs will be defective. [Given :  $e^{-5} = 0.007$ ]

- (a) 0.1823
- (b) 0.1723
- (c) 0.1623
- (d) 0.1923

**PROBABILITY**

85. In a non- leap year, the probability of getting 53 Sundays or 53 Tuesdays or 53 Thursdays is:

- (a)  $\frac{4}{7}$



(b)  $\frac{2}{7}$

(c)  $\frac{3}{7}$

(d)  $\frac{1}{7}$

**PROBABILITY**

86. Examine the validity of the following : Mean and standard deviation of a binomial distribution are 10 and 4 respective:

(a) Not valid

(b) Valid

(c) Both [a] and [b]

(d) Neither [a] nor [b]

**PROBABILITY  
DISTRIBUTION**

87. For a Poisson variate X,  $P(x=1) = P(x=2)$ , what is the mean of x ?

(a) 1

(b)  $\frac{3}{2}$ 

(c) 2

(d)  $\frac{5}{2}$ **PROBABILITY  
DISTRIBUTION**

88. Thirty balls are serially numbered and placed in bag. Find chance that the first ball drawn is a multiple of 3 or 5

(a)  $\frac{8}{15}$ (b)  $\frac{2}{15}$ (c)  $\frac{1}{2}$ (d)  $\frac{7}{15}$ **PROBABILITY**

89. For a normal distribution, the first and third quartile are given to be 37 and 49, the mode of the distribution is.

(a) 37

(b) 49

(c) 43

(d) 45

**PROBABILITY  
DISTRIBUTION**

90. The odds in favour of event A in a trail is 3:1. In a three independent trails, the probability of non occurrence of the event A is

(a)  $\frac{1}{64}$ (b)  $\frac{1}{32}$ (c)  $\frac{1}{27}$ (d)  $\frac{1}{8}$ **PROBABILITY**

91. If  $4y - 5x = 15$  is the regression line of y on x and the coefficient of correlation between x and y is 0.75, what is the value of the regression coefficient of x on y ?

(a) 0.45

(b) 0.9375

(c) 0.6

**REGRESSION**

- (d) none of these
92. If the regression line of y on x and of x on y are given by  $2x + 3y = -1$  and  $5x + 6y = -1$  then the arithmetic means of x and y are given by.
- (a) (1,-1)  
 (b) (-1,1)  
 (c) (-1, -1)  
 (d) (2,3)
- REGRESSION**
93. If correlation co-efficient r between x and y is 0.5 then r between x and -y is
- (a) 1  
 (b) 0.5  
 (c) -0.5  
 (d) 0
- CORRELATION**
94. For a positive and perfectly correlated random variables , one of the regression coefficient is 1.4 and the standard deviation of X is 2, the variance of Y is
- (a) 2.37  
 (b) 6.76  
 (c) 6.56  
 (d) 3.16
- REGRESSION**
95. For n pairs of observations , the coefficient of concurrent deviation is calculated as  $\frac{1}{\sqrt{3}}$  . If there are six concurrent deviations, n=
- (a) 11  
 (b) 10  
 (c) 9  
 (d) 8
- CORRELATION**
96. Consumer Price Index Number goes up from 100 to 200 and salary of a worker is also raised from 300 to 500, then Real Wage is
- (a) 300  
 (b) 250  
 (c) 600  
 (d) 350
- INDEX NUMBER**
97. The Circular Test is known as:
- (a)  $P_{01} \times P_{12} \times P_{20} = 1$   
 (b)  $P_{12} \times P_{01} \times P_{20} = 1$   
 (c)  $P_{20} \times P_{12} \times P_{01} = 1$   
 (d)  $P_{02} \times P_{21} \times P_{12} = 1$
- INDEX NUMBER**

98. In the data group Bowley's and Laspyre's index number is as follows. Bowley's index number =150, Laspyre's index number = 180 then Paasche's index number is

- (a) 120
- (b) 30
- (c) 165
- (d) None of these

**INDEX NUMBER**

99. Laspyres index number is aweighted aggregate method by taking \_\_\_\_\_ as weights.

- (a) Quanatity consumed in the base year
- (b) Quanatity consumed in the current year
- (c) Value of items consumed in base year
- (d) Vlaue of items consumed in the current year

**INDEX NUMBER**

100. Find the Paasche's Index number for prices from the following

Commodity	Base year		Current year	
	Price	Commodity	Price	Commodity
A	5	25	6	30
B	3	8	4	10
C	2	10	3	8
D	10	4	3	45

- (a) 151.21
- (b) 165.28
- (c) 157.26
- (d) 160.21

**INDEX NUMBER**

## MOCK TEST PAPER 1

## FOUNDATION COURSE

## PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

## Key Part A: Business Mathematics and Logical Reasoning

1	(a)	2	(d)	3	(c)	4	(d)	5	(a)
6	(c)	7	(c)	8	(a)	9	(a)	10	(a)
11	(c)	12	(c)	13	(a)	14	(d)	15	(a)
16	(c)	17	(b)	18	(d)	19	(a)	20	(a)
21	(c)	22	(b)	23	(b)	24	(c)	25	(a)
26	(a)	27	(a)	28	(b)	29	(c)	30	(c)
31	(a)	32	(c)	33	(d)	34	(c)	35	(b)
36	(b)	37	(a)	38	(b)	39	(a)	40	(b)
41	(c)	42	(b)	43	(d)	44	(a)	45	(b)
46	(c)	47	(d)	48	(c)	49	(c)	50	(c)
51	(d)	52	(d)	53	(a)	54	(a)	55	(c)
56	(c)	57	(c)	58	(b)	59	(d)	60	(c)

## Key Part B: Statistics

61	(c)	62	(c)	63	(b)	64	(d)	65	(d)
66	(b)	67	(a)	68	(c)	69	(c)	70	(c)
71	(c)	72	(c)	73	(a)	74	(c)	75	(d)
76	(c)	77	(d)	78	(c)	79	(a)	80	(b)
81	(a)	82	(b)	83	(a)	84	(a)	85	(c)
86	(a)	87	(c)	88	(d)	89	(c)	90	(a)
91	(a)	92	(a)	93	(c)	94	(a)	95	(a)
96	(c)	97	(a)	98	(a)	99	(a)	100	(c)

## MOCK TEST PAPER 2

## FOUNDATION COURSE

## PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 Hours

Marks: 100

## Part A: Business Mathematics and Logical Reasoning

- The ratio of two numbers are 3 : 4. The difference of their squares is 28 .Greater number is:
  - 8
  - 12
  - 24
  - 64

**RATIO**
- The price of scooter and moped are in the ratio 7 : 9. The price of moped is ₹ 1600 more than that of scooter. Then the price of moped is:
  - ₹ 7200
  - ₹ 5600
  - ₹ 800
  - ₹ 700

**RATIO**
- $\log_{0.01} 10,000 = ?$ 
  - 2
  - 2
  - 4
  - 4

**LOG**
- Value of  $\left[ 9^{n+\frac{1}{4}} \cdot \frac{\sqrt{3 \cdot 3^n}}{3 \cdot \sqrt{3^{-n}}} \right]^{\frac{1}{n}}$ 
  - 9
  - 27
  - 81
  - 3

**INDICES**
- Roots of the equation  $x^3+9x^2 - x - 9 = 0$ .
  - 1, 2, 3
  - 1, - 1, - 9
  - 2, 3, - 9
  - 1, 3, 9

**QUADRATIC EQUATION**
- $\frac{2x+5}{10} + \frac{3x+10}{15} = 5$ , then value of x
  - 10.58
  - 9.58

**LINEAR EQUATION**

- (c) 9.5  
(d) None of these
7. Find value of  $x^2 - 10x + 1$ , if  $x = \frac{1}{5-2\sqrt{6}}$
- (a) 25  
(b) 1  
(c) 0  
(d) 49
8. Find the value of  $k$  in  $3x^2 - 2kx + 5 = 0$ , if  $x = 2$ .
- (a)  $17/4$   
(b)  $-7/14$   
(c)  $4/17$   
(d)  $-4/17$
9.  $6x + y \geq 18$ ,  $x + 4y \geq 12$ ,  $2x + y \geq 10$ , On solving the inequalities; we get:
- (a) (0, 18), (12, 0), (4, 2) & (7, 6)  
(b) (3, 0), (0, 3), (4, 2) & (7, 6)  
(c) (5, 0), (0, 10), (4, 2) & (7, 6)  
(d) (0, 18), (12, 0), (4, 2), (0, 0) & (7, 6)
10. A man invests ₹ 12,000 at 10% p.a. and another sum of money at 20% p.a for one year. The total investment earns at 14% p.a. simple interest the total investment is:
- (a) ₹ 8,000  
(b) ₹ 20,000  
(c) ₹ 14,000  
(d) ₹ 16,000
11. The difference in simple interest of a sum invested of ₹ 1,500 for 3 years is ₹ 18. The difference in their rates is:
- (a) 0.4  
(b) 0.6  
(c) 0.8  
(d) 0.10
12. Find the effective rate of interest on ₹ 10,000 on which interest is payable half yearly at 5% p.a.
- (a) 5.06%  
(b) 4%  
(c) 0.4%  
(d) 3%
13. Find the effective rate of interest at 10% p.a. when interest is payable quarterly.
- (a) 10.38%  
(b) 5%  
(c) 5.04%

**QUADRATIC  
EQUATION**

**QUADRATIC  
EQUATION**

**INEQUALITIES**

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

- (d) 4%
14. What will be the population after 3 years when present population is 25,000 and population increases at the rate of 3% in 1st year, at 4% in 2nd year and at 5% in 3rd year?
- (a) 28,119  
(b) 29,118  
(c) 27,000  
(d) 30,000
15. The value of scooter is ₹ 10,000. Find its value after 7 years if rate of depreciation is 10% p.a.
- (a) ₹ 4,782.96  
(b) ₹ 4,278.69  
(c) ₹ 42,079  
(d) ₹ 42,000
16.  $SI = 0.125 P$  at 10% p.a. Find Time.
- (a) 1.25 years  
(b) 25 years  
(c) 0.25 years  
(d) None of these
17. How much amount is required to be invested every year as to accumulate ₹ 6,00,000 at the end of 10 years, if interest is compounded annually at 10% rate of interest [Given :  $(1:1)^{10} = 2.59374$ ].
- (a) ₹ 37,467  
(b) ₹ 37,476  
(c) ₹ 37,647  
(d) ₹ 37,674
18. The difference between the CI and SI for 2 year is 21. If the rate of interest is 5%, the final principal is:
- (a) ₹ 8,200  
(b) ₹ 4,800  
(c) ₹ 8,000  
(d) ₹ 8,400
19. Present value of a scooter is ₹ 7,290. If its value decreases every year by 10%, then its value before 3 years is equal to:
- (a) 10,000  
(b) 10,500  
(c) 20,000  
(d) 20,500
20. Mr. X lent some amount of money at 4% S.I. and he obtained ₹ 520 less than he lent in 5 years. The sum lent is
- (a) ₹ 620  
(b) ₹ 650  
(c) ₹ 750

TIME VALUE AND  
MONEY

TIME VALUE AND  
MONEY

TIME VALUE AND  
MONEY

TIME VALUE AND  
MONEY

TIME VALUE AND  
MONEY

TIME VALUE AND  
MONEY

TIME VALUE AND  
MONEY

- (d) None of these
21. ₹ 8,829 is invested into three different sectors in such a way that their amounts at 4% p.a. S.I. after 5 years; 6 and 8 years are equal. Find each part of the sum.
- (a) ₹ 3,069, ₹ 2,970; ₹ 2,790  
 (b) ₹ 3,089, ₹ 2,970; ₹ 2,790  
 (c) ₹ 3,609, ₹ 2,970; ₹ 2,790  
 (d) ₹ 3,069, ₹ 2,960; ₹ 2,760
- TIME VALUE AND MONEY**
22. A ₹1000 bond paying annual dividends at 8.5% will be redeemed at par at the end of 10 years. Find the purchase price of this bond if the investor wishes a yield rate of 8%
- (a) ₹ 907.135  
 (b) ₹ 1033.54  
 (c) ₹ 945.67  
 (d) None of these
- TIME VALUE AND MONEY**
23. Mr. X invest ₹ 10,000 every year starting from today for next: 10 years suppose interest rate is 8% per annual compounded annually. Calculate future value of the annuity.
- (a) ₹ 1,56,454.88  
 (b) ₹ 1,56,554.88  
 (c) ₹ 1,44,865.625  
 (d) None of these
- TIME VALUE AND MONEY**
24. Three girls and five boys are to be seated in a row so that no two girls sit together. Total No. of arrangements are:
- (a) 14,400  
 (b) 120  
 (c)  $5P_3$   
 (d)  $3! \times 5!$
- PERMUTATIONS & COMBINATIONS**
25. How many numbers can be formed with the help of 2, 3, 4, 5, 6, 1 which is not divisible by 5, given that it is a five digit number and digits are not repeating?
- (a) 1200  
 (b) 400  
 (c) 600  
 (d) 1400
- PERMUTATIONS & COMBINATIONS**
26. How many different groups of 3 people can be formed from a group of 5 people?
- (a) 5  
 (b) 6  
 (c) 10  
 (d) 9
- PERMUTATIONS & COMBINATIONS**
27. In how many ways can 4 people be selected at random from 6 boys and 4 girls if there are exactly two girls?
- (a) 90
- PERMUTATIONS & COMBINATIONS**



- (b) 360  
(c) 92  
(d) 480
28.  ${}^n P_3 : {}^n P_2 = 2 : 1$   
(a) 4  
(b)  $7/2$   
(c) 5  
(d)  $2/7$
29. Sum lying from 100 to 300 which is divisible by 4 and 5 is  
(a) 2000  
(b) 2100  
(c) 2200  
(d) 2300
30. Sum of  $x$  terms of two AP's are in the ratio  $(3x + 5) : (5x + 3)$  then ratio of their 10<sup>th</sup> term is  
(a) 31 : 49  
(b) 30 : 49  
(c) 28 : 49  
(d) None of these
31. Out of total 150 students, 45 passed in Accounts, 30 in Economics and 50 in Maths, 30 in both Accounts and Maths, 32 in both Maths and Economics, 35 in both Accounts and Economics, 25 students passed in all the three subjects. Find the numbers who passed at least in any one of the subjects :  
(a) 63  
(b) 53  
(c) 73  
(d) None of these
32. Let  $A = \{1, 2, 3\}$ , then the relation  $R = \{(1, 1), (2, 3), (2, 2), (3, 3), (1, 2)\}$  is:  
(a) Symmetric  
(b) Transitive  
(c) Reflexive  
(d) Equivalence
33. Let  $A$  be the set of squares of natural numbers and let  $x \in A, y \in A$  then  
(a)  $X + Y \in A$   
(b)  $X - Y \in A$   
(c)  $\frac{X}{Y} \in A$   
(d)  $xy \in A$
34. If 5<sup>th</sup> term of G.P. is 32 and 3<sup>rd</sup> term of G.P. is 8 then 6<sup>th</sup> term of G.P. is  
(a) 4  
(b) 16

**PERMUTATIONS &  
COMBINATIONS**

**PERMUTATIONS &  
COMBINATIONS**

**PERMUTATIONS &  
COMBINATIONS**

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

**SETS**

**SETS**

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

- (c) 32  
 (d) 6
35. Which term of The sequence 2, 4, 8, 16 ..... is 2048 ?
- (a) 9  
 (b) 10  
 (c) 11  
 (d) None of these

**ARITHMETIC &  
 GEOMETRIC  
 PROGRESSIONS**

36. The number of proper sub set of the set {3, 4, 5, 6, 7} is
- (a) 32  
 (b) 31  
 (c) 30  
 (d) 25

**SETS**

37.  $\int_0^1 (e^x + e^{-x}) dx$  is

- (a)  $e - e^{-1}$   
 (b)  $e^{-1} - e$   
 (c)  $e + e^{-1}$   
 (d) None of these

**INTEGRAL  
 CALCULUS**

38. If  $f(x) = x^k$  and  $f'(1) = 10$ , then the value of k is :

- (a) 10  
 (b) -10  
 (c) 1/10  
 (d) None of these

**DIFFERENTIAL  
 CALCULUS**

39. If  $y = ae^{nx} + be^{-nx}$ , then  $\frac{d^2y}{dx^2}$  is equal to \_\_\_\_\_.

- (a)  $n^2y$   
 (b)  $-n^2y$   
 (c)  $ny$   
 (d) None of these

**DIFFERENTIAL  
 CALCULUS**

40.  $\int 2^{3x} \cdot 3^{2x} \cdot 5^x \cdot dx =$  \_\_\_\_\_

- (a)  $\frac{2^{3x} \cdot 3^{2x} \cdot 5^x}{\log(720)} + c$   
 (b)  $\frac{2^{3x} \cdot 3^{2x} \cdot 5^x}{\log(360)} + c$   
 (c)  $\frac{2^{3x} \cdot 3^{2x} \cdot 5^x}{\log(180)} + c$   
 (d)  $\frac{2^{3x} \cdot 3^{2x} \cdot 5^x}{\log(90)} + c$

**INTEGRAL  
 CALCULUS**

### Logical Reasoning

41. Find the missing term of the following series : 3, 15, ?, 63, 99, 143  
 (a) 27  
 (b) 35  
 (c) 45  
 (d) 56  
**NUMBER SERIES**
42. Find the missing term of the following series : 7, 26, 63, 124, 215, 342, ?  
 (a) 391  
 (b) 421  
 (c) 481  
 (d) 511  
**NUMBER SERIES**
43. Find the missing term of the following series : 3, 7, 15, ?, 63, 127  
 (a) 30  
 (b) 31  
 (c) 47  
 (d) 52  
**NUMBER SERIES**
44. Find odd man out of the following series 3, 4, 10, 32, 136, 685, 4116  
 (a) 10  
 (b) 32  
 (c) 136  
 (d) 4116  
**NUMBER SERIES**
45. In a certain code language, '253' means 'books are old'; '546' means 'man is old' and '378' means 'buy good books'. What stands for 'are' in that code?  
 (a) 2  
 (b) 4  
 (c) 5  
 (d) 6  
**NUMBER SERIES**
46. Neha walked 2 km west of her house and then turned south covering 4 km. Finally, she moved 3 km towards east and then again 1 km west. How far is she from her initial position?  
 (a) 7 km  
 (b) 3 km  
 (c) 4 km  
 (d) 12 km  
**DIRECTION SENSE TEST**
47. Shweta moved a distance of 75 metres towards the north. She then turned to the left and walking for about 25 metres, turned left again and walked 80 metres. Finally, she turned to the right at an angle of  $45^\circ$ . In which direction was she moving finally?  
 (a) South  
 (b) South-West  
**DIRECTION SENSE TEST**

- (c) North-East
- (d) North-West

48. Varun faces towards north. Turning to his right, he walks 25 metres. He then turns to his left and walks 30 metres. Next, he moves 25 metres to his right. He then turns to his right again and walks 55 metres. Finally he turns to the right and moves 40 metres. In which direction is he now from his starting point ?

- (a) South-East
- (b) South-West
- (c) South
- (d) North-West

**DIRECTION SENSE  
TEST**

49. Pankaj is facing west. He turns  $45^\circ$  in the clockwise direction and then again another turns with  $180^\circ$  in the same direction i.e. clockwise direction, after that he turns  $270^\circ$  in the anticlockwise direction. Which direction is he facing now ?

- (a) North-West
- (b) West
- (c) South-West
- (d) South

**DIRECTION SENSE  
TEST**

50. A man is facing north. He turns 45 degree in the clockwise direction and then another 180 degree in the same direction and then 45 degree in the anticlockwise direction. Find which direction he is facing now?

- (a) North
- (b) East
- (c) West
- (d) South

**DIRECTION SENSE  
TEST**

51. A, P, R, X, S and Z are sitting in a row. S and Z are in the centre. A and P are at the ends. R is sitting to the left of A. Who is to the right of P?

