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(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2022 ONLY)

22UBI2A2

REG.NO

NGM COLLEGE (AUTONOMOUS) POLLACHI

END-OF-SEMESTER EXAMINATIONS: MAY- 2023

B.COM-BANKING AND INSURANCE **MAXIMUM MARKS: 50**

II SEMESTER **TIME: 3 HOURS**

PART - III

BUSINESS MATHEMATICS AND STATISTICS

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS. (K1)

1. Calculate the simple interest if the principal amount is 50000 and the rate is 2% for 4 years _
   [a] 4000 [b] 400 [c] 40000 [d] 40

2. Total number of possible matrices of order 3 × 3 with each entry 2 or 0 is---------.
   [a] 9 [b] 27 [c] 81 [d] 512

3. Which of the following two sets are equal?
   [a] A = {1, 2} and B = {1} [b] A = {1, 2} and B = {1, 2, 3}
   [c] A = {1, 2, 3} and B = {2, 1, 3} [d] A = {1, 2, 4} and B = {1, 2, 3}

4. --------- is not a measure of central tendency.
   [a] Mode [b] Mean [c] Range [d] Median

5. Which of the following are types of correlation?
   [a] Positive and Negative [b] Simple, Partial and Multiple
   [c] Linear and Nonlinear [d] All of these

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES (K2)

6. Define arithmetic progression.
7. Explain the inverse of a matrix.
8. Explain set theory.
9. Define Standard Deviation.
10. Explain the method of calculating Spearman's rank correlation coefficient.

SECTION – B (5 X 3 = 15 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

11. [a] A certain sum amounts to Rs.4,000 at the end of 5 years at 12% p.a. interest. Find the sum.

(CONTD …. 2)

[OR]

[b] Compare simple interest and compound interest.

12. [a] Find the rank of

$$\begin{pmatrix} 1 & 2 & 3 \\ 2 & 4 & 5 \\ 3 & 5 & 6 \end{pmatrix}$$

[OR]

[b] Using Matrix inversion method, solve the following system of equation.

$2x-y+3z=1$
$x+y+z=2$
$x-y+z=4$

13. [a] If U = {2, 3, 4, 5, 6, 7, 8, 9, 10, 11}, A = {3, 5, 7, 9, 11} and B = {7, 8, 9, 10, 11}, Then find $(A - B)'$.

[OR]

[b] In a survey among 140 students, 60 like to play videogames, 70 like to play indoor games, 75 like to play outdoor games, 30 play indoor and outdoor games, 18 like to play video games and outdoor games, 42 play video games and indoor games and 8 likes to play all types of games. Use the Venn diagram to find
(i) students who play only outdoor games
(ii) students who play video games and indoor games, but not outdoor games.

14. [a] List the characteristics of statistics.

[OR]

[b] The following table gives the weight of 31 persons in a sample survey. Calculate geometric Mean.

Weight [lbs]	130	135	140	145	146	148	149	150	157
No. of persons	3	4	6	6	3	5	2	1	1

15. [a] Determine Karl Pearson's coefficient of correlation.

X	12	9	8	10	11	13	7
Y	14	8	6	9	11	12	3

[OR]

[b] Given the following data, the expected value of Y when X=12.

	X	Y
Mean	7.6	14.8
S.D	3.6	2.5
Coefficient of correlation	0.99	

SECTION – C (5 X 5 = 25 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.

(Qn. No. 16 to 20 Questions for Long Answers with internal choices) (K4 (Or) K5)

16. [a] The first term of a G.P. is 4 while its sum to infinity is 5. Find its sum to 8 terms.

[OR]

[b] [i] Calculate the compound interest for Rs.2,500 for 4 years at 8% per annum.
[ii] Calculate the compound interest in the above case when interest is compounded [1] half yearly and [2] quarterly.

(CONTD …. 3)

17. [a] If $A=\begin{pmatrix}2 & 3 & -4\\ 6 & 7 & 8\end{pmatrix}$ $B=\begin{pmatrix}6 & -3 & 2\\ 5 & 0 & 8\end{pmatrix}$ and $C\begin{pmatrix}1 & 2 & -3\\ 5 & -4 & 3\end{pmatrix}$

Find [i] A+B-C [ii] A-B+C [iii] B-C+A and [iv] A-B-C

[OR]

[b] Solve the equation by the matrix method

3x+3y+3z=22

x- y + z = 4

4x+2y- z = 9

18. [a] If A= {0,1,3,4,6,7,9,10}, B = {2,3,4,5,6 }and C= {4,5,6,7,8,9}, prove that

[OR]

(i) A – (B U C) = (A – B) ∩ (A – C)

(ii) A – (B ∩ C) = (A – B) U (A – C)

[b] Explain the Laws and Properties of Sets.

19. [a] Calculate the mean, median and mode for the following data.

Profits	0-10	10-20	20-30	30-40	40-50	50-60
No. of shops	12	18	27	20	17	6

[OR]

[b] From the following data find out standard deviation.

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of person	5	10	20	40	30	20	10	4

20. [a] Categorize the following information calculate the coefficient of correlation by the method of rank differences.

X	75	88	95	70	60	80	81	50
Y	120	134	150	115	110	140	142	100

[OR]

[b] Construct two regression equation from the following data and estimate the value of Y when X= 20.

X	10	11	13	12	16	15	17	18	14
Y	40	38	43	45	37	41	42	25	31

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ETHICAL PAPER