

(6 pages)

S.No. 904

12USTA10

(For the candidates admitted from 2012–2013 onwards)

B.B.A. DEGREE EXAMINATION, NOVEMBER 2017.

First Semester

BUSINESS MATHEMATICS AND STATISTICS — I

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

All questions carry equal marks.

1. If a person joins his work in 2010 with an annual salary of Rs. 30,000 and receives an annual increment of Rs 600 every year, will his annual salary be Rs. 39,000?
2. Find the common ratio in the geometric sequence $\sqrt{2}, 1/\sqrt{2}, 1/2\sqrt{2}$?
3. If $A = \begin{pmatrix} 1 & 2 & 3 \\ 2 & 4 & -5 \\ 3 & -5 & 6 \end{pmatrix}$ then verify that $(A^T)^T = A$.

4. Solve for x and y if $\begin{pmatrix} 2x + y \\ x - 3y \end{pmatrix} = \begin{pmatrix} 5 \\ 13 \end{pmatrix}$.
5. What are four main functions of statistics?
6. What are the types of classification?
7. Find the geometric mean for the following values 3, 6, 24, 48.
8. Calculate Mean and Median for the following values :
70, 65, 68, 70, 75, 73, 80, 70, 83, 86.
9. Find range of the numbers 25, 24, 23, 32, 40, 27, 30, 25, 20, 10, 15, 45.
10. Write any two relative measures of Skewness.

PART B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Find the 50th term of the A.P. 2, 5, 8, 11...
Or
(b) Find the 9th term of 18, -12, 8, ...

12. (a) Verify that $B^T A^T = (AB)^T$ when

$$A = \begin{bmatrix} 1 & 1 & 2 \\ 2 & 1 & 0 \end{bmatrix} \text{ and } B = \begin{bmatrix} 1 & 2 \\ 2 & 0 \\ -1 & 1 \end{bmatrix}.$$

Or

- (b) Solve the following equations by Cramer's rule $3x + 2y = 8$, $5x - 3y = 7$.

13. (a) Distinguish between Primary data and Secondary data.

Or

- (b) Explain the four types of classification.

14. (a) Population of India in 5 censal years is given. Represent this by Simple Bar Diagram

Year :	1951	1961	1971	1981	1991
Population :	36	44	55	68	84

Or

- (b) Calculate the A.M., G.M. and H.M of the data given below :

Value :	10	15	20	25	40	72
Frequency :	1	3	4	10	5	2

15. (a) Calculate Quartile Deviation and coefficient of Q.D.

Rainfall : 0 1 2 3 5

No. of Days : 10 11 2 5 2

Or

- (b) Calculate Karl Pearson's coefficient of Skewness.

X: 1 3 4 5 6 7 9 10

F: 1 4 10 25 13 7 6 4

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. (a) Find three numbers in A.P. such that their sum is 27 and their product is 504.

Or

- (b) Find three numbers in GP. such that their sum and product are 14 and 64 respectively.

17. (a) Given $A = \begin{bmatrix} 3 & 1 \\ 0 & 2 \end{bmatrix}$ show that

$$A^3 + A^2 - 24A + 36I = 0 \text{ and hence find } A^{-1}.$$

Or

(b) Solve by inverse matrix method :

$$\begin{aligned}x + 3y + 5z &= 10, & 3x + 5y + 7z &= 14, \\ & & 5x + 7y + 8z &= 15.\end{aligned}$$

18. (a) Discuss the characteristics and limitations of Statistics.

Or

(b) Distinguish between classification and tabulation.

19. (a) Draw the Ogive's for the distribution and use it to determine the median.

X:	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
F:	7	11	24	32	9	14	2	1

Or

(b) Calculate the mean, median and mode :

Wages :	130-134	135-139	140-144	145-149
No.of Persons :	5	15	28	24
Wages :	150-154	155-159	160-164	
No.of Persons :	17	10	1	

20. (a) Calculate the coefficient of variation for the data given below :

Value :	30-39	40-49	50-59	60-69	70-79	80-89	90-99
Frequency :	1	4	14	20	22	12	1

Or

(b) Calculate Bowley's coefficient of skewness for the data given below :

Interval :	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency :	358	2417	976	129	62	18	10