- (a) A
- (b) X
- (c) S
- (d) Z

**SEATING  
ARRANGEMENT**

52. A, B, C, D and E are sitting on a bench. A is sitting next to B, C is sitting next to D, D is not sitting with E who is on the left end of the bench. C is on the second position from the right. A is to the right of B and E. A and C are sitting together. In which position A is sitting?

- (a) Between B and D
- (b) Between B and C
- (c) Between E and D
- (d) Between C and E

**SEATING  
ARRANGEMENT**

53. There are four children P, Q, R, S sitting in a row. P occupies seat next to Q but not next to R. If R is not sitting next to S? Who is occupying seat next to adjacent to S.

- (a) Q
- (b) P
- (c) P and Q

**SEATING  
ARRANGEMENT**

(d) None of these

54. Six persons A,B,C,D,E and F are standing in a circle.B is between D and C.A is between E and C.F is to the right of D.Who is between A and F?

(a) B

(b) C

(c) D

(d) E

**SEATING  
ARRANGEMENT**

55. Five persons are standing in a line. One of the two persons at the extreme ends is a professor and the other a businessman. An advocate is standing to the right of a student. An author is to the left of the businessman. The student is standing between the professor and the advocate. Counting from the left, the advocate is at which place ?

(a) 1<sup>st</sup>

(b) 2<sup>nd</sup>

(c) 3<sup>rd</sup>

(d) 5<sup>th</sup>

**SEATING  
ARRANGEMENT**

56. P is Q's daughter, Q is R's mother, S is R's brother. How is S related to P?

(a) Father

(b) Grandfather

(c) Brother

(d) Son

**BLOOD RELATION**

57. If X is brother of son of Y's son, then how is X related to Y ?

(a) Brother

(b) Cousin

(c) Grandson

(d) Son

**BLOOD RELATION**

58. If P is the husband of Q and R is the mother of S and Q. What is R to P?

(a) Mother

(b) Sister

(c) Aunt

(d) Mother-in-law

**BLOOD RELATION**

59. B is the brother of A. Whose only sister is mother of C. D is maternal grandmother of C. How is A related to D?

(a) Aunt

(b) Daughter-in-law

(c) Daughter

(d) Nephew

**BLOOD RELATION**

60. X and Y are the children of A. A is the father of X but Y is not his son. How is Y related to A?
- (a) Son
  - (b) Daughter
  - (c) Sister
  - (d) Brother

**BLOOD RELATION**

**Part B: Statistics**

61. The number of times a particular items occurs in a class interval is called its:
- (a) Mean
  - (b) Cumulative Frequency
  - (c) Frequency
  - (d) None of the above
62. An Ogive is a graphical representation of:
- (a) Cumulative Frequency distribution
  - (b) Ungrouped Data
  - (c) A frequency distribution
  - (d) None of the above
63. From the following data, cumulative frequency for the class 20 – 30 is

Class	Frequency
0 – 10	4
10 – 20	6
20 – 30	20
30 – 40	8
40 – 50	3

- (a) 26
  - (b) 10
  - (c) 41
  - (d) 30
64. Histogram can be shown as:
- (a) Ellipse
  - (b) Rectangle
  - (c) Hyperbola
  - (d) Circle
65. \_\_\_\_\_ series is continuous.
- (a) Open ended
  - (b) Exclusive
  - (c) Close ended
  - (d) Unequal Class Intervals

**STATISTICAL  
REPRESENTATION  
OF DATA**

**STATISTICAL  
REPRESENTATION  
OF DATA**

**STATISTICAL  
REPRESENTATION  
OF DATA**

**STATISTICAL  
REPRESENTATION  
OF DATA**

**STATISTICAL  
REPRESENTATION  
OF DATA**

66. Ogive graph is used for finding:

- (a) Quartiles
- (b) Deciles
- (c) Median
- (d) All of these

**CENTRAL  
TENDENCY**

67. Histogram is useful to determine graphically the value of:

- (a) Arithmetic Mean
- (b) Mode
- (c) Median
- (d) None of these

**CENTRAL  
TENDENCY**

68. Data are said to be \_\_\_\_\_ if the investigator himself is responsible for the collection of data.

- (a) Primary Data
- (b) Secondary Data
- (c) Mixed of Primary and Secondary Data
- (d) None of these

**STATISTICAL  
REPRESENTATION  
OF DATA**

69. A suitable graph for representing the portioning of total into sub parts in statistics is:

- (a) A Pictograph
- (b) A Pie Chart
- (c) An Ogive
- (d) A Histogram

**STATISTICAL  
REPRESENTATION  
OF DATA**

70. The AM of 15 observations is 9 and the AM of first 9 observations is 11 and then AM of remaining observations is:

- (a) 11
- (b) 6
- (c) 5
- (d) 9

**CENTRAL  
TENDENCY**

71. In a moderately skewed distribution the values of mean and median are 12 and 8 respectively. The value of mode is:

- (a) 0
- (b) 12
- (c) 15
- (d) 30

**CENTRAL  
TENDENCY**

72. Which of the following is positional average?

- (a) Median
- (b) GM
- (c) HM
- (d) AM

**CENTRAL  
TENDENCY**

73. For a symmetric distribution:
- (a) Mean = Median = Mode
  - (b) Mode = 3 Median – 2 Mean
  - (c) Mode =  $\frac{1}{3}$  Median =  $\frac{1}{2}$  Mean
  - (d) None

**CENTRAL  
TENDENCY**

74. For the distribution

x	f
1	6
2	9
3	10
4	14
5	12
6	8

**CENTRAL  
TENDENCY**

The value of median is:

- (a) 3.5
  - (b) 3
  - (c) 4
  - (d) 5
75. The QD of six numbers 15, 8, 36, 40, 38, 41 is equal to:

- (a) 12.5
- (b) 25
- (c) 13.5
- (d) 37

**DISPERSSION**

76. SD of first five consecutive natural numbers is:

- (a)  $\sqrt{10}$
- (b)  $\sqrt{8}$
- (c)  $\sqrt{3}$
- (d)  $\sqrt{2}$

**DISPERSSION**

77. If the profit of a company remain same for the last 10 months then the SD of profit of the company would be:

- (a) Positive
- (b) Negative
- (c) Zero
- (d) either (a) or (c)

**DISPERSSION**

78. Coefficient of Quartile Deviation is  $\frac{1}{4}$  then  $Q_3/Q_1 = ?$

- (a)  $\frac{5}{3}$
- (b)  $\frac{4}{3}$

**DISPERSSION**



- (c)  $\frac{3}{4}$   
 (d)  $\frac{3}{5}$
79. The sum of mean and SD of a series is  $a + b$ , if we add 2 to each observation of the series then the sum of mean and SD is :
- (a)  $a + b + 2$   
 (b)  $6 - a + b$   
 (c)  $4 + a - b$   
 (d)  $a + b + 4$
80. What is the mean of X having the following density function?  $f(x) = \frac{1}{\sqrt{2\pi}} e^{-\frac{(x-10)^2}{32}}$  for  $-\infty < x < \infty$
- (a) 4  
 (b) 10  
 (c) 40  
 (d) None of these
81. If mean and variance are 5 and 3 respectively then relation between p and q is :
- (a)  $p > q$   
 (b)  $p < q$   
 (c)  $p = q$   
 (d) p is symmetric
82. In a Poisson distribution if  $P(x=4) = P(x=5)$  then the parameter of Poisson distribution is:
- (a)  $\frac{4}{5}$   
 (b)  $\frac{5}{4}$   
 (c) 4  
 (d) 5
83. Area between -1.96 to +1.96 in a normal distribution is :
- (a) 95.45%  
 (b) 95%  
 (c) 96%  
 (d) 99%
84. Two events A and B are such that they do not occur simultaneously then they are called \_\_\_\_\_ events.
- (a) Mutually exhaustive  
 (b) Mutually Exclusive  
 (c) Mutually Independent  
 (d) Equally Likely
85. If a coin is tossed 5 times then the probability of getting Tail and Head occurs alternatively is:
- (a)  $\frac{1}{8}$

DISPERSION

PROBABILITY  
DISTRIBUTIONPROBABILITY  
DISTRIBUTIONPROBABILITY  
DISTRIBUTIONPROBABILITY  
DISTRIBUTION

PROBABILITY

PROBABILITY

(b)  $\frac{1}{16}$

(c)  $\frac{1}{32}$

(d)  $\frac{1}{64}$

86. When 2 dice are thrown simultaneously then the probability of getting at least one 5 is:

(a)  $\frac{11}{36}$

(b)  $\frac{5}{36}$

(c)  $\frac{8}{15}$

(d)  $\frac{1}{7}$

**PROBABILITY**

87. The probability that a leap year has 53 Wednesday is:

(a)  $\frac{2}{7}$

(b)  $\frac{3}{5}$

(c)  $\frac{1}{7}$

(d)  $\frac{2}{3}$

**PROBABILITY**

88. Ram is known to hit a target in 2 out of 3 shots whereas Shyam is known to hit the same target in 5 out of 11 shots. What is the probability that the target would be hit if they both try?

(a)  $\frac{9}{11}$

(b)  $\frac{6}{11}$

(c)  $\frac{10}{33}$

(d)  $\frac{3}{11}$

**PROBABILITY**

89. The probability that a student is not a swimmer is  $\frac{1}{5}$ , then the probability that out of five students four are swimmers is:

(a)  $\left(\frac{4}{5}\right)^4 \left(\frac{1}{5}\right)$

(b)  ${}^5C_1 \left(\frac{1}{5}\right)^4 \left(\frac{4}{5}\right)$

(c)  ${}^5C_4 \left(\frac{4}{5}\right)^4 \left(\frac{1}{5}\right)$

(d) None of these

**PROBABILITY**

90. If the two lines of regression are  $x + 2y - 5 = 0$  and  $2x + 3y - 8 = 0$ , then the regression line of y on x is:

(a)  $x + 2y - 5 = 0$

(b)  $x + 2y = 0$

(c)  $2x + 3y - 8 = 0$

(d)  $2x + 3y = 0$

**REGRESSION**

91. If the two regression lines are  $3X = Y$  and  $8Y = 6X$  then the value of correlation coefficient is:
- (a) -0.5  
(b) 0.5  
(c) 0.75  
(d) -0.80
- REGRESSION**
92. AM of regression coefficient is:
- (a) Equal to  $r$   
(b) Greater than or equal to  $r$   
(c) half of  $r$   
(d) None of these
- REGRESSION**
93. If the regression line of  $y$  on  $x$  is given by  $y = x + 2$  and Karl Pearson's coefficient of correlation is 0.5 then  $\frac{\sigma_y^2}{\sigma_x^2} = \underline{\hspace{2cm}}$ .
- (a) 3  
(b) 2  
(c) 4  
(d) None of these
- REGRESSION**
94. Which is not satisfied by Fisher's Ideal Index Number?
- (a) Factor Reversal Test  
(b) Time Reversal Test  
(c) Circular Test  
(d) None of the above
- INDEX NUMBER**
95. The prices and quantities of 3 commodities in base and current years are as follows:
- | $P_0$ | $P_1$ | $Q_0$ | $Q_1$ |
|-------|-------|-------|-------|
| 12    | 14    | 10    | 20    |
| 10    | 8     | 20    | 30    |
| 8     | 10    | 30    | 10    |
- INDEX NUMBER**
- The Laspyre's Price Index Number is:
- (a) 118.13  
(b) 107.14  
(c) 120.10  
(d) None of these
96. The cost of living index number in year 2015 and 2018 were 97.5 and 115 respectively. The salary of a worker in 2015 was 19500. How much additional salary was required for him in 2018 to maintain the same standard of living as in 2015?
- (a) 3000  
(b) 4000  
(c) 3500
- INDEX NUMBER**

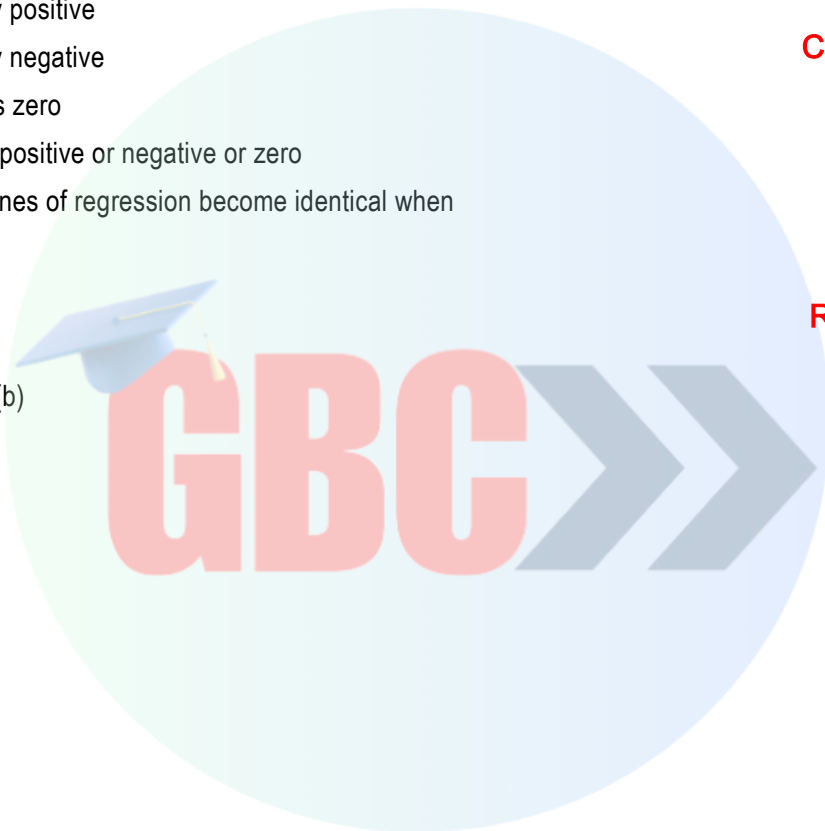
- (d) 4500
97. The number of test adequacy is
- (a) 2
  - (b) 5
  - (c) 3
  - (d) 4
98. Laspyers method and Paasches method do not satisfy
- (a) Unit Test
  - (b) Time Reversal Test
  - (c) Factor Reversal Test
  - (d) b and c
99. The coviraiance between two variables is
- (a) Strictly positive
  - (b) Strictly negative
  - (c) Always zero
  - (d) Either positive or negative or zero
100. When two lines of regression become identical when
- (a)  $r = 1$
  - (b)  $r = -1$
  - (c)  $r = 0$
  - (d) (a) or (b)

**INDEX NUMBER**

**INDEX NUMBER**

**CORRELATION**

**REGRASSION**



## MOCK TEST PAPER 2

## FOUNDATION COURSE

## PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

## Key Part A: Business Mathematics and Logical Reasoning

1	(a)	2	(a)	3	(b)	4	(b)	5	(b)
6	(b)	7	(c)	8	(a)	9	(a)	10	(b)
11	(a)	12	(a)	13	(a)	14	(a)	15	(a)
16	(a)	17	(c)	18	(d)	19	(a)	20	(b)
21	(a)	22	(b)	23	(a)	24	(a)	25	(c)
26	(c)	27	(a)	28	(a)	29	(c)	30	(a)
31	(b)	32	(c)	33	(d)	34	(d)	35	(c)
36	(b)	37	(a)	38	(a)	39	(a)	40	(b)
41	(b)	42	(d)	43	(b)	44	(b)	45	(a)
46	(c)	47	(b)	48	(a)	49	(c)	50	(d)
51	(b)	52	(b)	53	(b)	54	(d)	55	(c)
56	(c)	57	(c)	58	(d)	59	(c)	60	(b)

## Key Part B: Statistics

61	(c)	62	(a)	63	(d)	64	(b)	65	(b)
66	(d)	67	(b)	68	(a)	69	(b)	70	(b)
71	(a)	72	(a)	73	(a)	74	(c)	75	(c)
76	(d)	77	(c)	78	(a)	79	(a)	80	(a)
81	(b)	82	(d)	83	(b)	84	(b)	85	(b)
86	(a)	87	(a)	88	(a)	89	(c)	90	(a)
91	(b)	92	(b)	93	(c)	94	(c)	95	(b)
96	(c)	97	(d)	98	(d)	99	(d)	100	(d)

## MOCK TEST PAPER 1

## FOUNDATION COURSE

## PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 Hours

Marks: 100

## Part A: Business Mathematics and Logical Reasoning

1. The value of  $\frac{64(b^4a^3)^6}{4(a^3b)^2 \times (ab)^2}$

- (a)  $16 a^{10}b^{20}$
- (b)  $4 a^{20}b^{10}$
- (c)  $8 a^{10}b^{20}$
- (d)  $4 a^{10}b^{20}$

INDICES

2. Four persons A, B, C, D wish to share a sum in the ratio of 5:4:2:3. If D gets ₹1000 less than C, then the share of B ?

- (a) 2000
- (b) 1200
- (c) 2400
- (d) 3000

RATIO

3. The mean proportional between  $12x^2$  and  $27y^2$

- (a)  $18 xy$
- (b)  $81 xy$
- (c)  $8xy$
- (d)  $9xy$

PROPORTION

4. If thrice of A's age 6 years ago be subtracted from twice his present age, the result would be equal to his present age. Find A's present age.

- (a) 7
- (b) 8
- (c) 9
- (d) 6

LINEAR EQUATION

5. If one root of the quadratic equation is  $2-\sqrt{3}$  from the equation given that the roots are irrational. Then find the Quadratic equation.

- (a)  $x^2-4x+1=0$
- (b)  $x^2+4x-1=0$
- (c)  $x^2-4x-1=0$
- (d)  $x^2+4x+1=0$

QUADRATIC EQUATION

6. If  $\log_3 4 \cdot \log_4 5 \cdot \log_5 6 \cdot \log_6 7 \cdot \log_7 8 \cdot \log_8 9 = x$ , then find the value of  $x$

- (a) 4
- (b) 2
- (c) 3
- (d) 1

LOG

7. if  $\frac{1}{2} \log_{10} 4 = y$  and if  $\frac{1}{2} \log_{10} 9 = x$ , then the value of  $\log_{10} 15$

- (a)  $x-y+1$
- (b)  $x+y-1$
- (c)  $x+y+1$
- (d)  $y-x+1$

LOG

8. If the roots of  $(k-4)x^2 - 2kx + (k+5) = 0$  are coincident. Then the value of  $k$ ?

- (a) 14
- (b) 20
- (c) 18
- (d) 22

QUADRATIC  
EQUATION

9. If  $3x+2 < 2x+5$  and  $4x-5 \geq 2x-3$ , then  $x$  can take from the following values

- (a) 3
- (b) -1
- (c) 2
- (d) -3

INTEGRAL  
CALCULUS

10. The cost prices of 3 pens and 4 bags is ₹324. and 4 pens and 3 bags is ₹257, then cost price of 1 pen is equal to

- (a) ₹16
- (b) ₹18
- (c) ₹50
- (d) ₹75

LINEAR EQUATION

11. In a hostel ration stocked for 400 students upto 31 days. After 28 days 280 students were vacated the hostel. Find the number of days for which the remaining ration will be sufficient for the remaining students.

