

B.B.A. Semester - 2 (NEP-2020) Examination

MARCH/APRIL-2025

Business Mathematics (Multidisciplinary Course)

Time: 2.00 Hours

Marks: 50

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

- Que.1 (A) Explain: (05)
- 1) Transpose of a matrix,
 - 2) Unit matrix,
 - 3) Inverse of a matrix
 - 4) Diagonal Matrix
 - 5) Scalar Matrix
- Que.1 (B) Find value of $(1 \ 2 \ 3) \begin{pmatrix} 2 & 3 & 0 \\ 0 & 4 & 9 \\ 9 & 1 & 0 \end{pmatrix} \begin{pmatrix} 2 \\ 5 \\ 1 \end{pmatrix}$ (05)
- OR
- Que.1 (A) If $U = \begin{pmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ 0 & 0 & 0 \end{pmatrix}$ find matrix A such that $A = aI_3 + bU + cU^2$ (05)
- Que.1 (B) Find X and Y using matrix inversion method. (05)
- $$3X + 5Y = 2XY, 7X + 11Y = 4XY$$
- Que.2 (A) Write rules of determinant (05)
- Que.2 (B) Prove that $\begin{vmatrix} 2a-2x & 2a-by & 2a-2z \\ b-x & b-y & b-z \\ c-x & c-y & c-z \end{vmatrix} = 0$ (05)
- OR
- Que.2 (A) Prove that $\begin{vmatrix} a-b-c & 2a & 2a \\ 2b & b-c-a & 2b \\ 2c & 2c & c-a-b \end{vmatrix} = (a+b+c)^3$ (05)
- Que.2 (B) Solve using Cramer's method: $7x-5y+23=0$ and $3x+11y=45$ (05)
- Que.3 Find Limits (any five) (10)
- 1) $\lim_{x \rightarrow -2} \frac{5x^2+17x+14}{9x^2+5x-26}$
 - 2) $\lim_{x \rightarrow 1} \frac{x^{15}-1}{x^{11}-1}$
 - 3) $\lim_{x \rightarrow 2} \frac{\sqrt{x}+7-3}{x-2}$
 - 4) $\lim_{n \rightarrow \infty} \frac{(an+h)(cn+d)(cn+f)}{n(n+2)(n+3)}$
 - 5) $\lim_{n \rightarrow \infty} \frac{\sum n}{n^2}$
 - 6) $\lim_{x \rightarrow 0} \frac{2^{3x}-2^x}{x}$
- Que.4 Find $\frac{dy}{dx}$ (any four) (10)
- 1) $y = 5^x X^5$
 - 2) $Y = \log(4X+7)$
 - 3) $y = x^3 + 7X^2 + 5X + 11$
 - 4) $y = \log(x e^x)$
 - 5) $y = X(x+2)(x^2+2)$
 - 6) $y = x^2 - 4x + 3/x^2 - 5x + 6$
- Que.5 (A) Define (05)
- 1) simple Interest
 - 2) compound Interest
 - 3) Effective rate
- Que.5 (B) At what % rate of Simple Interest a sum will be double itself in 25 years? (05)
- OR
- Que.5 (A) Define (05)
- 1) Annuity
 - 2) present value of Annuity
 - 3) Sinking Fund
- Que.5 (B) What is present value of Rs.13,440 to be received after 2.5 years at 12% compounded quarterly. (05)
