

6. (i) For the following time-series data, fit the linear trend :

Year	Production	
1997	52	
1998	56	
1999	60	
2000	65	
2001	69	
2002	73	5

- (ii) Construct Index number for 2001, taking 1998 as base year :

Commodity	A	B	C	D	E
Price in 1998 (Rs.)	90	50	80	70	110
Price in 2001 (Rs.)	110	70	90	80	120

5

SECTION—D

7. (i) A leap year is selected at random from the list of leap years. Find the probability that the selected leap year has :
- (a) 53 Sundays
- (b) 52 Sundays. 5
- (ii) A bag contains 5 white and 3 black balls. Four balls are drawn successively without replacement. What is the probability that the balls are of alternate different colour ? 5
8. (i) Define Binomial Distribution. Under what assumptions, Binomial Distribution can be used ? Discuss its properties. 5
- (ii) What is Normal Probability distribution ? Give its important properties. 5

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Bachelor in Business Administration (B.B.A.)

3rd Semester (Batch 2020-23)

STATISTICS FOR BUSINESS

Paper—BBA-303

Time Allowed—3 Hours]

[Maximum Marks—50

Note :— Attempt FIVE questions in all, selecting at least ONE question from each section. The fifth question may be attempted from any section. All questions carry equal marks.

SECTION—A

1. (i) If $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 9 & 10 \end{bmatrix}$ $B = \begin{bmatrix} 7 & 9 & 10 \\ 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}$

Find $A + 5B$.

5

(ii) Show that $\begin{vmatrix} x+a & b & c \\ a & x+b & c \\ a & b & x+c \end{vmatrix} = x^2(a+b+c)$.

5

2. (i) Solve the following simultaneous linear equations by Cramer's rule :

$$x + y + z = 6$$

$$2x + 5y + 5z = 27$$

$$2x + 5y + 11z = 45$$

5

(ii) Find the rank of the following matrix :

$$A = \begin{bmatrix} 4 & 2 & 3 \\ 8 & 5 & 2 \\ 12 & -4 & 5 \end{bmatrix} \quad 5$$

SECTION—B

3. (i) Find A.M. from the following data :

Marks	No. of Students
0-10	12
10-20	18
20-30	34
30-40	22
30-50	16
50-60	10
60-70	8

5

(ii) Find Median Wage from the following data :

Wages	No. of Workers
100	26
80	18
90	22
120	20
110	32
130	14

5

4. (i) Calculate Mean deviation from arithmetic mean :

X	10	20	30	40	50
f	5	8	15	16	6

5

(ii) Calculate Standard deviation from the following data :

X	f
10-20	10
20-30	20
30-40	30
40-50	40
50-60	40
60-70	30
70-80	20
80-90	10

5

SECTION—C

5. (i) Calculate Karl Pearson Coefficient of correlation from the following data :

X	1	2	3	4	5	6	7	8	9	10
Y	3	10	5	1	2	9	4	8	7	6

5

(ii) The lines of regression are $8X - 10Y + 66 = 0$ and $40X - 18Y = 214$. The variance of X is 9. Find :

(i) A.M. of X and Y

(ii) Correlation between X and Y

(iii) S.D. of Y. 5