- (a) 5
- (b) 4
- (c) 7
- (d) 10

LINEAR EQUATION

12. The sum of the two numbers is 8 and the sum of their squares is 34. Taking one number as  $x$  form an equation in  $x$  and hence find the numbers. The numbers are

- (a) (7,10)
- (b) (4,4)

LINEAR EQUATION





- (c) 11%
- (d) 10%
19. A machine with useful life of 7 years costs ₹ 10,000 while another machine with useful life of 5 years costs ₹8000. The first machine saves labour expenses of ₹ 1900 annually and the second one saves labour expenses of ₹ 2200 annually.
- Determine the preferred course of action. Assume cost of borrowing as 10% compounded per annum.
- (a) 1st Machine should be purchased
- (b) 2nd Machine should be purchased
- (c) Information is not sufficient
- (d) None of these
20. How much amount is required to be invested every year so as to accumulate ₹5,00,000 at the end of 12 years if interest is compounded annually at 10% {Where  $A(12,0.1) = 3.1384284$ }
- (a) ₹23381.65
- (b) ₹ 24385.85
- (c) ₹26381.65
- (d) ₹28362.75
21. Raju invests ₹20,000 every year in a deposit scheme starting from today for next 12 years. Assuming that interest rate on this deposit is 7% per annum compounded annually. What will be the future value of this annuity? Given that  $(1+0.07)^{12} = 2.25219150$
- (a) ₹ 540,576
- (b) ₹ 382,816
- (c) ₹ 643,483
- (d) ₹ 357,769
22. Mr. A invested ₹ 20,000 every year for next 3 years at the interest rate of 8 percent per annum compounded annually. What is future value of the annuity?  $(1.08)^3 = 1.2597$
- (a) 62644
- (b) 62464
- (c) 64925
- (d) 63442
23. ₹10,000 is invested every month and in an account paying interest @ 12% per annum compounded monthly. What is the future value of this annuity just after making 11<sup>th</sup> payment" (Given that  $(1.01)^{11} = 1.1156$ )
- (a) ₹115,600
- (b) ₹156100
- (c) ₹156,800
- (d) ₹157,100

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

24. Sinking fund factor is the reciprocal of :

- (a) Present value interest factor of a single cash flow
- (b) Present value interest factor of an annuity
- (c) Future value interest factor of an annuity
- (d) Future value interest factor of a single cash flow.

**TIME VALUE AND  
MONEY**

25. 10 years ago the earning per share (EPS) of ABC Ltd. was ₹5 share its EPS for this year is ₹22. Compute at what rate, EPS of the company grow annually?

- (a) 15.97%
- (b) 16.77%
- (c) 18.64%
- (d) 14.79%

**TIME VALUE AND  
MONEY**

26. The number of ways of 4 boys and 3 girls are to be seated for a photograph in a row alternatively.

- (a) 24
- (b) 164
- (c) 144
- (d) 336

**PERMUTATION &  
COMBINATION**

27. if there are 30 points in a plane of which 5 points are lies on the same line. Then the number of triangles can be formed ?

- (a) 650
- (b) 580
- (c) 4050
- (d) 4060

**PERMUTATION &  
COMBINATION**

28. The value n, r If  ${}^n P_r = 3024$  and  ${}^n C_r = 126$

- (a) 9,4
- (b) 10, 7
- (c) 12, 5
- (d) 11, 6

**PERMUTATION &  
COMBINATION**

29. The number of 3-digit odd numbers can be formed using the digits 5,6,7, 8, 9. If repetition is allowed?

- (a) 56
- (b) 75
- (c) 95
- (d) 45

**PERMUTATION &  
COMBINATION**

30. If  $f(x) = x^2 - 5$ , evaluate  $f(3)$ ,  $f(-4)$ ,  $f(5)$  and  $f(1)$ .

- (a) 0, 11, 20, 4
- (b) -4, 11, -2, 4

**FUNCTION**

(c) 4, 11, 20, -4

(d) -2, 0, 20, 5

31. The 5<sup>th</sup> and 8<sup>th</sup> terms of a GP series is 27 and 729. Then find the 10<sup>th</sup> term.

(a) 729

(b) 243

(c) 81683

(d) 6561

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**32. In AP  $T_p = q$  and  $T_q = P$  then  $T_{p+q} = \dots\dots\dots$ 

(a) 0

(b)  $-(p+q)$ (c)  $\frac{p+q}{2}$ 

(d) 1

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

33. Four Geometric Means between 4 and 972 are

(a) 12, 30, 100; 324

(b) 12, 24, 108, 320

(c) 10, 36, 108, 320

(d) 12, 36, 108, 324

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**34. If  $A = \{0, 1, 2, 3, 4, 5\}$  then the number of subsets of A is

(a) 64

(b) 63

(c) 61

(d) 60

**SETS**35. The number of proper subsets of  $A \cap B$ ,  $A = \{1, 2, 3, 4, 5, 7, 8, 9, 10\}$  and  $B = \{2, 4, 6, 7, 9\}$ 

(a) 8

(b) 15

(c) 16

(d) 64

**SETS**36. If  $y = x(x-1)(x-2)$  then  $\frac{dy}{dx}$  is(a)  $3x^2 - 6x + 2$ (b)  $-6x^2 + 2$ (c)  $3x^2 + 2$ (d)  $3x^3 + 5$ **DIFFERENTIAL  
CALCULUS**

37. If  $\int_0^1 (3x^2 + 2x + k)dx = 0$ , find k.

- (a) 0
- (b) -1
- (c) -2
- (d) 1

**INTEGRAL  
CALCULUS**

38. If  $f(x) = 2x^3 - 15x^2 + 36x + 10$  at which  $f(x)$  is minimum and at which  $f(x)$  is maximum.

- (a) at  $x = 3$  and  $x = 2$
- (b) at  $x = 2$  and  $x = 3$
- (c) at  $x = -3$  and  $x = -2$
- (d) at  $x = 3$  and  $x = -2$

**DIFFERENTIAL  
CALCULUS**

39.  $\int_0^2 3x^2 dx$  is

- (a) 7
- (b) -8
- (c) 8
- (d) -7

**INTEGRAL  
CALCULUS**

40.  $\int (2x+3)^5 dx$  is

- (a)  $\frac{(2x-3)^6}{6} + c$
- (b)  $\frac{(2x-3)^6}{2} + c$
- (c)  $\frac{(2x+3)^6}{12} + c$
- (d)  $\frac{(2x-3)^6}{5} + c$

**INTEGRAL  
CALCULUS**

41. If GOODNESS is coded as HNPCODTR, then how GREATNESS can be written in that code?

- (a) HQZSMFRT
- (b) HQFZUFRTM
- (c) HQFZUODTR
- (d) HQFZUMFRT

**NUMBER SERIES**

42. In certain code language, if TOUR, is written as 1234, CLEAR is written 5678 and SPARE is written as 90847, Find the code for TEARS?

- (a) 17847
- (b) 14847

**NUMBER SERIES**

- (c) 15247  
(d) 17849
43. If ROSE is coded as 6821, CHAIR is coded as 73456 and PREACH is coded as 961473, what will be the code for RESEARCH?
- (a) 61246173  
(b) 61214673  
(c) 61216473  
(d) 61214743

**NUMBER SERIES**

44. Find the next alphabet series in the given sequence? ALN, DNP, GPR?
- (a) KLN  
(b) JRT  
(c) RNU  
(d) RNV

**NUMBER SERIES**

45. Find the missing number in the following series? 2, 5, 10, 17, 26?
- (a) 49  
(b) 47  
(c) 37  
(d) 36

**NUMBER SERIES**

46. Find the odd man out: 34, 105, 424, 2125, 12755.
- (a) 12755  
(b) 2125  
(c) 424  
(d) 34

**NUMBER SERIES**

47. Ram moves towards South-East a distance of 7 km, then he moves towards West and travels a distance of 14 km. from there he moves towards North-West a distance of 7 km and finally he moves a distance of 4 km towards east. How far is he now from the starting point?
- (a) 3 km  
(b) 4 km  
(c) 10 km  
(d) 11 km

**DIRECTION SENSE TESTS**

48. P, Q, R and S are playing a game of carom P, R and S, Q are partners, 'S' is to the right of 'R'. If 'R' is facing West, then 'Q' is facing which direction?
- (a) South  
(b) North  
(c) East  
(d) West

**DIRECTION SENSE TESTS**

49. One morning a boy starts walking in a particular direction for 5 Km and then takes a left turn and walks another 5 Km. thereafter he again takes left turn and walks another 5 Km and at last he takes right turn and walks 5 Km. Now he sees his shadow in front of him. What direction he did start initially?

(a) South  
(b) North  
(c) West  
(d) East

**DIRECTION SENSE TESTS**

50. It is 3'o clock in a watch. If the minute hand points towards the North-East then the hour hand will point towards the

(a) South  
(b) South – West  
(c) North– West  
(d) South – East

**DIRECTION SENSE TESTS**

51. A man is facing west. He turns  $45^{\circ}$  in the clockwise direction and then another  $180^{\circ}$  in the same direction and then  $270^{\circ}$  in the anticlockwise direction. Find which direction he is facing now?

(a) South-East  
(b) West  
(c) South  
(d) South-West

**DIRECTION SENSE TESTS**

52. Six persons A, B, C, D, E and F are sitting in two rows with three persons in each row. Both rows are in front of each other. E is not at the end of the any row and D is second left to the F, C is neighbour of E and diagonally opposite to D. If B is neighbour F who is in front of C then who is sitting diagonally to F?

(a) C  
(b) E  
(c) A  
(d) D

**SEATING ARRANGEMENT**

53. Five students are standing in a circle. Abhinav is between Alok and Ankur. Apurva is on the left of Abhishek. Alok is on the left of Apurva. Who is sitting next to Abhinav on his right?

(a) Apurva  
(b) Ankur  
(c) Abhishek  
(d) Alok

**SEATING ARRANGEMENT**

54. P, Q, R S and T are seated in a line facing west. R is sitting at north end and S is sitting at south end. T is neighbor of R and Q. P and Q are seated together, then who is sitting the middle?

(a) P  
(b) Q  
(c) R

**SEATING ARRANGEMENT**

- (d) S
55. Suresh's sister is the wife of Ram, Ram is Rani's brother. Ram's father is Madhur, Sheetal is Ram's grandmother, Rema is sheetal's daughter –in-law. Rohit is Rani's brother's son. Who is Rohit to Suresh?
- (a) Brother-in-law  
 (b) Son  
 (c) Brother  
 (d) Nephew
- BLOOD RELATION**
56. Pointing to a man, a lady said "His mother is the only daughter of my mother". How is the lady related of the man?
- (a) Mother  
 (b) Daughter  
 (c) Sister  
 (d) Aunt
- BLOOD RELATION**
57. In a joint family, there are father, mother, 3 married sons and one unmarried daughter. Out of the sons, two have 2 daughters each and one has a son only. How many female members are there in the family?
- (a) 3  
 (b) 6  
 (c) 9  
 (d) 8
- BLOOD RELATION**
58. When Rani saw Vinit, she recollected that "He is the brother of my grandfather's son". How is Rani related to Vinit?
- (a) Aunt  
 (b) Daughter  
 (c) Sister  
 (d) Niece
- BLOOD RELATION**
59. Annanya is mother of Satya and Shyam is the son of Bhima, Shiva is brother of Annanya. If Satya is sister of Shyam, How Bhima is related to Shiva?
- (a) Son  
 (b) Cousin  
 (c) Brother-in-law  
 (d) Son-in-law
- BLOOD RELATION**
60. Suman is daughter-in-law of Rakesh and sister-in-law of Rajesh, Ramesh is the son of Rakesh and only brother of Rajesh. Find the relation of Suman with Ramesh.
- (a) Sister-in-law  
 (b) Cousin  
 (c) Aunt  
 (d) Wife
- BLOOD RELATION**

## Part B: Statistics

61. The most accurate mode of data presentation is :
- Diagrammatic
  - Tabulation
  - Textual presentation
  - None of these.
62. Which is the left part of the table providing the description of the rows?
- Captain
  - Box head
  - Stub
  - Body
63. The mean of 100 observations is 50. If one of the observations which was 50 is replaced by 40, the resulting mean will be:
- 40
  - 49.90
  - 50
  - none of these
64. Ogive for more than type and less than type distributions intersect at
- Means
  - Median
  - Mode
  - Origin
65. If mean ( $\bar{x}$ ) is = 10 and mode (Z) is = 7, then find out the value of median (M)
- 9
  - 17
  - 3
  - 4.33
66. If the coefficient of variation and standard deviation are 60 and 12 respectively, then the arithmetic mean of the distribution is
- 40
  - 36
  - 20
  - 19

**STATISTICAL  
REPRESENTATION  
OF DATA**

**STATISTICAL  
REPRESENTATION  
OF DATA**

**CENTRAL  
TENDENCY**

**STATISTICAL  
REPRESENTATION  
OF DATA**

**CENTRAL  
TENDENCY**

**DISPERSION**



67. \_\_\_\_\_ is based on all the observations and \_\_\_\_\_ is based on the central fifty percent of the observations.
- (a) Mean deviation, Range **DISPERSION**
- (b) Mean deviation, quartile deviation
- (c) Range, standard deviation
- (d) Quartile deviation, standard deviation
68. The relationship between two variable  $x$  and  $y$  is given by  $4x - 10y = 20$ . If the median value of the variable  $x$  is 20 then what is median value of variable  $y$ ?
- (a) 1.0 **CENTRAL TENDENCY**
- (b) 2.0
- (c) 3.0
- (d) 6.0
69. Which one of the following is not a method of measures of dispersion?
- (a) Standard deviation **DISPERSION**
- (b) Mean deviation
- (c) Range
- (d) Concurrent deviation method
70. Mode is:
- (a) Least frequent value **CENTRAL TENDENCY**
- (b) Middle Most Value
- (c) Most frequent Value
- (d) None of these
71. The median of the observations 42, 72, 35, 92, 67, 85, 72, 81, 51, 56 is
- (a) 69.5 **CENTRAL TENDENCY**
- (b) 72
- (c) 64
- (d) 61.5
72. If the sum of square of the value equals to 3390, Number of observation are 30 and Standard deviation is 7, what is the mean value of the above observation?
- (a) 14 **DISPERSION**
- (b) 11
- (c) 8
- (d) 5

73. The mean annual salary of all employees in a company is ₹25,000. The mean salary of male and female employees is ₹27,000 and ₹17,000 respectively. Find the percentage of males and females employed by the company.

- (a) 60% and 40%
- (b) 70% and 25%
- (c) 70% and 30%
- (d) 80% and 20%

**CENTRAL  
TENDENCY**

74. If the variance of random variable 'x' is 18, then what is variance of  $y=2x+5$ ?

- (a) 34
- (b) 39
- (c) 68
- (d) 72

**DISPERSION**

75. If the variance of given data is 12, and their mean value is 40, what is coefficient of variation (CV)?

- (a) 5.66%
- (b) 6.66%
- (c) 7.50%
- (d) 8.65%

**DISPERSION**

76. In a given set if all data are of same value then variance would be:

- (a) 0
- (b) 1
- (c) -1
- (d) 0.5

**DISPERSION**

77. If Arithmetic mean between two numbers is 5 and Geometric mean is 4 then what is the value of Harmonic mean?

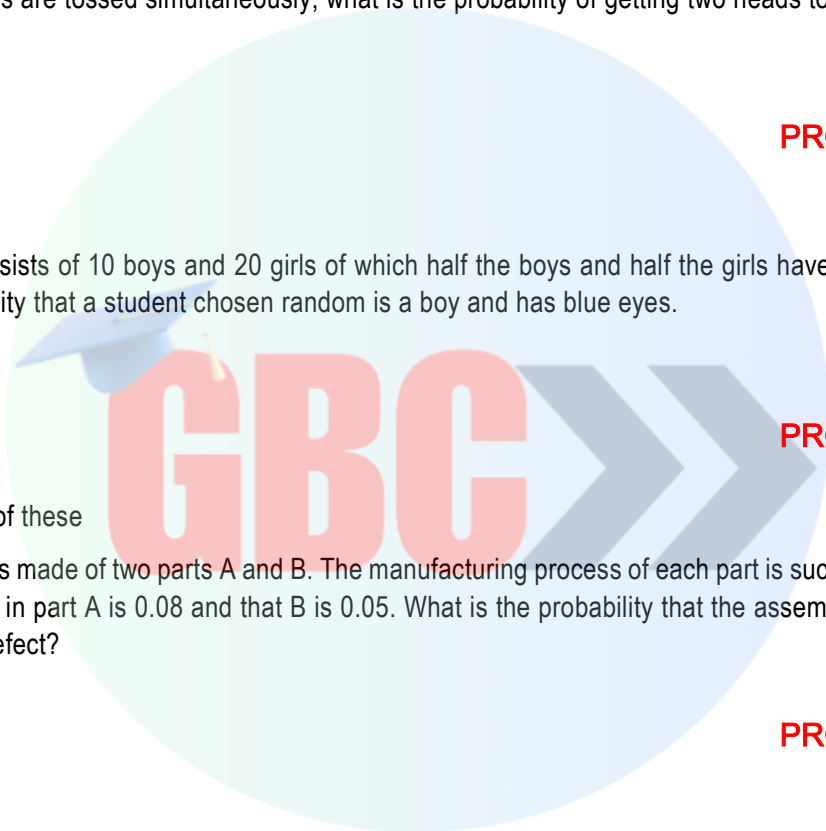
- (a) 3.2
- (b) 3.4
- (c) 3.5
- (d) 3.6

**CENTRAL  
TENDENCY**

78. The average age of 15 students in a class is 9 years. Out of them, the average age of 5 students is 13 years and that 8 students is 5 years. What is the average of remaining 2 students?

- (a) 5 years
- (b) 9 years
- (c) 10 years
- (d) 15 years

**CENTRAL  
TENDENCY**

79. Ticket numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn bears a number which is multiple of 3 or 7?
- (a)  $1/5$
  - (b)  $2/5$
  - (c)  $3/5$
  - (d) None of these
80. The probability that is leap year has 53 Sunday is:
- (a)  $1/7$
  - (b)  $2/3$
  - (c)  $2/7$
  - (d)  $3/5$
81. If three coins are tossed simultaneously, what is the probability of getting two heads together?
- (a)  $1/4$
  - (b)  $1/8$
  - (c)  $5/8$
  - (d)  $3/8$
82. A class consists of 10 boys and 20 girls of which half the boys and half the girls have blue eyes. Find the probability that a student chosen random is a boy and has blue eyes.
- (a)  $1/6$
  - (b)  $3/5$
  - (c)  $1/2$
  - (d) None of these
83. A machine is made of two parts A and B. The manufacturing process of each part is such that probability of defective in part A is 0.08 and that B is 0.05. What is the probability that the assembled part will not have any defect?
- (a) 0.934
  - (b) 0.864
  - (c) 0.85
  - (d) 0.874
84. If  $P(A)=1/3$ ,  $P(B)=3/4$  and  $P(A \cap B) = 1/6$  then  $P(A/B)$  is:
- (a)  $1/6$
  - (b)  $2/9$
  - (c)  $1/2$
  - (d)  $1/8$
- 
- PROBABILITY
- PROBABILITY
- PROBABILITY
- PROBABILITY
- PROBABILITY
- PROBABILITY

85. If a number is selected at random from the first 50 natural numbers, what will be the probability that the selected number is a multiple of 3 and 4?
- (a)  $5/50$   
 (b)  $2/25$   
 (c)  $3/50$   
 (d)  $4/25$
- PROBABILITY**
86. If the first quartile is 56 and the third quartile is 77, then the coefficient of quartile deviation is
- (a) 18.09  
 (b) 15.79  
 (c) 63.80  
 (d) 56.71
- DISPERSION**
87. Skewness of Normal Distribution is –
- (a) Negative  
 (b) Positive  
 (c) Zero  
 (d) Undefined
- PROBABILITY DISTRIBUTION**
88. If Poisson distribution is such that  $P(X = 2) = P(X = 3)$  then the Standard Deviation of the distribution is
- (a)  $\sqrt{3}$   
 (b) 3  
 (c) 6  
 (d) 9
- PROBABILITY DISTRIBUTION**
89. The Standard Deviation of Binomial distribution is:
- (a)  $npq$   
 (b)  $\sqrt{npq}$   
 (c)  $np$   
 (d)  $\sqrt{np}$
- PROBABILITY DISTRIBUTION**
90. The speeds of bikes follow a normal distribution model with a mean of 80 km/hr and a standard deviation of 9.4 km. /hr. Find the probability that a bike picked at random is travelling at more than 95 km/hr.?  $[P(z) = P(1.60)=0.4452]$
- (a) 0.0548  
 (b) 0.38  
 (c) 0.49  
 (d) 0.278
- PROBABILITY DISTRIBUTION**
91. The equations of the two lines of regression are  $4x + 3y + 7 = 0$  and  $3x + 4y + 8 = 0$ . Find the correlation coefficient between x and y.
- (a) -0.75

