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(FOR THE CANDIDATES ADMITTED

21UBI2A2

DURING THE ACADEMIC YEAR 2021 ONLY)

REG.NO. :

N.G.M.COLLEGE (AUTONOMOUS): POLLACHI

END-OF-SEMESTER EXAMINATIONS: JULY 2022

B.COM-BI

MAXIMUM MARKS: 70

SEMESTER-II

TIME : 3 HOURS

PART – III

BUSINESS MATHEMATICS AND STATISTICS

SECTION - A

(10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

MULTIPLE CHOICE QUESTIONS.

(K1)

1. If r, P and n represent interest rate, principle and number of terms then the simple interest is _____.

a) $\frac{100P}{nr}$

b) $\frac{Pnr}{100}$

b) $\frac{100n}{rp}$

b) $\frac{100r}{Pn}$

2. For any two matrices with the same order which one of the following is not true?

a) $AB = BA$

b) $(AB)^T = B^T A^T$

c) $A+B = B+A$

d) $(AB)C = A(BC)$

3. The arithmetic mean of 10,20,30,40,50 is _____.

a) 20

b) 40

c) 30

d) 30.5

4. The range of correlation coefficient is _____.

a) $0 \leq r \leq 1$

b) $-1 \leq r \leq 0$

c) $0 \leq r \leq \infty$

d) $-1 \leq r \leq 1$

5. Laspeyre's formula for price index P_{01} in weighted aggregative method _____.

a) $\frac{\sum p_1 q_0}{\sum p_0 q_0} \times 100$

b) $\frac{\sum p_1 q_1}{\sum p_0 q_1} \times 100$

c) $\sqrt{\frac{\sum p_1 q_0}{\sum p_0 q_0} \times \frac{\sum p_1 q_1}{\sum p_0 q_1}} \times 100$

d) $\frac{\sum p_1 q_0}{\sum p_0 q_0} \times \frac{\sum p_1 q_1}{\sum p_0 q_1} \times 100$

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

6. Define geometric progression.

7. Define order of matrix with an example.

8. State any two characteristics of statistics.

9. Write any one difference between regression and correlation.

10. State any two uses of index numbers.

SECTION – B

(5 X 4 = 20 MARKS)

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

11. a) Find the sum of the series $8+13+18+\dots$ up to 23 terms.

(OR)

b) Calculate the compound interest for Rs. 2500 for 4 years at 8% per annum.

(CONTD...2)

12. a) State the difference between matrices and determinants

(OR)

b) If $A = \begin{bmatrix} 4 & -2 \\ 3 & -1 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 4 \\ 3 & 6 \end{bmatrix}$ prove that $AB = B$.

13. a) Explain any four limitations of statistics

(OR)

b) Calculate the mean. No. of persons per house: 2 3 4 5 6
No. of houses: 10 25 30 25 10

14. a) The following table gives aptitude test scores and productivity indices of 8 randomly selected workers.

Aptitude Score:	57	58	59	59	60	61	62	64
Productivity Indices:	67	68	65	68	72	72	69	71

(OR)

b) State any five uses of regression

15. a) Construct an index for 1995 taking 1994 as base

Commodities :	A	B	C	D	E
Price in 1994 :	50	40	80	110	20
Price in 1995 :	70	60	90	120	20

(OR)

b) Calculate the cost of living index number using family budget method

Commodity:	A	B	C	D	E	F	G	H
Quantity in base year (Rs):	200	50	50	20	40	50	60	40
Price in base year (Rs):	10	30	40	200	25	100	20	150
Price in current year:	12	35	50	300	50	150	25	180

SECTION - C

(4X10= 40 MARKS)

ANSWER ANY FOUR OUT OF SIX QUESTIONS. (K4/K5)

(16thQUESTION IS COMPULSORY AND ANSWER ANY THREE QUESTIONS)

16. Find the standard deviation.

C.I :	0-10	10-20	20-30	30-40	40-50	Total
Frequency :	2	5	9	3	1	20

17. Find the 20th term of an Arithmetic progression if 11th and 16th term are 53 and 83 respectively

18. Show that the matrix $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$ satisfies the equations $A^2 - 4A - 5I = 0$ where I is the Identity matrix and find A^{-1}

19. Find out mode for the following data using grouping and analysis table.

C-I :	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
Frequency :	9	12	15	16	17	15	10	13

(CONTD...3)

20. From the following data find the two regression equations and estimate the value of X when

$Y = 75.$	X	Y
Arithmetic mean	36	85
Standard deviation	11	08
Correlation Coefficient	0.66	

- (i) Find the regression equation of X on Y
(ii) Estimate the value of X when Y = 75

21. Compute the (i) Laspeyre's (ii) Paasche's and (iii) Fisher index numbers

Item	PRICE		QUANTITY	
	Base year	Current year	Base year	Current year
A	6	10	50	50
B	2	2	100	120
C	4	6	60	60
D	10	12	30	25
