



Term Evaluation (Odd) Semester Examination November 2025

Roll no.....

Name of the Course: B. Com (H)
Semester: I
Name of the Paper: Business Mathematics
Paper Code: BCH 106
Time: 1.5 Hours

Maximum Marks: 50

Note:

- (i) Answer all the questions by choosing any one of the sub-questions
- (ii) Each question carries 10 marks.

Q1.

(CO1)

a. Explain with Examples

- (i) Square Matrix
- (ii) Diagonal Matrix
- (iii) Skew Symmetric Matrix
- (iv) Symmetric Matrix

OR

b. Solve the system of linear equations,

$$\begin{aligned}x + 3y + 4z &= 8 \\2x + y + 2z &= 5 \\5x + y + z &= 7\end{aligned}$$

Q2.

(CO1)

a. Show that,

$$\begin{bmatrix} 1 & 1 & 2 \\ a & b & c \\ a^2 & b^2 & c^2 \end{bmatrix} = (a-b)(b-c)(c-a)$$

OR

b. Let, $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$. Then prove that $A^2 - 4A - 5I = 0$.

Q3.

(CO1)

a. Find the adjoint of the matrix, $A = \begin{bmatrix} 1 & 4 & 0 \\ -1 & 2 & 2 \\ 0 & 0 & 2 \end{bmatrix}$, hence obtain A^{-1} .

OR

b. Find $\frac{dy}{dx}$.

- (i) $x = a \cos t, y = a \sin t$,
- (ii) $x^2 \sin x$
- (iii) $\log(\sin 2x)$



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Q4.

(CO2)

a. Find the derivative of the following functions.

(i) $e^{2x} + \sin 2x + x^4$

(ii) $x^7 + 6x^2 + \log x$

(iii) $(\cos x)^2$

(iv) $\log \sin x$

OR

b. Show that the function $x^5 - 5x^4 + 5x^3 - 10$ is Maximum at $x = 1$ and Minimum at $x = 3$ and neither Maximum nor Minimum at $x = 0$, and find the maximum and minimum value of the function.

Q5.

(CO2)

a. If $A = \begin{bmatrix} 3 & 2 \\ 4 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} a & b \\ 3 & 5 \end{bmatrix}$, find a and b such that $AB = BA$. Compute $3A + 5B$.

OR

b. Find the domain and range of a function:

$$f(x) = \begin{cases} x^2 & x < 0 \\ x & 0 \leq x \leq 1 \\ 1/x & x > 1 \end{cases}$$

Also find $f(0)$, $f\left(\frac{5}{2}\right)$, $f\left(\frac{1}{2}\right)$, $f(25)$.