- (b) 0.25  
 (c) -0.92  
 (d) 1.25

**PROBABILITY**

92. The regression equation are  $2x + 3y + 1 = 0$  and  $5x + 6y + 1 = 0$ , then Mean of  $x$  and  $y$  respectively are

- (a) -1,-1  
 (b) -1,1  
 (c) 1, -1  
 (d) 2,3

**REGRESSION**

93. If  $b_{yx} = 0.5$ ,  $b_{xy} = 0.45$  then the value of correlation coefficient is:

- (a) 0.23  
 (b) 0.25  
 (c) 0.39  
 (d) 0.47

**CORRELATION**

94. Find the coefficient of rank correlation between the marks of following 6 students in two subjects Mathematics and Statistics is:

Mathematics	3	5	8	4	7	10
Statistics	6	4	9	8	1	2

- (a) - 0.26  
 (b) 0.35  
 (c) 0.38  
 (d) 0.20

**CORRELATION**

95. If  $Y$  is dependent variable and  $X$  is independent variable and the S.D. of  $X$  and  $Y$  are 5 and 8 respectively and Co-efficient of co-relation between  $X$  and  $Y$  is 0.8. Find the Regression coefficient of  $Y$  on  $X$ :

- (a) 0.78  
 (b) 1.28  
 (c) 6.8  
 (d) 0.32

**CORRELATION**

96. Fisher's index number is called as ideal index number because it satisfies.

- (a) Factor reversal test  
 (b) Time reversal test  
 (c) Both factor and time reversal test  
 (d) Circular test


**INDEX NUMBER**

97. From the following data constructed the index number by Laspeyre's method

$$\sum P_1 Q_1 = 100, \sum P_0 Q_1 = 86, \sum P_0 Q_0 = 83, \sum P_1 Q_0 = 106$$

- (a) 130.36

**INDEX NUMBER**

- (b) 131.51  
(c) 130.59  
(d) 127.71
98. Which index measures the change from month to month in the cost of a representative basket of goods and services of the type bought by a typical household?
- (a) Retail Price Index  
(b) Laspeyre's Index **INDEX NUMBER**  
(c) Fisher's index  
(d) Paasche's Index
99. If Fisher's index = 150 and Paasche's Index = 144, then Laspeyre's index is \_\_\_\_\_
- (a) 147  
(b) 156.25 **INDEX NUMBER**  
(c) 104.17  
(d) 138
100. In price index, when a new commodity is required to be added, which of the following index is used?
- (a) Shifted price index  
(b) Splicing price index  
(c) Deflating price index **INDEX NUMBER**  
(d) Value price index
- 

**MOCK TEST PAPER I**  
**FOUNDATION COURSE**

**PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS**

**Key Part A: Business Mathematics and Logical Reasoning**

1	(a)	2	(a)	3	(a)	4	(c)	5	(a)
6	(b)	7	(a)	8	(b)	9	(c)	10	(d)
11	(d)	12	(c)	13	(d)	14	(c)	15	(d)
16	(a)	17	(c)	18	(b)	19	(b)	20	(a)
21	(b)	22	(c)	23	(a)	24	(c)	25	(a)
26	(c)	27	(c)	28	(a)	29	(b)	30	(c)
31	(d)	32	(a)	33	(d)	34	(a)	35	(b)
36	(a)	37	(c)	38	(a)	39	(c)	40	(c)
41	(d)	42	(d)	43	(b)	44	(b)	45	(c)
46	(a)	47	(c)	48	(b)	49	(b)	50	(d)
51	(d)	52	(c)	53	(d)	54	(b)	55	(d)
56	(a)	57	(c)	58	(d)	59	(c)	60	(d)

**Key Part B: Statistics**

61	(b)	62	(c)	63	(b)	64	(c)	65	(a)
66	(c)	67	(b)	68	(d)	69	(d)	70	(c)
71	(a)	72	(c)	73	(d)	74	(d)	75	(d)
76	(a)	77	(a)	78	(d)	79	(b)	80	(c)
81	(a)	82	(a)	83	(d)	84	(b)	85	(b)
86	(b)	87	(c)	88	(a)	89	(b)	90	(a)
91	(a)	92	(c)	93	(d)	94	(a)	95	(b)
96	(c)	97	(d)	98	(a)	99	(b)	100	(a)

**MOCK TEST PAPER II**  
**FOUNDATION COURSE**

**PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS**

Time: 2 Hours

Marks: 100

**Part A: Business Mathematics and Logical Reasoning**

1. The monthly incomes of A & B are in the ratio 4 : 5 and their monthly expenditures are in the ratio 5 : 7. If each saves ₹ 150 per month, find their monthly incomes.

- (a) (40; 50)  
(b) (50; 40)  
(c) (400; 500)  
(d) None of these

**RATIO**

2. Two vessels containing water and milk in the ratio 2 : 3 and 4 : 5 are mixed in the ratio 1 : 2. The ratio of milk and water in the resulting mixture.

- (a) 58 : 77  
(b) 77 : 58  
(c) 68 : 77  
(d) None of these

**PROPORTION**

3. If  $(x - 9) : (3x + 6)$  is the duplicate ratio of 4 : 9, find the value of x

- (a)  $x = 9$   
(b)  $x = 16$   
(c)  $x = 36$   
(d)  $x = 25$

**RATIO**

4. Value of  $(a^{1/8} + a^{-1/8})(a^{1/8} - a^{-1/8})(a^{1/4} + a^{-1/4})(a^{1/2} + a^{-1/2})$  is :

- (a)  $a + \frac{1}{a}$   
(b)  $a - \frac{1}{a}$   
(c)  $a^2 + \frac{1}{a^2}$   
(d)  $a^2 - \frac{1}{a^2}$

**INDICES**

5. If  $(25)^{150} = (25x)^{50}$  then the value of x will be

- (a)  $5^3$   
(b)  $5^4$   
(c)  $5^2$   
(d) 5

**INDICES**

6.  $7\log\left(\frac{16}{15}\right) + 5\log\left(\frac{25}{24}\right) + 3\log\left(\frac{81}{80}\right)$  is equal to

- (a) 0



- (b) 1 LOG
- (c)  $\log 2$
- (d)  $\log 3$
7.  $\log_4(x^2+x) - \log_4(x+1) = 2$ . find x LOG
- (a) 16
- (b) 0
- (c) -1
- (d) None of these
8. Given  $\log 2 = 0.3010$  and  $\log 3 = 0.4771$  then the value of  $\log 24$  LOG
- (a) 1.3081
- (b) 1.1038
- (c) 1.3801
- (d) 1.830
9. The value of y of fraction  $\frac{x}{y}$  exceeds with x by 5 and if 3 be added to both the fraction becomes  $\frac{3}{4}$ . Find the fraction, LINEAR EQUATION
- (a)  $\frac{12}{17}$
- (b)  $\frac{13}{17}$
- (c)  $-\frac{1}{3}$
- (d) None of these
10. Solve for x; y and z.  $\frac{xy}{y-x} = 210, \frac{xz}{z-x} = 140, \frac{yz}{y+z} = 140$  LINEAR EQUATION
- (a) 105;210;420
- (b) 100; 205;400
- (c) 95;215; 395
- (d) None of these
11. If difference between a number and its positive square root is 12; the numbers are LINEAR EQUATION
- (a) 9
- (b) 16
- (c) 25
- (d) None of these
12. On solving the inequalities  $6x + y > 18, x + 4y > 12, 2x + y > 10$ , we get the following situation : INEQUALITIES
- (a) (0, 18), (12, 0), (4, 2) & (7, 6)
- (b) (3, 0), (0, 3), (4, 2), & (7, 6)
- (c) (5, 0), (0, 10), (4, 2) & (7, 6)
- (d) (0, 18), (12, 0), (4, 2), (0, 0) and (7, 6)

13. Mr. A invested ₹ x in an organisation, it amounts to ₹ 150 at 5% p.a. S.I. and to ₹ 100 at 3% p.a. S.I. Then the value of x is

(a) ₹ 70  
 (b) ₹ 40  
 (c) ₹ 25  
 (d) None of these

**TIME VALUE AND  
MONEY**

14. Mrs. Sudha lent ₹ 4,000 in such a way that some amount to Mr. A at 3% p.a. S.I. and rest amount to B at 5% p.a. S.I., the annual interest from both is ₹ 144, Find the amount lent to Mr. A

(a) ₹ 2,800  
 (b) ₹ 1,200  
 (c) ₹ 2,500  
 (d) None of these

**TIME VALUE AND  
MONEY**

15. A certain sum of money becomes double at 5% rate of S.I. p.a. in a certain time, the time in years is

(a) 10 years  
 (b) 20 years  
 (c) 25 years  
 (d) None of these

**TIME VALUE AND  
MONEY**

16. A certain sum of money amounts to ₹ 5,000 in 5 years at 10% p.a. In how many years will it amount to ₹ 6,000 at same rate of S.I p.a.

(a) 10 years  
 (b) 8 years  
 (c) 6 years  
 (d) None of these

**TIME VALUE AND  
MONEY**

17. ₹ 1,25,000 is borrowed at compound interest at the rate of 2% for the 1<sup>st</sup> year, 3% for the second year and 4% for the 3<sup>rd</sup> year. Find the amount to be paid after 3 years.

(a) ₹ 125678  
 (b) ₹ 136587  
 (c) ₹ 163578  
 (d) ₹ 136578

**TIME VALUE AND  
MONEY**

18. A certain sum of money amounts to double in 5 years placed at a compound interest. In how many years will it amount to 16 times at same rate of interest?

(a) 12 years  
 (b) 20 years  
 (c) 24 years  
 (d) None of these

**TIME VALUE AND  
MONEY**

19. If the compound interest on a certain sum of money for 3 years at 5% p.a. be ₹50.44, then the Simple Interest (S.I) is

(a) ₹ 50

**TIME VALUE AND  
MONEY**

- (b) ₹ 49  
 (c) ₹ 48  
 (d) None of these
20. If the difference between C.I and S.I on a certain sum of money at 5% p.a. for 2 years is ₹ 1.50. Find the sum of money.
- (a) ₹ 600  
 (b) ₹ 500  
 (c) ₹ 400  
 (d) None of these
21. Find the present value of an annuity which pays ₹ 200 at the end of each 3 months for 10 years assuming money to be worth 5% converted quarterly?
- (a) ₹ 3473.86  
 (b) ₹ 3108.60  
 (c) ₹ 6265.38  
 (d) None of these
22. The amount of an annuity due consisting of 15 annual payments invested at 8% effective is ₹ 10,000. Find the size of each payment.
- (a) ₹ 873.86  
 (b) ₹ 108.60  
 (c) ₹ 341.01  
 (d) None of these
23. A company is considering proposal of purchasing a machine full payment of ₹4000 or by leasing it for 4 years at an annual rate of ₹1250. Which course of action is preferable if the company can borrow money at 14% compounded annually?
- (a) Purchasing  
 (b) Leasing  
 (c) Both are same  
 (d) None of these
24. Find the purchase price of a ₹ 1000 bond redeemable at the paying annual dividends at 4% if the yield rate is to be 5% effective.
- (a) ₹ 884.16  
 (b) ₹ 984.17  
 (c) ₹ 1084.16  
 (d) None of these
25. The future value of an annuity of ₹ 5,000 is made annually for 8 years at interest rate of 9% compounded annually. [Given that  $(1.09)^8 = 1.99256$ ]
- (a) ₹ 55,142.22  
 (b) ₹ 65,142.22  
 (c) ₹ 65,532.22

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

**TIME VALUE AND  
MONEY**

- (d) ₹ 57,425.22
26. Paul borrows ₹ 20,000 on condition to repay it with compound interest at 5% p.a. in annual instalment of ₹ 2,000 each. Find the number of years in which the debt would be paid off.
- (a) 10 years  
(b) 12 years  
(c) 14 years  
(d) 15 years
27. How many numbers of 3 digits can be made by using digits 3, 5, 6, 7 and 8. No. digit being repeated.
- (a) 120  
(b) 60  
(c) 100  
(d) None of these
28. In how many ways of the word "MATHEMATICS" be arranged so that the vowels always occur together?
- (a)  $11! (2!)^3$   
(b)  $(8! \times 4!) + (2!)^3$   
(c)  $12! + (2!)^3$   
(d) None of these
29. If  ${}^{20}C_r = {}^{20}C_{r+6}$ . Then the value of r is
- (a) 10  
(b) 7  
(c) 11  
(d) None of these
30. If 20 A.M.s. are inserted between 3 and 51 then sum of these 20 A.M.s is
- (a) 540  
(b) 1080  
(c) 270  
(d) None of these
31. The sum upto infinity of the series  $S = \frac{1}{2} + \frac{1}{6} + \frac{1}{18} + \dots$  is
- (a)  $\frac{5}{4}$   
(b)  $\frac{3}{4}$   
(c)  $\frac{7}{3}$   
(d) None of these
32. Find the sum to n terms of the series:  $7+77+777+ \dots$  to n terms:
- (a)  $\frac{7}{9}(10^{n+1}-10) - \frac{7n}{9}$

**TIME VALUE AND  
MONEY**

**PERMUTATION &  
COMBINATION**

**PERMUTATION &  
COMBINATION**

**PERMUTATION &  
COMBINATION**

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

- (b)  $\frac{7}{9}(10^{n+1}-10)+\frac{7n}{9}$
- (c)  $\frac{7}{9}\left[\frac{10(10^n-1)}{9}-n\right]$
- (d)  $\frac{7}{81}(10^{n+1}-10)+\frac{7n}{9}$

33. Out of 20 members in a family, 11 like to take tea and 14 like coffee. Assume that each one likes at least one of the two drinks. Find how many like both coffee and tea:

- (a) 2  
 (b) 3  
 (c) 4  
 (d) 5

**PERMUTATION &  
COMBINATION**

34. If  $f(x) = \frac{x}{\sqrt{1+x^2}}$  and  $g(x) = \frac{x}{\sqrt{1-x^2}}$  Find fog?

- (a)  $x$   
 (b)  $\frac{1}{x}$   
 (c)  $\frac{x}{\sqrt{1-x^2}}$   
 (d)  $x\sqrt{1-x^2}$

**FUNCTIONS**

35. The range of the relation  $\{(1,0)(2,0)(3,0)(4,0)(0,0)\}$  is

- (a)  $\{1,2,3,4,0\}$   
 (b)  $\{0\}$   
 (c)  $\{1,2,3,4\}$   
 (d) None of these

**FUNCTIONS**

36. The slope of the tangent at the point  $(2, -2)$  to the curve  $x^2 + xy + y^2 - 4 = 0$  is given by :

- (a) 0  
 (b) 1  
 (c) -1  
 (d) None of these

**DIFFERENTIAL  
CALCULUS**

37. If  $y = 2x + \frac{4}{x}$ , then  $x^2 \frac{d^2y}{dx^2} + x \frac{dy}{dx} - y$  then yields

- (a) 3  
 (b) 1  
 (c) 0  
 (d) 4

**DIFFERENTIAL  
CALCULUS**

38.  $\int (\sqrt{x} + \frac{1}{\sqrt{x}}) dx$

- (a)  $2x^{\frac{1}{2}} \left(\frac{1}{3}x - 1\right)$   
 (b)  $2x^{\frac{1}{2}} \left(\frac{1}{3}x + 1\right)$

**INTEGRAL  
CALCULUS**

- (c)  $2\left(\frac{1}{3}x + x^{1/2}\right)$
- (d) None of these
39.  $\int \frac{6x+4}{(x-2)(x-3)} dx$  is equal to
- (a)  $22 \log(x-3) - 16 \log(x-2)$
- (b)  $11 \log(x-3) - 8 \log(x-2)$
- (c)  $22 \log(x-3) - 16 \log(x-2)$
- (d)  $232 \log(x-3) + 16 \log(x-2)$
40. The 4<sup>th</sup> term of an A.P. is three times the first and the 7<sup>th</sup> term exceeds the third term by 1. Find the first term 'a' and common difference 'd'.
- (a)  $a = 3, d = 2$
- (b)  $a = 4, d = 3$
- (c)  $a = 5, d = 4$
- (d)  $a = 6, d = 5$
41. Find next term of the series 10, 69, 236, 595, ?
- (a) 1254
- (b) 1020
- (c) 1320
- (d) 1200
42. In certain code language, BOARD is coded as CQDVI, what is the code for the word CONSULTING?
- (a) DQQWZRARNQ
- (b) DQQWZARQWQ
- (c) DQQWZRAQWQ
- (d) None of these
43. In a certain code language if CAMP is written as 9, then in the same code how will the word TEAM be written?
- (a) 14
- (b) 19
- (c) 27
- (d) 33
44. Which number will come next in the following series? 675, 623, 573, 525?
- (a) 491
- (b) 479
- (c) 423
- (d) 456

**INTEGRAL  
CALCULUS**

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

**NUMBER SERIES**

**NUMBER SERIES**

**NUMBER SERIES**

**NUMBER SERIES**

45. Identify the sequence of letters and find out the missing number. AGM, DJP, HNT, \_\_\_\_

- (a) MSY
- (b) NTZ
- (c) LRX
- (d) KQW

**NUMBER SERIES**

46. 105, 115.5, 150, 162.5, 203, ?

- (a) 217
- (b) 217.5
- (c) 210.5
- (d) None of these

**NUMBER SERIES**

Directions (47-48) Read the following information carefully and answer that questions that follow.

Eight friends A, B, C, D, E, F, G and H are sitting in a circle facing the Centre, B is sitting between G and D. H is third to the left of B and second to the right of A. C is sitting between A and G and B and E are not sitting opposite to each other.

47. Who is third to the left of D ?

- (a) F
- (b) E
- (c) A
- (d) Cannot be determined

**SEATING  
ARRANGEMENT**

48. Which of the following statement is not correct ?

- (a) D and A are sitting opposite to each other
- (b) C is third to the right of D
- (c) E is sitting F and D
- (d) A is sitting C and F

**SEATING  
ARRANGEMENT**

49. Six friends A, B, C, D, E and F are sitting in a row facing East. C is between A and E. B is just to the right of E but left of D. F is not at the right end. Who is at the right end?

- (a) D
- (b) B
- (c) E
- (d) C

**SEATING  
ARRANGEMENT**

50. Ram walks 30 km East then turns right and walks for another 16 km. He then again turns right and walks for another 16 km. He then turns left & walks for another 14 km. Then he turns right & walks for 14 km. How far is he from his initial point?

- (a) 26 km
- (b) 24 km
- (c) 22 km

**DIRECTION SENSE  
TESTS**

- (d) None of these

**Directions (Illustrations 51-52)** Study the following information carefully and answer the questions given below.

Six friends A, B, C, D, E and F are sitting in a row facing towards North. C is sitting between A and E. D is not at the end. B is sitting at immediate right of E. F is not at the right end but D is sitting at 3<sup>rd</sup> left of E.

51. How many persons are there to the right of D?

- (a) One  
(b) Two  
(c) Three  
(d) Four

**SEATING  
ARRANGEMENT**

52. Which of the following is sitting to the left of D?

- (a) F  
(b) C  
(c) E  
(d) A

**SEATING  
ARRANGEMENT**

53. A man walks 5 km south and then turns to the right. After walking 3 km he turns to the left and walks 5 km. Now in which direction is he from the starting place?

- (a) East  
(b) South  
(c) North-East  
(d) South-West

**DIRECTION SENSE  
TESTS**

54. If South-East becomes North, North-East becomes West and so on. What will West become?

- (a) North-East  
(b) North-West  
(c) South-East  
(d) North-East

**DIRECTION SENSE  
TESTS**

55. One evening before sunset Rekha and Hema were talking to each other face to face. If Hema's shadow was exactly to the right of Hema, which direction was Rekha facing?

- (a) North  
(b) South  
(c) West  
(d) East

**DIRECTION SENSE  
TESTS**

56. If A+B means, "A is the son of B"

A-B means, "A is the daughter of B"

A\*B means, "A is the wife of B"

A\$B means, "A is the sister of B".

