

VIVEKANANDHA COLLEGE OF WOMEN,UNJANAI
DEPARTMENT OF MATHEMATICS
II BCOM(CA) – FOURTH SEMESTER
BUSINESS STATISTICAL DECISION TECHNIQUES

TIME:3HRS

MAX:75 MARKS

SECTION A

ANSWER ALL THE QUESTIONS

(10*2 = 20)

1. Define Matrix
2. Define Null Matrix
3. Define Transpose of a Matrix
4. Define Singular & Non – Singular Matrix
5. Define Inverse of Matrix
6. Define Series.
7. Define Arithmetic Mean
8. Write down Newton's forward formula
9. Write down Newton's backward formula
10. Write down Lagrange's formula

SECTION B

ANSWER ALL THE QUESTIONS

(5*5=25)

11a) Write down the types of the Matrix (OR)

b) If $A = \begin{pmatrix} 3 & 1 & 2 \\ 0 & 5 & 7 \\ 9 & 1 & 4 \end{pmatrix}$ and $B = \begin{pmatrix} 7 & 1 & 9 \\ 3 & 0 & -1 \\ 4 & -6 & 2 \end{pmatrix}$ and

$$C = \begin{pmatrix} 1 & 2 & 3 \\ 2 & 4 & 6 \\ 3 & 6 & 9 \end{pmatrix} \text{ find } ABC$$

$$12a) \text{ If } A = \begin{pmatrix} 2 & 3 & 4 \\ 5 & 2 & 1 \\ 4 & 6 & -5 \end{pmatrix}, \text{ B} = \begin{pmatrix} 1 & 4 & 7 \\ -2 & 3 & 8 \\ 6 & -3 & 4 \end{pmatrix}$$

$$\text{Find i) } (A+B)^T = A^T + B^T \quad \text{(ii) } (AB)^T = B^T + A^T \quad \text{(OR)}$$

$$b) \text{ Find the inverse of a matrix } A = \begin{pmatrix} 5 & -6 & -4 \\ 7 & 4 & -3 \\ 2 & 1 & 6 \end{pmatrix}$$

13a) The sum of three numbers in AP is 24 and their product is 440. Find the numbers. **(OR)**

b) The fourth and seventh term of an A.P is 3 and 36. Find the A.P and its 15th term

14a) If Pth, Qth and Rth terms of an AP. then P, Q, R. To prove that P(q-r) + Q(r-p) + R(p-q) = 0 **(OR)**

b) Sum of the first n terms of a series is $3n^2 + 6n$. Show that it is an AP and find the term of the series is 105.

15a) If $a^p = b^q = c^r$ and a, b, c are in GP. Prove that $\frac{1}{p}, \frac{1}{q}, \frac{1}{r}$ are in AP. **(OR)**

b) The first term of GP is 4 while its sum to infinity is 5. Find its sum to 8 terms

SECTION C

ANSWER ANY THREE QUESTIONS **(3*10=30)**

$$16. \text{ If } A = \begin{pmatrix} 1 & 2 & 3 \\ 0 & 9 & 8 \\ 5 & 7 & 6 \end{pmatrix} \text{ B} = \begin{pmatrix} 10 & 4 & 1 \\ -3 & 7 & 3 \\ 14 & 5 & 9 \end{pmatrix} \quad \begin{matrix} 0 & 3 \end{matrix}$$

$$C = \begin{pmatrix} 1 & 0 & 3 \\ 3 & 2 & 5 \\ 6 & 5 & 9 \end{pmatrix}$$

Verify that a) $(A+B) + C = A + (B+C)$ b) $A(B+C) = AB + AC$ c) $(AB)C = A(BC)$

17. Find $2x - y + 3z = 1$, $x + y + z = 2$, $x - y + z = 4$ by crammers' method.

18. Find premium payable of the age of 26. by using Newton's forward method.

Age in (yrs): 20 25 30 35 40

Premium: 230 260 300 350 420

19. The following table gives the normal weight of a baby during the first six months of life.

Age : 0 2 3 5 6

Weights : 5 7 8 10 12

Estimate the weight of a baby at the age of 4 months

20. Interpolate y when $x = 32$ from the following

X : 30 34 36 38 40

Y: 340 353 358 364 369