If A\$B-C\*D is true, how is D related to B?

**BLOOD RELATION**



- (a) Wife
- (b) Father
- (c) Grandmother
- (d) Grandfather

57. In a certain language, '+' means father of, '-' means daughter of, '\*' means son of, and '/' means mother of. For example, X+Y-Z means that X is the father of Y and Y is the daughter of Z.

A + F - K / G + L \* H

How is H related to A?

**BLOOD RELATION**

- (a) Sister-in-law
- (b) Daughter-in-Law
- (c) Daughter
- (d) Grand-Daughter

58. The brother of X's mother is the only son of Y's mother's father. How is Y's mother related to X.

- (a) Mother
- (b) Daughter
- (c) Grandmother
- (d) Cannot be determined

**BLOOD RELATION**

59. If X + Y means X is the mother of Y;

X - Y means X is the brother of Y;

X % Y means X is the father of Y and

X x Y means X is the sister of Y,

which of the following shows that O is the maternal uncle of L?

**BLOOD RELATION**

- (a) L - N + M x O
- (b) O + S x N - L
- (c) O - M + N x L
- (d) L - S % O

**BLOOD RELATION**

60. A man said to a woman, —Your mother's husband's sister is my aunt. || How is the woman related to the man?

- (a) Granddaughter
- (b) Daughter
- (c) Sister
- (d) Aunt

**BLOOD RELATION**

### Part B – Statistics

61. Which of the following is a correct statement?

- (a) Range is unaffected by the change in origin or change in scale

**DISPERSION**

- (b) Range is affected by the change in origin or change in scale  
 (c) Range is unaffected by the change in origin but affected by change in scale  
 (d) Range is affected by the change in origin but unaffected by change in scale
62. In case of extreme sampling fluctuations, which is the best measure of dispersion?  
 (a) Quartile Deviation  
 (b) Standard Deviation  
 (c) Mean Deviation  
 (d) Range
63. A shopkeeper wants to place an order for t-shirts with the wholesaler based on past sales data. The size he orders will be decided looking at the \_\_\_\_\_ of past sales data?  
 (a) Mean  
 (b) Median  
 (c) Mode  
 (d) None of the above
64. The students of a class  $X^{\text{th}}$  have an average weight of 50 kg. The strength of the class is 49 students. On including the weight of the Principal, the average weight shoots up by 0.8 kg. Find the weight of the Principal?  
 (a) 75  
 (b) 90  
 (c) 85  
 (d) None of these
65. The average of  $(p+q)$  consecutive numbers starting from 1 is 'r'. If 's' is added to each of the numbers then the new average will be?  
 (a)  $r+s$   
 (b)  $r+(s/2)$   
 (c)  $\{r + (p+q+s)\}/(p+q)$   
 (d) None of these
66. The average weight of 40 people is increased by 2.4 kg when one man weight 73 kg is replaced by another man. Find the weight of the new man?  
 (a) 121  
 (b) 169  
 (c) 154  
 (d) 149

DISPERSION

CENTRAL  
TENDENCYCENTRAL  
TENDENCYCENTRAL  
TENDENCYCENTRAL  
TENDENCY

67. The average salary of the whole employees in a company is ₹400 per day. The average salary of officers is ₹ 800 per day and that of clerks is ₹ 320 per day. If the number of officers is 40, then find the number of clerks in the company?

- (a) 50
- (b) 100
- (c) 150
- (d) 200

**CENTRAL  
TENDENCY**

68. The average of 6 numbers is 30. If the average of the first four is 25 and that of the last three is 35, the fourth number is

- (a) 25
- (b) 30
- (c) 35
- (d) 40

**CENTRAL  
TENDENCY**

69. Perpendicular is drawn from the point of intersection of 2 Ogives on the horizontal axis. The value of  $x$  denotes:

- (a) First Quartile
- (b) Second Quartile
- (c) Third Quartile
- (d) Any of the above

**CENTRAL  
TENDENCY**

70. In study of impact of novel Coronavirus in the world, a frequency graph is plotted for age on the  $x$  axis and fatalities on the  $y$  axis. Which frequency curve is most expected as the output?

- (a) J shaped curve
- (b) U shaped curve
- (c) Bell shaped curve
- (d) Mixed shaped curve

**STATISTICAL  
REPRESENTATION  
OF DATA**

71. AM and GM are both negative values, HM is equal to:

- (a)  $H = \frac{G}{A^2}$
- (b)  $H = \frac{G^2}{A}$
- (c)  $H = \frac{G^2}{\sqrt{A}}$
- (d) None of the above

**CENTRAL  
TENDENCY**

72. Which of the following is the correct relation between mean, median and mode

- (a) Median = mode +  $\frac{2}{3}$  (mean – mode)
- (b) 2Mean = Mode - 3Median
- (c) 2Mean = Mode + 3Median

**CENTRAL  
TENDENCY**

(d)  $\text{Mode} = 3\text{Median} + 2\text{Mean}$

73. A student marks were wrongly entered as 85 instead of 45. Due to that the average marks for the whole class got increased by one-fourth. The no. of students in the class is?

- (a) 80
- (b) 160
- (c) 40
- (d) 20

**CENTRAL  
TENDENCY**

74. Find the mean deviation about mean for the numbers: 2,6,7,4,8,3

- (a) 4
- (b) 6
- (c) 5
- (d) 2

**DISPERSION**

75. If Quartile deviation is 7. Find the value of x from the arranged series: 2, x, 6, 7, 9, 16, 18.

- (a) 5
- (b) 2
- (c) 8
- (d) 6

**DISPERSION**

76. There are two startups in ecommerce sector struggling to acquire the market. Following data is for Mean and Standard Deviation of billing amount of bought items per month on their website

Startup	No. of customers/ month	Mean billing amount	SD of billing amount
A	40	₹ 2500	₹10
B	30	₹2200	₹11

Which startup has a better consistency when it comes to sales numbers?

- (a) Startup A
- (b) Startup B
- (c) Both A and B
- (d) Need more information

**DISPERSION**

77. If a card is drawn randomly from a deck, the probability of the card being neither a red card nor a face card?

- (a)  $5/13$
- (b)  $6/17$
- (c)  $12/27$
- (d)  $5/7$

**PROBABILITY**

78. From a deck of 52 cards, two cards are drawn at random. What is the probability that they are a king and a queen, if the cards are drawn one after the other without replacement?

(a)  $\frac{4}{52} \times \frac{4}{51}$

(b)  $2 \times \frac{4}{52} \times \frac{4}{51}$

(c)  $\frac{4}{52} \times \frac{3}{51} \times \frac{4}{52} \times \frac{3}{51}$

(d) None of these

**PROBABILITY**

79. In a poker set there are 90 chips numbered from 1 to 90. Dan picks 3 chips at random, one after the other, without replacement. What is the probability that the numbers on the chips, in the order that he picks them are in descending order?

(a)  $\frac{1}{3}$

(b)  $\frac{1}{30}$

(c)  $\frac{1}{6}$

(d) None of these

**PROBABILITY**

80. A number is selected at random from first 70 natural numbers. What is the chance that it is a multiple of either 5 or 14?

(a)  $6/35$

(b)  $8/35$

(c)  $10/35$

(d) None of these

**PROBABILITY**

81. If two dice are thrown then what is the probability that the sum of the faces of dice are square or cube number?

(a)  $1/4$

(b)  $1/2$

(c)  $1/3$

(d) None of these

**PROBABILITY**

82. Probability of Ramesh & Deepak speaking truth is  $1/4, 3/5$ . Find the probability of atmost one of them speaks truth.

(a) 0.60

(b) 0.85

(c) 0.75

(d) None of these

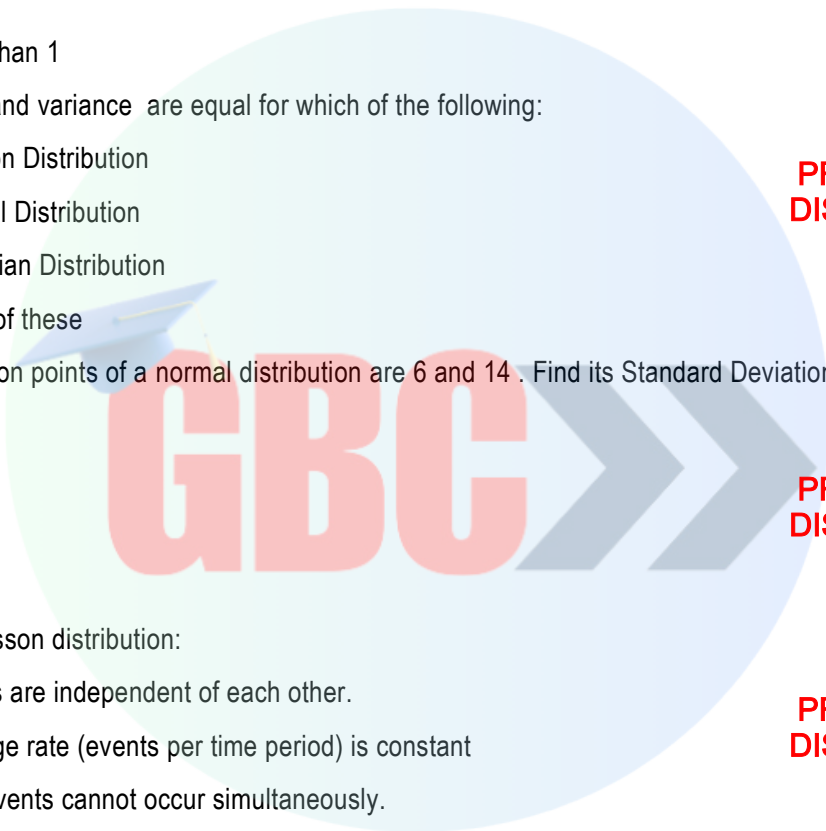
**PROBABILITY**

83. To find the distribution of number of airplanes crashing every hour in the world, which of the following distribution is appropriate to apply:

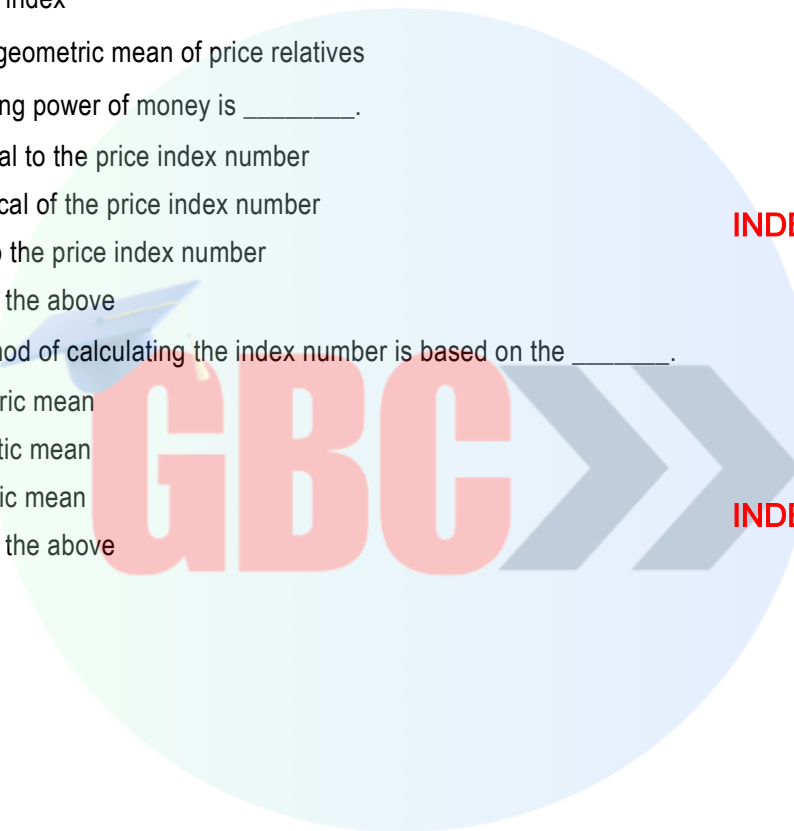
(a) Normal distribution

(b) Binomial distribution

**PROBABILITY  
DISTRIBUTION**

- (c) Poisson distribution  
(d) Using any of the above will yield the same output
84. Which of the following is not a property of normal distribution?
- (a) There are two points of inflexion.  
(b) Mean, median and mode coincide for normal distribution  
(c) Skewness is zero  
(d) All the above
85. For a continuous random variable following standard normal distribution, what is the value of standard deviation?
- (a) 1  
(b) 0  
(c) -1  
(d) More than 1
86. The mean and variance are equal for which of the following:
- (a) Poisson Distribution  
(b) Normal Distribution  
(c) Gaussian Distribution  
(d) None of these
87. If the inflexion points of a normal distribution are 6 and 14. Find its Standard Deviation
- (a) 4  
(b) 6  
(c) 10  
(d) 12
88. For the Poisson distribution:
- (a) Events are independent of each other.  
(b) Average rate (events per time period) is constant  
(c) Two events cannot occur simultaneously.  
(d) All of the above
89. Normal distribution is also known as
- (a) Gaussian distribution  
(b) Binomial distribution  
(c) Poisson distribution  
(d) None of these
- PROBABILITY DISTRIBUTION**
- PROBABILITY DISTRIBUTION**
- PROBABILITY DISTRIBUTION**
- PROBABILITY DISTRIBUTION**
- PROBABILITY DISTRIBUTION**
- PROBABILITY DISTRIBUTION**
- PROBABILITY DISTRIBUTION**
- 

90. In regression analysis, which of the following can be in the form of an index number?
- Only dependent variable
  - Only independent variable
  - Both A and B
  - Need more information
- REGRESSION**
91. A scatter diagram of two variables developing a pattern of multiple circular rings represents which kind of correlation?
- Positive
  - Negative
  - Curvilinear
  - No correlation
- CORRELATION**
92. Which of the following is the best measure to calculate the volatility of stock market?
- Covariance
  - Standard Deviation
  - Variance
  - All of the above
- CORRELATION**
93. If both the regression coefficients are negative, what will be coefficient of correlation?
- Negative
  - Positive
  - Can be either positive or negative
  - Cannot be determined
- CORRELATION**
94. Correlation between unrelated variables is not because of:
- Coefficient of non-determination
  - Existence of third variable related to both the variables
  - Spurious correlation
  - None of the above
- CORRELATION**
95. If the regression equation of two variables are  $5x - y = 4$  and  $3x - 2y = 1$ . Find the arithmetic means of  $x$  and  $y$
- 2,1
  - 2,2
  - 1,1
  - Cannot be determined.
- REGRESSION**
96. If Laspeyres index is  $A$  and Fisher's index is  $B$ . Find the value of Passche's index
- $B^2 / A$
  - $A^2 / B$
- INDEX NUMBER**

- (c)  $A / 2B$   
(d)  $2B / A$
97. Which test should be considered necessarily to verify the consistency while we select an appropriate index formula
- (a) Circular test  
(b) Time reversal test  
(c) Factor reversal test  
(d) Both b and c
98. Circular test is satisfied by which of the following index?
- (a) Laspeyres index  
(b) Paasche's index  
(c) Fisher's index  
(d) Simple geometric mean of price relatives
99. The purchasing power of money is \_\_\_\_\_.
- (a) Not equal to the price index number  
(b) Reciprocal of the price index number  
(c) Equal to the price index number  
(d) None of the above
100. Fisher's method of calculating the index number is based on the \_\_\_\_\_.
- (a) Geometric mean  
(b) Arithmetic mean  
(c) Harmonic mean  
(d) None of the above
- 
- INDEX NUMBER**
- INDEX NUMBER**
- INDEX NUMBER**
- INDEX NUMBER**



## MOCK TEST PAPER II

## FOUNDATION COURSE

## PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

## Key Part A: Business Mathematics and Logical Reasoning

1	(c)	2	(b)	3	(d)	4	(b)	5	(b)
6	(c)	7	(a)	8	(a)	9	(a)	10	(a)
11	(b)	12	(a)	13	(c)	14	(a)	15	(b)
16	(b)	17	(d)	18	(b)	19	(c)	20	(a)
21	(c)	22	(c)	23	(b)	24	(b)	25	(a)
26	(c)	27	(b)	28	(b)	29	(b)	30	(a)
31	(b)	32	(c)	33	(d)	34	(a)	35	(b)
36	(b)	37	(c)	38	(b)	39	(c)	40	(a)
41	(a)	42	(c)	43	(c)	44	(b)	45	(a)
46	(b)	47	(a)	48	(c)	49	(a)	50	(d)
51	(d)	52	(a)	53	(d)	54	(c)	55	(b)
56	(b)	57	(b)	58	(a)	59	(c)	60	(c)

## Key Part B: Statistics

61	(c)	62	(a)	63	(c)	64	(b)	65	(a)
66	(b)	67	(d)	68	(a)	69	(b)	70	(a)
71	(b)	72	(a)	73	(b)	74	(d)	75	(b)
76	(a)	77	(a)	78	(b)	79	(c)	80	(d)
81	(c)	82	(b)	83	(c)	84	(d)	85	(a)
86	(a)	87	(a)	88	(d)	89	(a)	90	(c)
91	(d)	92	(b)	93	(a)	94	(c)	95	(c)
96	(a)	97	(d)	98	(d)	99	(b)	100	(a)

**MOCK TEST PAPER I**  
**FOUNDATION COURSE**

**PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS**

Time: 2 Hours

Marks: 100

**Part A: Business Mathematics and Logical Reasoning**

1. What is the value of  $\frac{p+q}{p-q}$  if  $\frac{p}{q} = 7$

- (a) 4/3
- (b) 2/3
- (c) 2/6
- (d) 7/8

PROPORTION

2. If  $x/2 = y/3 = z/7$ , then the value of  $(2x - 5y + 4z)/2y$  is

- (a) 6/23
- (b) 23/6
- (c) 3/2
- (d) 17/6

LINEAR EQUATION

3. If  $x : y = 3 : 4$ , the value of  $x^2y + xy^2 : x^3 + y^3$  is

- (a) 13 : 12
- (b) 12 : 13
- (c) 21 : 31
- (d) none of these

LINEAR EQUATION

4. If  $a^x = b$ ,  $b^y = c$ ,  $c^z = a$ , then  $xyz$  is

- (a) 1
- (b) 2
- (c) 3
- (d) none of these

INDICES

5. Given that  $\log_{10}2 = x$  and  $\log_{10}3 = y$ , the value of  $\log_{10}120$  is expressed as

- (a)  $2x - y + 1$
- (b)  $2x + y + 1$
- (c)  $2x - y - 1$
- (d) none of these

LOG

6. The simplified value of  $2 \log_{10} 5 + \log_{10} 8 - \frac{1}{2} \log_{10} 4$  is

- (a)  $1/2$
- (b) 4
- (c) 2
- (d) none of these

LOG

7. If  $\log \left( \frac{a+b}{4} \right) = \frac{1}{2} (\log a + \log b)$  then  $\frac{a}{b} + \frac{b}{a}$

- (a) 12
- (b) 14
- (c) 16
- (d) 8

LOG

8. If  $\frac{\sqrt{x+5} + \sqrt{x-16}}{\sqrt{x+5} - \sqrt{x-16}} = \frac{7}{3}$  then x equals

- (a) 10
- (b) 20
- (c) 30
- (d) 40

INDICES

9. If  $x = 3^{\frac{1}{4}} + 3^{-\frac{1}{4}}$  and  $y = 3^{\frac{1}{4}} - 3^{-\frac{1}{4}}$  then the value  $3(x^2 + y^2)^2$  will be

- (a) 12
- (b) 18
- (c) 46
- (d) 64

INDICES

10. If the ratio of the roots of the Equation  $4x^2 - 6x + p = 0$  is 1:2 then the value of p is :

- (a) 1
- (b) 2
- (c) -2
- (d) -1

QUADRATIC  
EQUATION

11. If  $2x+5 > 3x+2$  and  $2x-3 \leq 4x-5$ , then x takes which of the following value ?

- (a) 4
- (b) -4

INEQUALITIES

- (c) 2
- (d) -2

12 Solve for x of the Inequalities  $2 \leq \frac{3x-2}{5} \leq 4$  where  $x \in \mathbb{N}$

- (a) {5,6,7}
- (b) {3,4,5,6}
- (c) {4,5,6}
- (d) {4,5,6,7}

**INEQUALITIES**

13. The amount charged for a defined length of time for uses of principal, generally on year basis is known as

- (a) Balance
- (b) Rate of Interest
- (c) Principal
- (d) Interest

**TIME VALUE AND MONEY**

14. The sum required to earn a monthly interest of Rs.1200 at 18% p.a Simple Interest is –

- (a) Rs. 50,000
- (b) Rs. 60,000
- (c) Rs.80,000
- (d) None of these

**TIME VALUE AND MONEY**

15. Sachin deposited Rs.1,00,000 in his bank for 2 years at simple interest of 6%. How much interest would he earn? How much final value of deposit

- (a) Rs.6,000, Rs. 1,06,000
- (b) Rs.15,000, Rs.1,15,000
- (c) Rs.11,600, Rs.1,11,600
- (d) Rs.12,000, Rs.1, 12,000

**TIME VALUE AND MONEY**

16. The ratio of principal and the compounded interest value for three years (Compounded annually) is 216:127. The rate of interest is

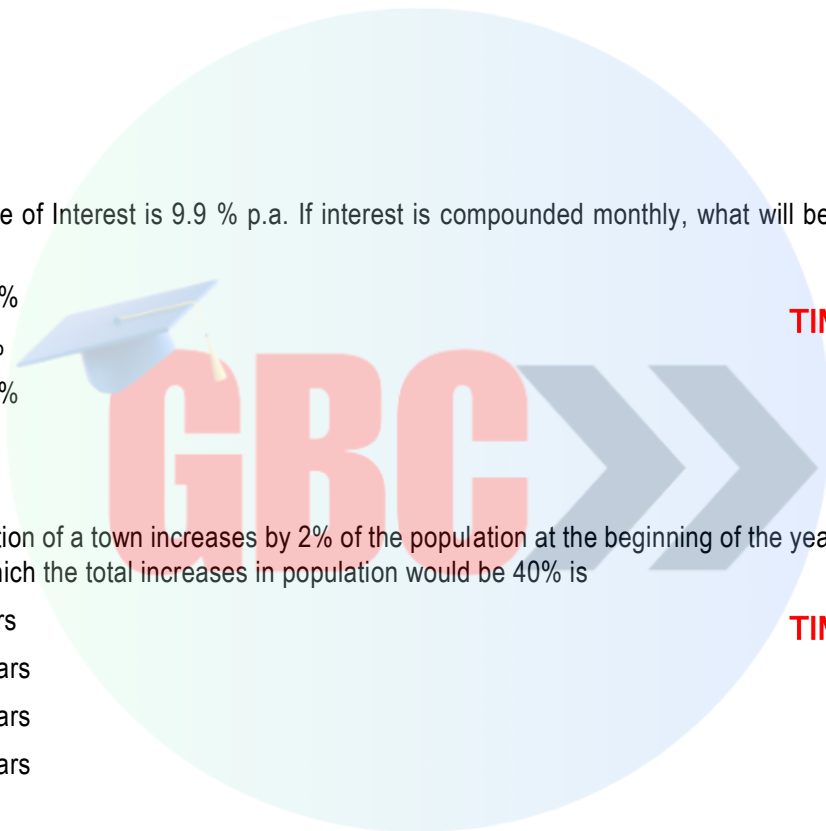
- (a) 0.1777
- (b) 0.1567
- (c) 0.1666
- (d) 0.1587

**TIME VALUE AND MONEY**

17 The Compounded interest Rs.8000 for 6 months at 12% p.a payable quarterly is

- (a) Rs.487.20
- (b) Rs.480

**TIME VALUE AND MONEY**

- (c) Rs.380  
(d) None of these
18. The annual birth and death rates per 1,000 are 39.4 and 19.4 respectively. The number of years in which the population will be doubled assuming there is no immigration or emigration is
- (a) 35 years  
(b) 30 years  
(c) 25 years  
(d) none of these
19. The simple interest on sum of money at 6% p.a for 7 years is equal to twice of simple interest on another sum for 9 years at 5 p.a. The ratio will be
- (a) 2:15  
(b) 7:15  
(c) 15. 7  
(d) 1:7
20. Nominal rate of Interest is 9.9 % p.a. If interest is compounded monthly, what will be effective rate of Interest.
- (a) 10.36%  
(b) 9.36%  
(c) 11.36%  
(d) 9.9%
21. The population of a town increases by 2% of the population at the beginning of the year. The number of years by which the total increases in population would be 40% is
- (a) 7 years  
(b) 10 years  
(c) 17 years  
(d) 19 years
22. A stock pays annually an amount of Rs. 10 from 6<sup>th</sup> year onwards . What is the present value of perpetuity, if the rate of return is 20%
- (a) 20.1  
(b) 19.1  
(c) 21.1  
(d) 22.1
- 
- TIME VALUE AND MONEY**
- TIME VALUE AND MONEY**
- TIME VALUE AND MONEY**
- TIME VALUE AND MONEY**

23. A sum of money invested in compounded interest doubles itself in four years. In how many years it becomes 32 times of itself as the same rate of compound interest ?

- (a) 12 years
- (b) 16 years
- (c) 20 years
- (d) 24 years

**TIME VALUE AND MONEY**

24. Sinking fund factor is the reciprocal of \_\_\_\_

- (a) Present value of interest factor of a single cash flow
- (b) Present value interest factor of annuity
- (c) Future value of Interest factor of annuity
- (d) Future value of Interest factor of a single cash flow

**TIME VALUE AND MONEY**

25. If the nominal rate of growth is 17% and inflation is 9% for the five years. Let P be the Gross domestic Product (GDP) amount at the present year then the projected real GDP after 6 years is

- (a) 1.587 P
- (b) 1.921P
- (c) 1.403P
- (d) 2.51 P

**TIME VALUE AND MONEY**

26. If discounted rate is 14% per annum , then how much company has to pay receive Rs.280 growing at 9% annually forever ?

- (a) Rs.5600
- (b) Rs.2800
- (c) Rs.1400
- (d) Rs.4200

**TIME VALUE AND MONEY**

27. A bag contains 4 red, 3 black and 2 white balls > In how many ways 3 balls can be drawn from this bag so that they include at least one black ball?

- (a) 64
- (b) 46
- (c) 85
- (d) None of the above

**PERMUTATIONS & COMBINATIONS**

28. The number of words from the letters of the word BHARAT, in which B and H will never come together is

- (a) 360
- (b) 240
- (c) 120

**PERMUTATIONS & COMBINATIONS**

(d) None of these

29. The value of N in  $\frac{1}{7!} + \frac{1}{8!} = \frac{N}{9!}$  is

- (a) 81
- (b) 78
- (c) 89
- (d) 64

**PERMUTATIONS &  
COMBINATIONS**

30. The 3<sup>rd</sup> term of a G.P is  $\frac{2}{3}$  and 6<sup>th</sup> term is  $\frac{2}{81}$ , then the first term is

- (a) 6
- (b)  $\frac{1}{3}$
- (c) 9
- (d) 2

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

31. A person pays Rs. 975 in monthly instalments, each instalment is less than former by Rs. 5. The amount of first instalment is Rs. 100. In what time will the entire amount be paid?

- (a) 26 months
- (b) 15 months
- (c) Both (a) & (b)
- (d) 18 months

**TIME VALUE AND  
MONEY**

32. If the sum of n terms of an A.P. is  $(3n^2 - n)$  and its common difference is 6, then its first term is:

- (a) 3
- (b) 2
- (c) 4
- (d) 1

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

33. In a survey of 300 companies, the number of companies using different media -Newspapers (N), Radio (R) and Television (T) are as follows:

$$N(N) = 200, n(R) = 100, n(T) = 40, n(N \cap R) = 50, n(R \cap T) = 20, n(N \cap R) = 25, \text{ and } n(N \cap R \cap T) = 5,$$

Find the numbers of companies using none of these media:

- (a) 20 companies
- (b) 250 companies
- (c) 30 companies
- (d) 50 companies

**SETS**

34. If  $f(x) = x+2$ ,  $g(x) = 7^x$ , then  $\text{gof}(x) =$

- (a)  $7^x \cdot x + 2 \cdot 7^x$
- (b)  $7^{x+2}$
- (c)  $49(7^x)$
- (d) None of these

**FUNCTIONS**

35. Let  $A = \{1, 2, 3\}$ , then the relation  $R = \{(1, 1), (2, 3), (2, 2), (3, 3), (1, 2)\}$  is called

- (a) Symmetric
- (b) Transitive
- (c) Reflexive
- (d) Equivalence

**FUNCTIONS**

36. The cost function for the production of  $x$  units of a commodity by  $C(x) = 2x^3 + 15x^2 + 36x + 15$  the cost will be minimum when ' $x$ ' is equal to

- (a) 3
- (b) 2
- (c) 1
- (d) 4

**DIFFERENTIAL  
CALCULUS**

37. If  $f(x) = x_{c_3}$  then  $f'(1) = ?$

- (a)  $1/6$
- (b)  $-1/6$
- (c)  $5/6$
- (d)  $-5/6$

**DIFFERENTIAL  
CALCULUS**

38. The equation of the curve which passes through the point  $(1, 2)$  and has the slope  $3x-4$  and the point of  $(x, y)$  is

- (a)  $2y = 3x^2 - 8x + 9$
- (b)  $y = 6x^2 - 8x + 9$
- (c)  $y = x^2 - 8x + 9$
- (d)  $2y = 3x^2 - 8x + c$

**DIFFERENTIAL  
CALCULUS**

39. The slope of the tangent to the curve  $y = \frac{x-1}{x+2}$  at  $x=2$  is

- (a)  $\frac{3}{16}$
- (b)  $-\frac{3}{16}$

**DIFFERENTIAL  
CALCULUS**



(c)  $-\frac{1}{4}$

(d)  $\frac{1}{4}$

40.  $\int_0^5 \frac{x^2 dx}{x^2 + (5-x)^2} =$

- (a) 5  
 (b) 5/2  
 (c) 1  
 (d) none of these

**INTEGRAL  
CALCULUS**

41. TWENTY is written as 863985 and ELEVEN is written as 323039, then TWELVE can be coded.

- (a) 863203  
 (b) 836203  
 (c) 826303  
 (d) 862303

**NUMBER SERIES**

42. Find next number of the series 7, 23, 47, 79, 119, 167, ?

- (a) 211  
 (b) 223  
 (c) 287  
 (d) 319

**NUMBER SERIES**

43. Find odd man out: 34, 105, 424, 2123, 12756.

- (a) 12756  
 (b) 2123  
 (c) 424  
 (d) 34

**NUMBER SERIES**

44. Find next term of the series A5A, C10C, E15E, G20G \_\_\_\_

- (a) I25I  
 (b) I20I  
 (c) J25J  
 (d) K20K

**NUMBER SERIES**

45. Find next term of the letter series QPO, NML, KJI, HGF, \_\_\_\_

- (a) EDC
- (b) HGE
- (c) CAB
- (d) GHI

**NUMBER SERIES**

46. If PLAY is coded as 8123 and RHYME is coded 49367. What will be code of MEAL?

- (a) 6712
- (b) 6198
- (c) 6395
- (d) 6721

**NUMBER SERIES**

47. The length and breadth of a room are 8 metre and 6 metre respectively. A cat runs along all four walls and finally along diagonal order to catch a rat. How much total distance covered by the cat?

- (a) 10
- (b) 14
- (c) 38
- (d) 48

**DIRECTION SENSE TESTS**

48. Ravi left home and cycled 10 km towards South, then turned right and cycled 5 km and then again turned right and cycled 10 km. After this he turned left and cycled 10 km. How many kilometers will he have to cycle to reach his home straight?

- (a) 10 km
- (b) 15 km
- (c) 12 km
- (d) 17 km

**DIRECTION SENSE TESTS**

49. Hari in order to go to university started from his house in the east and came to a crossing. The road to the left ends in a theatre, straight ahead is the hospital. In which direction is the university?

- (a) North
- (b) South
- (c) East
- (d) West

**DIRECTION SENSE TESTS**

50. Shivam started from his house towards west. After walking a distance of 15 m. He turned to the right and walked 10 m. He then again turned to the right and walked 5 m. After this he is to turn right at  $135^\circ$  and to cover 10 m. In which direction should he go?

- (a) South
- (b) South-West

**DIRECTION SENSE TESTS**

- (c) South-East
- (d) North

51. If  $A \times B$  means A is to the south of B;  $A + B$  means A is to the north of B;  $A \% B$  means A is to the east of B;  $A - B$  means A is to the west of B; then in  $P \% Q + R - S$ , S is in which direction with respect to Q?

- (a) South -West
- (b) South- East
- (c) North-East
- (d) North-West

**DIRECTION SENSE TESTS**

52. A, P, R, X, S and Z are sitting in a row. S and Z are in the centre. A and P are at the ends. R is sitting to the left of A. Who is to the right of P?

- (a) A
- (b) X
- (c) S
- (d) Z

**SEATING ARRANGEMENT**

53. Shyam, Sathish, Amar and Pavan are playing cards. Amar is to the right of Sathish, who is to the right of Shyam. Who is to the right of Amar?

- (a) Satish
- (b) Amar
- (c) Pavan
- (d) Shyam

**SEATING ARRANGEMENT**

54. In a line P is sitting 13<sup>th</sup> from left. Q is sitting 24<sup>th</sup> from the right and 3<sup>rd</sup> left from P. How many people are sitting are in the line?

- (a) 34
- (b) 31
- (c) 32
- (d) 33

**SEATING ARRANGEMENT**

55. P is the mother of K , K is the sister of D. D is the father of J . How is P related to J?

- (a) Mother
- (b) Grandmother
- (c) Aunt
- (d) Data is in adequate

**BLOOD RELATION**

56. If  $A+B$  means B is the brother of A;  $A \times B$  means B is the husband of A;  $A-B$  means A is the mother of B and  $A \% B$  means A is the father of B, which of the following relations shows that Q is the grandmother of T ?

- (a)  $Q-P+R\%T$
- (b)  $PXQ\%R-T$
- (c)  $P \times Q \% R + T$
- (d)  $P+Q\%R-T$

**BLOOD RELATION**

57. Read the following instructions:

$P \$ Q$  means P is the brother of Q;

$P \# Q$  means P is the mother of Q;

$P * Q$  means P is the daughter of Q

If the code of family is  $A \# B \$ C * D$ , who is the father in them?

- (a) D
- (b) B
- (c) C
- (d) A

**BLOOD RELATION**

**(58-59) There are seven members A, C, D, E, F, G and H in a family. There are two fathers, one mother, two sisters and four brothers. E is a sister-in-law of D. G is a daughter of C. F is the brother of E. A is a grandfather of G. E is a mother of H.**

58) How is H related to A?

- (a) Grandson
- (b) Granddaughter
- (c) Son
- (d) Cannot be determined

**BLOOD RELATION**

59. How many male members in the family?

- (a) 4
- (b) 5
- (c) 3
- (d) Data Inadequate

**BLOOD RELATION**

60. A is B's sister. C is B's mother. D is C's father. E is D's mother. Then how A is related to D.

- (a) Grandfather
- (b) Grandmother
- (c) Daughter
- (d) Granddaughter

**BLOOD RELATION**

## Part B – Statistics

61. A tabular presentation Can be Used for

- (a) Continuous data
- (b) Nominal data
- (c) Time Series data
- (d) Comparing different components

**STATISTICAL  
REPRESENTATION  
OF DATA**

62. When data are classified according one criterion, then it is called ----- classification

- (a) quantitative
- (b) qualitative
- (c) Simple
- (d) factored

**STATISTICAL  
REPRESENTATION  
OF DATA**

63. Census report are used as source of \_\_\_\_\_ data.

- (a) Secondary
- (b) Primary
- (c) Organize
- (d) Confidential

**STATISTICAL  
REPRESENTATION  
OF DATA**

64. In a graphical representation of data , the largest numerical value is 45 the smallest numerical value is 25. If classes desired are 4 then which class interval is

- (a) 45
- (b) 5
- (c) 20
- (d) 7.5

**STATISTICAL  
REPRESENTATION  
OF DATA**

65. A student marks in five subjects S1, S2, S3, , S4 and S5 are 86, 79, 90, 88 and 89 . If we need to draw a pie chart to represent these marks, what will be central angle for S3.

- (a)  $103.2^\circ$
- (b)  $75^\circ$
- (c)  $105.6^\circ$
- (d)  $94.8^\circ$

**STATISTICAL  
REPRESENTATION  
OF DATA**

66. The median following numbers , which are given in ascending order is 25. Find the value of x

11, 13 , 15 , 19 , (x+2) , (x+4) , 30, 35, 39, 46

- (a) 22
- (b) 20
- (c) 15
- (d) 30

**CENTRAL  
TENDENCY**

67. The mean salary of a group of 50 persons is Rs. 5850. Later on it is discovered that the salary of one has been wrongly taken as Rs.8000 instead of RS. 7800. The corrected mean salary is
- (a) Rs.5854
  - (b) Rs.5846
  - (c) Rs.5640
  - (d) none
- CENTRAL  
TENDENCY**
68. If the mode of a data is 18 and mean is 24, then median is
- (a) 18
  - (b) 24
  - (c) 22
  - (d) 21
- CENTRAL  
TENDENCY**
69. If the first Quartile is 142 and semi-inter quartile range is 18 , then the value of median is :
- (a) 151
  - (b) 160
  - (c) 178
  - (d) none of these
- CENTRAL  
TENDENCY**
70. Origin is shifted by 5, what will happen
- (a) SD will increase by 5
  - (b) QD will increase by 5
  - (c) MD will increase by 5
  - (d) There will be no change in SD
- DISPERSION**
71. The third decile for the numbers 15, 10, 25, 18, 11, 9 and 12 is
- (a) 13
  - (b) 10.70
  - (c) 11
  - (d) 11.50
- CENTRAL  
TENDENCY**
72. The Harmonic mean H of two numbers is 4 and their arithmetic means A and the geometric mean G satisfy the equation  $2A+G^2=27$  , the numbers are
- (a) (1,3)
  - (b) (9,5)
  - (c) (6,3)
  - (d) (12,7)
- CENTRAL  
TENDENCY**

73. If mean and coefficient of variation of the marks of 10 students is 20 and 80 respectively. What will be the variance of them ?

- (a) 256
- (b) 16
- (c) 25
- (d) none of these

**DISPERSION**

74. If the same amount is added or subtracted from all the of an individual series then the standard deviation and variance both shall be \_\_\_\_

- (a) Changed
- (b) Unchanged
- (c) Same
- (d) none of these

**DISPERSION**

75. The algebraic sum of the deviations of set of values from their arithmetic mean is

- (a)  $>0$
- (b)  $<0$
- (c) 0
- (d) None of these

**CENTRAL  
TENDENCY**

76. The AM of 15 observations is 9 and the AM of first 9 observations is 11 and then AM of remaining observations is

- (a) 11
- (b) 6
- (c) 5
- (d) 9

**CENTRAL  
TENDENCY**

77. If  $P(A \cap B) = 0.10$ , and  $P(B) = 0.80$ , then  $P(A/B)$  is

- (a) 0.25
- (b) 0.40
- (c) 0.50
- (d) 0.75

**PROBABILITY**

78. In connection with random experiment, it is found that  $P(A) = 2/3$ ,  $P(B) = 3/5$  and  $P(A \cup B) = 5/6$

Find  $P(A/B)$

- (a)  $13/18$
- (b)  $1/2$

**PROBABILITY**

- (c)  $13/20$
- (d)  $5/18$

79. If a card is drawn at random from a pack of 52 cards, what is the chance of getting spade or an ace ?

- (a)  $4/13$
- (b)  $5/13$
- (c) 0.25
- (d) 0.20

**PROBABILITY**

80. The chance of getting a sum of 10 in a simple single throw is

- (a)  $10/36$
- (b)  $1/12$
- (c)  $1/12$
- (d) none

**PROBABILITY**

81. A dice is rolled thrice , if getting a four is considered a success , find the variance of the probability distribution of number of successes

- (a)  $\frac{1}{2}$
- (b)  $\frac{1}{4}$
- (c)  $5/12$
- (d)  $7/12$

**PROBABILITY**

82. The probability that A speaks truth is  $4/5$  while this probability for B is  $3/4$ . The probability that they contradict each other when asked to speak on a fact is

- (a)  $3/20$
- (b)  $1/5$
- (c)  $7/20$
- (d)  $4/5$

**PROBABILITY**

83. A random variable  $x$  follows Binomial Distribution With  $E(x) = 2$  and  $V(x) = 1.2$ , then the value of  $n$  is

- (a) 8
- (b) 2
- (c) 5
- (d) none

**PROBABILITY  
DISTRIBUTION**

84. If  $x$  is binomial variate with parameter 15 and  $1/3$ , what is mode of the distribution?

- (a) 5 and 6
- (b) 5
- (c) 5.50

**PROBABILITY  
DISTRIBUTION**



(d) 6

85. The mean deviation about median of standard normal variate is

- (a)  $0.675\sigma$
- (b) 0.675
- (c)  $0.80\sigma$
- (d) 0.80

**PROBABILITY  
DISTRIBUTION**

86. If the Quartile Deviation of a normal distribution with mean 10 and SD 4 is

- (a) 0.675
- (b) 67.50
- (c) 2.70
- (d) 3.20

**PROBABILITY  
DISTRIBUTION**

87. If the two Quartiles  $N(\mu, \sigma^2)$  are 14.6 and 25.4 respectively. What is the standard deviation of the distribution?

- (a) 9
- (b) 6
- (c) 10
- (d) 8

**PROBABILITY  
DISTRIBUTION**

88. When 'p is large than 0.5, the Binomial Distribution is

- (a) Asymmetrical
- (b) Symmetrical
- (c) Both
- (d) None

**PROBABILITY  
DISTRIBUTION**

89. A die is thrown 100 times .if getting an even number is considered a success then the variance number of success.

- (a) 50
- (b) 25
- (c) 10
- (d) 100

**PROBABILITY  
DISTRIBUTION**

90. Two regression lines are perpendicular each other of r =

- (a) 0
- (b) +1
- (c) -1

**REGRESSION**

(d)  $\pm 1$

91. If  $r = 0.6$ , then the coefficient of non-determination is

- (a) 0.4
- (b) -0.6
- (c) 0.36
- (d) 0.64

**REGRESSION**

92. The sum of the squares of differences in ranks of marks obtained in Physics and Chemistry by 10 students in a test is 150, then the coefficient of rank correlation by :

- (a) 0.849
- (b) 0.091
- (c) 0.909
- (d) None of these

**CORRELATION**

93. If one regression coefficient is \_\_\_\_ unity, the other must be \_\_\_\_ Unity

- (a) more than, more than
- (b) less than, less than
- (c) more than, less than
- (d) positive, negative

94. Find the coefficient of correlation  $2x+3y= 2$  and  $4x+3y= 4$

- (a) -0.71
- (b) 0.71
- (c) -0.5
- (d) 0.5

**CORRELATION**

95. If the coefficient of correlation between  $x$  and  $y$  is 0.5, the covariance is 16 and if the Standard deviation of  $X=4$  then Standard deviation of  $y$  is

- (a) 4
- (b) 8
- (c) 16
- (d) 64

**CORRELATION**

96. Fisher index number is \_\_\_\_\_ of Laspyres and Paasches Index Number

- (a) A.M
- (b) G.M
- (c) H.M

**CORRELATION**

(d) None of these

97. Circular test is satisfied by which of the following index?

(a) Laspeyres index

(b) Paasche's index

(c) Fisher's index

(d) Simple geometric mean of price relatives

**INDEX NUMBER**

98.  $\sum P_0Q_0=1360$ ,  $\sum P_nQ_0=1900$ ,  $\sum P_0Q_n=1344$ ,  $\sum P_nQ_n=1880$ , then the Laspyres Index number is

(a) 71

(b) 139.70

(c) 175

(d) none of these

**INDEX NUMBER**

99. If Laspyres Index number is 250 and Paasches Index number is 160, then Fishers Index number is

(a) 200

(b) 400

(c) 250

(d) 196

**INDEX NUMBER**

100 The cost of Index number is always

(a) Price Index number

(b) Quantity Index number

(c) Weighted Index number

(d) Value index number

**INDEX NUMBER**

## MOCK TEST PAPER I

## FOUNDATION COURSE

## PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

## Key Part A: Business Mathematics and Logical Reasoning

1	(a)	2	(d)	3	(b)	4	(a)	5	(b)
6	(b)	7	(b)	8	(b)	9	(d)	10	(b)
11	(c)	12	(d)	13	(b)	14	(c)	15	(d)
16	(c)	17	(a)	18	(a)	19	(c)	20	(a)
21	(c)	22	(a)	23	(c)	24	(b)	25	(a)
26	(a)	27	(a)	28	(b)	29	(a)	30	(a)
31	(b)	32	(b)	33	(d)	34	(c)	35	(c)
36	(a)	37	(b)	38	(d)	39	(a)	40	(b)
41	(a)	42	(b)	43	(b)	44	(a)	45	(a)
46	(d)	47	(c)	48	(b)	49	(a)	50	(b)
51	(b)	52	(b)	53	(c)	54	(d)	55	(b)
56	(a)	57	(a)	58	(a)	59	(b)	60	(a)

## Key Part B: Statistics

61	(d)	62	(c)	63	(a)	64	(b)	65	(b)
66	(a)	67	(b)	68	(c)	69	(b)	70	(d)
71	(b)	72	(c)	73	(a)	74	(b)	75	(c)
76	(b)	77	(c)	78	(d)	79	(a)	80	(c)
81	(c)	82	(c)	83	(c)	84	(b)	85	(c)
86	(c)	87	(d)	88	(a)	89	(b)	90	(a)
91	(d)	92	(b)	93	(c)	94	(a)	95	(c)
96	(b)	97	(d)	98	(b)	99	(a)	100	(c)

## MOCK TEST PAPER - II

## FOUNDATION COURSE

## PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 Hours

Marks: 100

## Part A: Business Mathematics and Logical Reasoning

1. If  $x = 2 + \sqrt{3}$  and  $y = 2 - \sqrt{3}$  then value of  $x^2 + y^2 =$
- (a) 14  
(b) 4  
(c) 2  
(d) 6
- LINEAR EQUATION
2. If  $(25)^{150} = (25x)^{50}$ ; then the value of x will be:
- (a)  $5^3$   
(b)  $5^4$   
(c)  $5^2$   
(d) 5
- INDICES
3. On solving the equation  $\log t + \log (t-3) = 1$  we get the value of t as
- (a) 5  
(b) 2  
(c) 3  
(d) 0
- LOG
4. If  $\log 2 = 0.3010$  and  $\log 3 = 0.4771$ , then the value of  $\log 24$  is :
- (a) 1.0791  
(b) 1.7323  
(c) 1.3801  
(d) 1.8301
- LOG
5. If four numbers  $\frac{1}{2}, \frac{1}{3}, \frac{1}{5}, \frac{1}{x}$  are proportional then  $x =$
- (a)  $\frac{6}{5}$   
(b)  $\frac{5}{6}$   
(c)  $\frac{15}{2}$   
(d) none
- PROPORTION
6. A box contains 276 coins of 5 rupees, 2 rupees and 1 rupee. The value of each kind of coins are in the ratio 2:3:5 respectively. The number of 2 rupees coin is
- (a) 52
- RATIO

- (b) 60
- (c) 76
- (d) 85

7. What must be added to each term of the ratio 49 : 68, so that it becomes 3 : 4 ?

- (a) 3
- (b) 5
- (c) 8
- (d) 9

**RATIO**

8. If  $u = 3t^4 + 5t^3 + 2t^2 + t + 4$ , then the value of  $\frac{du}{dt}$  at  $t = -1$  is :

- (a) 0
- (b) 1
- (c) 2
- (d) 5

**DIFFERENTIAL  
CALCULUS**

9. if  $y = e^{a \log x} + e^{x \log a}$ , then  $\frac{dy}{dx} =$

- (a)  $x^a + a^x$
- (b)  $a x^{a-1} + a^x \log a$
- (c)  $a x^{a-1} + x a^{x-1}$
- (d)  $x^x + a^a$

**DIFFERENTIAL  
CALCULUS**

10.  $\int_1^4 (2x + 5) dx$  and the value is:

- (a) 10
- (b) 3
- (c) 30
- (d) None

**INTEGRAL  
CALCULUS**

11. Evaluate  $\int x \cdot e^x dx$

- (a)  $e^x(x + 1) + c$
- (b)  $e^x(x - 1) + c$
- (c)  $e^x + c$
- (d)  $x - e^x + c$

**INTEGRAL  
CALCULUS**

12. Insert 4 A.M.'s between 3 and 18:

- (a) 12, 15, 9, 6
- (b) 6, 9, 12, 15
- (c) 9, 6, 12, 15
- (d) 15, 12, 9, 6

**ARITHMETIC &  
GEOMETRIC  
PROGRESSIONS**

13. Find the sum to infinity of the following series:

$$1 - 1 + 1 - 1 + 1 - 1 + \dots \infty$$

- (a) 1  
 (b)  $\infty$   
 (c)  $1/2$   
 (d) Does not exist
14. Find the product of:  
 $(243), (243)^{1/6}, (243)^{1/36}, \dots \infty$   
 (a) 1,024  
 (b) 27  
 (c) 729  
 (d) 243
15. The sum of the series  $1 + 11 + 111 + \dots$  to  $n$  terms is \_\_\_\_\_.  
 (a)  $\frac{1}{27}(10^{n+1} - 9n - 10)$   
 (b)  $10^{n+1} - 9n - 10$   
 (c)  $\frac{1}{81}(10^{n+1} - 9n - 10)$   
 (d) None of these
16. The roots of the cubic equation  $x^3 - 7x + 6 = 0$  are:  
 (a) 1, 2 and 3  
 (b) 1, -2 and 3  
 (c) 1, 2 and -3  
 (d) 1, -2 and -3
17. If  $A = \{p, q, r, s\}$ ,  $B = \{q, s, t\}$ ,  $C = \{m, q, n\}$ . Find  $C - [A \cap B]$   
 (a)  $\{m, n\}$   
 (b)  $\{p, q\}$   
 (c)  $\{r, s\}$   
 (d)  $\{p, r\}$
18. If arithmetic mean between roots of a quadratic equation is 8 and the geometric mean between them is 5, the equation is \_\_\_\_\_.  
 (a)  $x^2 - 16x - 25 = 0$   
 (b)  $x^2 - 16x + 25 = 0$   
 (c)  $x^2 - 16x + 5 = 0$   
 (d) None of these.
19. A man starts his job with a certain monthly salary and earns a fixed increment every year. If his salary was ₹ 1,500 after 4 years of service and ₹ 1,800 after 10 years of service, what was his starting salary and what is the annual increment in rupees?  
 (a) ₹ 1,300, ₹ 50  
 (b) ₹ 1,100, ₹ 50

**ARITHMETIC &  
 GEOMETRIC  
 PROGRESSIONS**

**ARITHMETIC &  
 GEOMETRIC  
 PROGRESSIONS**

**ARITHMETIC &  
 GEOMETRIC  
 PROGRESSIONS**

**QUADRATIC  
 EQUATION**

**SETS**

**QUADRATIC  
 EQUATION**

**TIME VALUE AND  
 MONEY**

- (c) ₹ 1,500, ₹ 30  
 (d) None
20. On an average, an experienced person does 5 units of work whereas an unexperienced does one 3 units work daily but the employer have to maintain the output of at least 30 units of work per day. The situation can be expressed as.
- (a)  $5x + 3y \leq 30$   
 (b)  $5x + 3y \geq 30$   
 (c)  $5x + 3y = 30$   
 (d) None of these

**INEQUALITIES**

21. From a group of 200 persons, 100 are interested in music, 70 in photography and 40 in swimming, furthermore 40 are interested in both music and photography, 30 in both music and swimming, 20 in photography and swimming and 10 in all the three. How many are interested in photography but not in music and swimming?
- (a) 30  
 (b) 15  
 (c) 25  
 (d) 20

**SETS**

22. If  $f(x) = 2x + 2$  and  $g(x) = x^2$ , then the value of  $f \circ g(4)$  is:
- (a) 18  
 (b) 22  
 (c) 34  
 (d) 128
23. A Supreme Court Bench consists of 5 judges. In how many ways, the bench can give a majority decision?
- (a) 10  
 (b) 5  
 (c) 15  
 (d) 16

**FUNCTIONS****PERMUTATIONS & COMBINATIONS**

24. The maximum number of points of intersection of 10 circles will be :
- (a) 2  
 (b) 20  
 (c) 90  
 (d) 180

**PERMUTATIONS & COMBINATIONS**

25. If  ${}^{15}C_{3r} = {}^{15}C_{r+3}$ , then 'r' is equal is
- (a) 2  
 (b) 3  
 (c) 4  
 (d) 5

**PERMUTATIONS & COMBINATIONS**



26. There are 5 books on English, 4 Books on Tamil and 3 books on Hindi. In how many ways can these books be placed on a shelf if the books on the same subjects are to be together?

- (a) 1,36,800
- (b) 1,83,600
- (c) 1,03,680
- (d) 1,63,800

**PERMUTATIONS &  
COMBINATIONS**

27. The simple interest on ₹600 for 9 months is ₹27. Find the interest rate.

- (a) 6%
- (b) 12%
- (c) 2.2 %
- (d) None of these

**TIME VALUE AND  
MONEY**

28. Miss Liza lent ₹ 4,000 in such a way that some amount was given to Mr. A at 3% p.a. S.I. and rest amount to was given to B at 5% p.a. S.I., the annual interest from both is ₹ 144, Find the amount lent to Mr. A

- (a) ₹ 2,800
- (b) ₹ 1,200
- (c) ₹ 2,500
- (d) None

**TIME VALUE AND  
MONEY**

29. A certain sum of money was put at S.I. for 2.5 years at a certain rate of S.I. p.a. Had it been put at 4% higher rate, it would have fetched ₹ 500 more. Find the sum of money.

- (a) ₹ 4000
- (b) ₹ 5000
- (c) ₹ 6000
- (d) None

**TIME VALUE AND  
MONEY**

30. ₹ 1,25,000 is borrowed at compound interest at the rate of 2% for the 1st year, 3% for the second year and 4% for the 3rd year. Find the amount to be paid after 3 years.

- (a) ₹ 125678
- (b) ₹ 136587
- (c) ₹ 163578
- (d) ₹ 136578

**TIME VALUE AND  
MONEY**

31. If the Compound Interest on a certain sum of money for 2 years at 4% p.a. be ₹510, then its simple Interest (S.I) of same time at same rate of interest is

- (a) ₹500
- (b) ₹510
- (c) ₹450
- (d) None

**TIME VALUE AND  
MONEY**

32. How long will it take for a principal to double if money is worth 12% compounded monthly?

- (a) 4.25 years.
- (b) 5.81 years

**TIME VALUE AND  
MONEY**

- (c) 6 years  
(d) none of these
33. The difference between compound interest and simple interest on a certain sum for 2 years @ 10% p.a. is ₹ 100. Find the sum:
- (a) ₹ 10,100  
(b) ₹ 10,950  
(c) ₹ 10,000  
(d) ₹ 9,900
- TIME VALUE AND MONEY**
34. A debt of ₹5000 with interest at the rate of 8% compounded quarterly is to be discharged by 8 equal quarterly payments, the first payment being due today. Find the size of each payment.
- (a) ₹ 573.86  
(b) ₹ 669.17  
(c) ₹ 399.26  
(d) none of these
- TIME VALUE AND MONEY**
35. Find the future value of an annuity of ₹ 500 is made annually for 7 years at interest rate of 14% compounded annually. [Given that  $(1.14)^7 = 2.5023$ ]
- (a) ₹ 5365.25  
(b) ₹ 5265.25  
(c) ₹ 5465.25  
(d) none
- TIME VALUE AND MONEY**
36. A machine can be purchased for ₹ 50,000. Machine will contribute ₹ 12000 per year for the next five years. Assume borrowing cost is 10% per annum compounded annually. Determine whether machine should be purchased or not.
- (a) Purchased  
(b) Not Purchased  
(c) Information insufficient  
(d) None of these
- TIME VALUE AND MONEY**
37. A ₹1000 bond paying annual dividends at 8.5% will be redeemed at par at the end of 10 years. Find the purchase price of this bond if the investor wishes a yield rate of 8%.
- (a) ₹ 907.135  
(b) ₹ 1033.54  
(c) ₹ 945.67  
(d) None of these
- TIME VALUE AND MONEY**
38. Assuming that the discount rate is 10% per annum, how much would you pay to receive ₹800, growing at 8%, annually, forever?
- (a) ₹ 1000  
(b) ₹ 1050  
(c) ₹ 950  
(d) None of these
- TIME VALUE AND MONEY**

39. How much amount is required to be invested every year as to accumulate ₹ 6,00,000 at the end of 10<sup>th</sup> year, if interest is compounded annually at 10% rate of interest?

- (a) ₹ 37,467
- (b) ₹ 37,476
- (c) ₹ 37,647
- (d) ₹ 37,674

**TIME VALUE AND MONEY**

40. Paul borrows ₹ 20,000 on condition to repay it with compound interest at 5% p.a. in annual instalment of ₹ 2,000 each. Find the number of years in which the debt would be paid off.

- (a) 10 years
- (b) 12 years
- (c) 14 years
- (d) 15 years

**TIME VALUE AND MONEY**

41. Find the missing term 9, 27, 31, 155, 161, 1127, ?

- (a) 316
- (b) 1135
- (c) 1288
- (d) 2254

**NUMBER SERIES**

42. Find the missing term 5760, 960, ?, 48, 16,8

- (a) 120
- (b) 160
- (c) 192
- (d) 240

**NUMBER SERIES**

43. If, in a code, MIND becomes KGLB and ARGUE becomes YPESC, then what will DIAGRAM be in that code?

- (a) BGYEPYK
- (b) BGYPYEK
- (c) GLPEYKB
- (d) LKBGYPK

**NUMBER SERIES**

44. If A = 2, M = 26, Z = 52, then BET = ?

- (a) 44
- (b) 54
- (c) 64
- (d) 72

**NUMBER SERIES**

45. If 'sky' is 'star', 'star' is 'cloud', 'cloud' is 'earth', 'earth' is 'tree' and 'tree' is 'book'. Then where do the birds fly?

- (a) Cloud
- (b) Sky
- (c) Star

**NUMBER SERIES**

(d) Data inadequate

46. Neha walked 2 lane west of her house and then turned south covering 4 km. Finally, she moved 3 km towards east and then again 1 km west. How far is she from her initial position?

- (a) 7 km
- (b) 3 km
- (c) 4 km
- (d) 12 km

**DIRECTION SENSE TESTS**

47. Pankaj is facing west. He turns  $45^\circ$  in the clockwise direction and then again another turns with  $180^\circ$  in the same direction i.e. clockwise direction, after that he turns  $270^\circ$  in the anticlockwise direction. Which direction is he facing now ?

- (a) North-West
- (b) West
- (c) South-West
- (d) South

**DIRECTION SENSE TESTS**

48. One day, Pranav took his car & commenced his journey from his home and drove 25 km towards north and turned to his left and drove another 12.5 km. After waiting to meet a friend Deepak, he turned to his right and continued to drive another 25 km. After covering a distance of 62.5 km till now, in which direction is he now?

- (a) North
- (b) East
- (c) South-east
- (d) South

**DIRECTION SENSE TESTS**

49. After 3 pm on a Sunny day when Vicky was returning from his college, he saw that his uncle was coming from the opposite direction. His uncle talked to him for sometime. Vicky saw that the shadow of his uncle was to his right side. Which direction was his uncle facing during their talk ?

- (a) North
- (b) South
- (c) East
- (d) None

**DIRECTION SENSE TESTS**

50. Five persons are standing in a line. One of the two persons at the extreme ends is a professor and the other a businessman. An advocate is standing to the right of a student. An author is to the left of the businessman. The student is standing between the professor and the advocate. Counting from the left, the advocate is at which place ?

- (a) 1<sup>st</sup>
- (b) 2<sup>nd</sup>
- (c) 3<sup>rd</sup>
- (d) 5<sup>th</sup>

**SEATING ARRANGEMENTS**

**Directions: Read the following information carefully to answer questions 51 and 52 :**

- (i) Six flats on a floor in two rows facing North and South are allotted to P, Q, R, S, T and U.
- (ii) Q gets a North facing flat and is not next to S.

- (iii) S and U get diagonally opposite flats.  
 (iv) R, next to U, gets a South facing flat and T gets a North facing flat.  
 51. The flats of which of the other pairs than SU, are diagonally opposite to each other ?

- (a) QP  
 (b) PT  
 (c) QR  
 (d) TS

**SEATING  
ARRANGEMENTS**

52. Which of the following combinations gets South facing flats?

- (a) UPT  
 (b) URP  
 (c) QTS  
 (d) Data inadequate

**SEATING  
ARRANGEMENTS**

53. A, B, C, D, E and F are sitting around a round table. A is between E and F, E is opposite to D, and C is not in either of the neighbouring seats of E. Who is opposite to B ?

- (a) C  
 (b) D  
 (c) F  
 (d) None of these

**SEATING  
ARRANGEMENTS**

54. Four girls A, B, C, D are sitting around a circle facing the centre. B and C in front of each other, which of the following is definitely true ?

- (a) A and D in front of each other  
 (b) A is not between B and C  
 (c) D is left of C  
 (d) A is left of C

**SEATING  
ARRANGEMENTS**

55. A is the sister of B. B is the brother of C, C is the son of D. How is D related to A?

- (a) Son  
 (b) Mother  
 (c) Daughter  
 (d) Uncle

**BLOOD RELATION**

56. C is wife of B. E is the son of C. A is the brother of B and father of D. What is the relationship of E to D?

- (a) Cousin  
 (b) Mother  
 (c) Sister  
 (d) Brother

**BLOOD RELATION**

57. (i) F is the brother of A.  
 (ii) G is the daughter of A.  
 (iii) K is the sister of F.  
 (iv) G is the brother of C.

**BLOOD RELATION**

Who is the uncle of G?

- (a) K
- (b) F
- (c) A
- (d) C

58 X and Y are the children of A. A is the father of X but Y is not his son. How is Y related to A?

- (a) Son
- (b) Daughter
- (c) Sister
- (d) Brother

**BLOOD RELATION**

59 If X is brother of son of Y's son, then how is X related to Y?

- (a) Brother
- (b) Cousin
- (c) Grandson
- (d) Son

**BLOOD RELATION**

60 Point P is 10 m west of point Q. Point R is 4 m north of point P. Point T is 3 m east of point S and point S is 5 m south of point Q. What is the direction of point R with respect to point T?

- (a) South-east
- (b) South
- (c) North-east
- (d) North-west

**DIRECTIONS  
SENSE TESTS**

**Part B – Statistics**

61. For a moderately skewed distribution, which of the following relationship is correct

- (a) Mean - Mode = 3 (Mean - Median)
- (b) Median - Mode = 3 (Mean - Median)
- (c) Mean - Median = 3 (Mean - Mode)
- (d) Mean - Median = 3 (Median - Mode).

**CENTRAL  
TENDENCY**

62. The weighted mean of first n natural numbers, if their weights are proportional to their corresponding numbers is

- (a)  $\frac{2n+1}{3}$
- (b)  $\frac{n-1}{2}$
- (c)  $\frac{(n+1)(2n-1)}{6}$
- (d)  $\frac{3n(n+1)}{2}$

**CENTRAL  
TENDENCY**

63. The average wages of a group of unexperienced labours is ₹ 1000 and that of a group of experienced labours is ₹ 1,500. If the combined wage is ₹ 1200, then what is the percentage of experienced labours?

- (a) 60%

- (b) 40%
- (c) 50%
- (d) None of these.
64. If the arithmetic mean of 1<sup>st</sup> n natural numbers is  $\frac{6n}{11}$  then the value of 'n' is:
- (a) 10
- (b) 11
- (c) 14
- (d) None of these
65. The graphical representation of Median is calculated :
- (a) Ogive Curve
- (b) Frequency Curve
- (c) Line diagram
- (d) Histogram
66. If  $R_x$  and  $R_y$  denote ranges of x and y respectively where x and y are related by  $4x + 5y + 12 = 0$ , what would be the relation between  $R_x$  and  $R_y$ ?
- (a)  $R_x = R_y$
- (b)  $4R_x = 5R_y$
- (c)  $5R_x = 4R_y$
- (d) None of these
67. If the relation between x and y is  $4y - 3x = 10$  and the mean deviation about mean for x is 12, then the mean deviation of y about mean is:
- (a) 9.00
- (b) 7.80
- (c) 12.5
- (d) None of these
68. If the S.D. of x is 4, what is the variance of  $(5 - 2x)$ ?
- (a) 64
- (b) 36
- (c) 16
- (d) None of these
69. There were 200 employees in an office in which 150 were married. Total male employees were 160 out of which 120 were married. What was the number of female unmarried employees.
- (a) 30
- (b) 10
- (c) 40
- (d) 50
70. The harmonic mean of 1,  $\frac{1}{2}, \frac{1}{3}, \dots, \frac{1}{n}$  is

CENTRAL  
TENDENCYCENTRAL  
TENDENCYCENTRAL  
TENDENCY

DISPERSION

DISPERSION

DISPERSION

CENTRAL  
TENDENCY

- (a)  $1/(n + 1)$
- (b)  $2/(n+ 1)$
- (c)  $(n + 1)/2$
- (d)  $1/(n-1)$

**CENTRAL  
TENDENCY**

71. The average age of a group of 10 students was 20 years. The average age is increased by two years when two new students joined the group. What is the average age of two new students who joined the group ?

- (a) 22 years
- (b) 30 years
- (c) 44 years
- (d) 32 years

**CENTRAL  
TENDENCY**

72. There were 50 students in a class. 10 failed whose average marks were 2.5. The total marks of class were 281. Find the average marks of students who passed?

- (a) 6.4
- (b) 25
- (c) 256
- (d) 86

**CENTRAL  
TENDENCY**

73. 100 students are classified into male/female and graduate/non-graduate classes. This data classification is

- (a) Cardinal data
- (b) Ordinal data
- (c) Spatial Series data
- (d) Temporal data

**STATISTICAL  
REPRESENTATION  
OF DATA**

74. Mean and S.D. of a given set of observations' is 1,500 and 400 respectively. If there is an increment of 100 in the first year and each observation is hiked by 20% in 2nd years, then find new mean and S.D.

- (a) 1920,480
- (b) 1920,580
- (c) 1600,480
- (d) 1600,400

**DISPERSION**

75. The mode of data is 18 and mean is 24, then median is

- (a) 18
- (b) 24
- (c) 22
- (d) 21

**CENTRAL  
TENDENCY**

76. When 10 is subtracted from all the observations, the mean is reduced to 60% of its value. If 5 is added to all the observations, then the mean will be

- (a) 25
- (b) 30

**CENTRAL  
TENDENCY**



- (c) 60  
(d) 65

77. If 5 is subtracted from each observation of some certain item then its co-efficient of variation is 10% and if 5 is added to each item then its coefficient of variation is 6%. Find original coefficient of variation.

- (a) 8%  
(b) 7.5%  
(c) 4%  
(d) None of these

**DISPERSION**

78. In how many ways can 'REGULATION' be arranged so that the vowels come at odd places

- (a)  $\frac{1}{252}$   
(b)  $\frac{1}{144}$   
(c)  $\frac{144}{252}$   
(d) None of these

**PERMUTATIONS &  
COMBINATIONS**

79. Exactly 3 girls are to be selected from 5 girls and 3 boys. The Probability of selecting 3 girls will be

- (a)  $\frac{5}{28}$   
(b)  $\frac{1}{56}$   
(c)  $\frac{15}{28}$   
(d) None of these

**PROBABILITY**

80. A speaks truth in 75% cases and B in 60% of the cases. In what percentage of the cases are they likely to contradict each other, narrating the same incident?

- (a) 0.60  
(b) 0.45  
(c) 0.65  
(d) 0.35

**PROBABILITY**

81. The wages of workers of a factory follows

- (a) Binomial distribution  
(b) Poisson distribution  
(c) Normal distribution  
(d) Chi-square distribution

**PROBABILITY  
DISTRIBUTION**

82. Which of the following is uni-parametric distribution

- (a) Poisson  
(b) Normal  
(c) Binomial  
(d) Hyper geometric

**PROBABILITY  
DISTRIBUTION**

83. The probability that a man aged 45 years will die within a year is 0.012. What is the probability that of 10 men, at least 9 will reach their 46th birthday? [Given:  $e^{-0.12} = 0.88692$ ]

- (a) 0.0935

**PROBABILITY  
DISTRIBUTION**

- (b) 0.9934
- (c) 0.9335
- (d) 0.9555

84. If the inflexion points of a Normal Distribution are 6 and 14. Find its Standard Deviation?

- (a) 4
- (b) 6
- (c) 10
- (d) 12

**PROBABILITY  
DISTRIBUTION**

85. The quartile deviation of a normal distribution with mean 10 and standard deviation 4 is \_\_\_\_

- (a) 54.24
- (b) 23.20.
- (c) 0.275
- (d) 2.70

**PROBABILITY  
DISTRIBUTION**

86. The standard deviation of Binomial distribution is

- (a)  $npq$
- (b)  $\sqrt{npq}$
- (c)  $np$
- (d)  $\sqrt{np}$

**PROBABILITY  
DISTRIBUTION**

87. An approximate relation between quartile deviation (QD) and standard deviation (S.D.) of normal distribution is :

- (a)  $5QD = 4 SD$
- (b)  $4 QD = 5 SD$
- (c)  $2 QD = SD$
- (d)  $3 QD = 2 SD$

**PROBABILITY  
DISTRIBUTION**

88. In Binomial distribution  $n = 9$  and  $P = 1/3$ , what is the value of variance:

- (a) 8
- (b) 4
- (c) 2
- (d) 16

**PROBABILITY  
DISTRIBUTION**

89. Which of the following is not a characteristic of a normal probability distribution?

- (a) Mean of the normally distributed population lies at the centre of its normal curve.
- (b) It is multi-modal
- (c) The mean, median and mode are equal
- (d) It is a symmetric curve.

**PROBABILITY  
DISTRIBUTION**

90. If one regression coefficient is greater than one, then other will be:

- (a) More than one
- (b) Equal to one
- (c) Less than one

**REGRESSION**

(d) Equal to minus one

91. In a bivariate data  $\sum X = 30$ ,  $\sum Y = 40$ ,  $\sum X^2 = 196$ ,  $\sum XY = 850$  and  $N = 10$ . The regression coefficient of Y on X is :

(a) -5.31

**REGRESSION**

(b) -8.23

(c) 6.89

(d) None

92. If the sum of squares of the rank difference in mathematics and physics marks of 10 students is 22, then the coefficient of rank correlation is :

(a) 0.267

(b) 0.897

(c) 0.92

**CORRELATION**

(d) None of these

93. For a bivariate data, the two lines of regression are  $4x + 5y - 137 = 0$  and  $2x + 9y - 179 = 0$ , the values of  $\bar{x}$  and  $\bar{y}$  are:

(a) 13, 17.

(b) 16, 13

(c) 15, 11

(d) None

**REGRESSION**

94. Fisher's ideal formula for calculating index number satisfies the \_\_\_\_\_

(a) Until Test

(b) Factor Reversal Test

(c) Both (a) and (b)

(d) None of these

**INDEX NUMBER**

95. Shifted Price index =  $\frac{\text{Original Price Index}}{\text{Price Index of the year on which it has to be shifted}} \times 100$

(a) True

(b) False

(c) Partly True

(d) Partly False

**INDEX NUMBER**

96. If  $\sum P_1q_1 = 249$ ,  $\sum P_0q_0 = 150$ , Paasche's Index Number = 150 and Dorbish and Bowely's Index number = 145, then the Fisher's Ideal Index Number is

(a) 175

(b) 144.91

(c) 145.97

(d) None

**INDEX NUMBER**

97. If the 2018 index with base 2015 is 250 and 2015 index with base 2012 is 150, the index 2018 on base 2012 will be:

- (a) 800
- (b) 375
- (c) 600
- (d) None

**INDEX NUMBER**

98. In 2017 the average price of a commodity was 20% more than in 2016 but 20% less than in 2015; and more over it was 50% more than in 2018 to price relatives using 2016 as base (2016 price relative 100) Reduce the data is:

- (a) 140, 100, 120, 80 for (2015-18)
- (b) 150, 100, 120, 80 for (2015-18)
- (c) 135, 100, 125, 87 for (2015-18)
- (d) None of these.

**INDEX NUMBER**

99. From the following data

Group	A	B	C	D	E	F
Group Index	120	132	98	115	108	95
Weight	6	3	4	2	1	4

The general Index (I) is given by:

- (a) 123.25
- (b) 217.15
- (c) 111.30
- (d) None

**INDEX NUMBER**

100. Consumer price index number goes up from 110 to 200 and the Salary of a worker is also raised from ₹ 33,000 to ₹ 50,000. Therefore, in real terms, to maintain his previous standard of living he should get an additional amount of: -

- (a) ₹ 8500
- (b) ₹ 10,000
- (c) ₹ 9825
- (d) None of these.

**INDEX NUMBER**

**MOCK TEST PAPER II**  
**FOUNDATION COURSE**

**PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS**

**Key Part A: Business Mathematics and Logical Reasoning**

1	(a)	2	(b)	3	(a)	4	(c)	5	(c)
6	(b)	7	(c)	8	(a)	9	(b)	10	(c)
11	(b)	12	(b)	13	(c)	14	(c)	15	(c)
16	(c)	17	(a)	18	(b)	19	(a)	20	(b)
21	(d)	22	(c)	23	(d)	24	(c)	25	(b)
26	(c)	27	(a)	28	(a)	29	(b)	30	(d)
31	(a)	32	(b)	33	(c)	34	(b)	35	(a)
36	(b)	37	(b)	38	(a)	39	(c)	40	(c)
41	(b)	42	(c)	43	(a)	44	(b)	45	(c)
46	(c)	47	(c)	48	(a)	49	(a)	50	(c)
51	(a)	52	(b)	53	(c)	54	(a)	55	(b)
56	(a)	57	(b)	58	(b)	59	(c)	60	(d)

**Key Part B: Statistics**

61	(a)	62	(a)	63	(b)	64	(b)	65	(a)
66	(b)	67	(a)	68	(b)	69	(b)	70	(b)
71	(d)	72	(a)	73	(b)	74	(a)	75	(c)
76	(b)	77	(b)	78	(a)	79	(a)	80	(b)
81	(c)	82	(a)	83	(b)	84	(a)	85	(d)
86	(b)	87	(d)	88	(c)	89	(b)	90	(c)
91	(c)	92	(b)	93	(a)	94	(c)	95	(a)
96	(b)	97	(b)	98	(b)	99	(c)	100	(b)

gopal bhoot classes

## Gopal Bhoot Classes

Overview Photos Reviews Updates

Coaching center in Kolkata, West Bengal · **Open**

Hear about this place

2nd Floor, Amit Agarwal School for Blind Building, 72, Girish Park N, Ram Bagan, Kolkata, West Bengal 700006

4.8 ★★★★★ (383)

**Review us on Google**

How did you like our place? We'd love to hear about your experience!



**madhu singh**

Local Guide · 2 reviews



★★★★★ a week ago

Sir aapka debit credit wala concept jo aap pship npo final accounts mein use karte hai who superb se bhi upar hai zabardast hai sir matlab ab yeh chapter paani jaisa lagta hai.Thank u so much sir





**Aditya Pandey**

3 reviews



★★★★★ a month ago

Sir is so friendly and motivating , his skills and tricks are so much helpfull. His experience and knowledge is incomparable also his teaching style is different from others he is so energetic and his books are best have all more than 20 years question in all subjects +RTP+MTP+PYQS. Thank You Sir.







**neha jain**

Local Guide · 5 reviews



★★★★★ a week ago

BRS mein mazaa aa gaya sir kitna easy concept bataya hai aapne poora class 11 ka doubts clear ho gaya





**jyoti korav**

Local Guide · 6 reviews



★★★★★ a week ago

My maths was very weak And had doubt of scoring even 40 in maths in CA Foundation, but Gopal sir has cleared my all doubts and helped to make my Maths BASICS strong and now Maths is a interesting subject for me





**manila sahu**

Local Guide · 4 reviews

★★★★★ a week ago

Sir ka koi bhi topic samjhane ke baad ye bolna ki " Koi doubt hai kya, abhi bhi samajh me nahi aaya" is memorable and unique, best teacher best experience.





**omprakas morvi**

Local Guide · 4 reviews · 1 photo



★★★★★ a week ago

Maths was a scary subject for me but Gopal sir has changed my view and now Maths is a interesting subject for me. Thank you soooooo much sir





**Aniket Sinha**

3 reviews



★★★★★ 2 months ago

I really felt very comfortable while studying through your video's. Sir hindi meaning was very helpful in all subjects and help in memorizing. Any difficulty or help related to subject or tech are solved immediately. Thank you very much for all help and support.





**Amitabh Pandey**

3 reviews



★★★★★ 3 months ago

Gopal sir ia excellent teacher and kind too. He helps a lot in my studies, 2-3 I got confused and get nervous but he help me to come out from this. He has excellent teaching skills and his notes are too much helpful.

Thank you, so much sirji. 😊❤️🙏





**gayatri goyal**

Local Guide · 5 reviews



★★★★★ a week ago

Sir use to solve PYQ,MTP,RTP of past 30 years chapterwise at the time of doing chapters only, for that your each doubt will be cleared at time of doing that chapter in the class. Ye mujhe bahut help kiya acha Mark's gain karne me





**abhilekha nirwan**

Local Guide · 2 reviews



★★★★★ a week ago

Mujhe Law subject se bahut darr tha but first day se hi laga hi nahi ki wohi subject ki class hai jis se bahut darta tha







**priyadarshi ghosal**

Local Guide · 8 reviews



★★★★★ a week ago

I was from science background and don't have any base of accounts but only and only for Gopal sir I had cleared my CA Foundation Dec 2022 exam in 1st attempt





**Rohit K. (Rohit)**

1 review



★★★★★ 2 months ago

One of the best coaching for CA foundation student's. Thank u so much sir..u are amazing... I have studied and enjoyed every single seconds of your lecture sir...The way you teach, entertain b/w every topics, makes every topics easier to understand.... Best thing is that gopal bhoot classes provide online backup facility for recorded classes nd that's really helpfull.... just amazing...





**gopilal jain**

Local Guide · 3 reviews



a week ago

**NEW**

Sir ka Law samjhaneka style to excellent hai, according to me Gopal sir is the best teacher for all subjects. Thank you so much sir





**madhu singh**

Local Guide · 4 reviews



★★★★★ a week ago

Sir aapka debit credit wala concept jo aap pship npo final accounts mein use karte hai who superb se bhi upar hai zabardast hai sir matlab ab yeh chapter paani jaisa lagta hai.Thank u so much sir





**kalpana choudhri**

Local Guide · 2 reviews



★★★★★ a week ago

Gopal sir ka Maths ka formulas ek kanani banake samjnaneka style to best hai ek second me formula yaad ho jata hai. You don't have to sit and memorize formulas just because of this style. ...

