

B.V. Patel Institute of Business Management, Computer & Information Technology
UkaTarsadia University
2nd Internal Examination, BCOM 1st Semester
030100130 Business Mathematics

Date: 13/10/2017

Marks: 50
Time: 2 hrs.

Q-1 Answer the following. (Any Eight)

[16]

1. Find value: $\frac{d}{dx}(kx) =$
2. If $y = x^2 - 5$ then find the value of $\frac{dy}{dx}$.
3. If $y = 10x$ then find the value of $\frac{d^2y}{dx^2}$.
4. At which point the function $f(x) = x^2 - 2x + 5$ is minimum?
5. If $f(x) = 3 - 2x - x^2$, find the value of x for which $f(x)$ is maximum.
6. Define : identity matrix
7. Find value: $\begin{vmatrix} 2 & -1 \\ 4 & 3 \end{vmatrix} =$
8. Find adjoint matrix of $A = \begin{bmatrix} 7 & 5 \\ 4 & 3 \end{bmatrix}$.
9. If $A = \begin{bmatrix} 2 & 3 \\ 4 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$ then find the value of $2A + 3B$.

Q-2 Answer the following. (Any Two)

[20]

1. Differentiate following with respect to x :
 - 1) $y = (x^2 + 2)(x^3 + 3)$
 - 2) $y = \frac{(2x+3)}{(3x+2)}$
2. Find the maximum and minimum values of the function
$$f(x) = x^3 - 6x^2 + 9x + 6$$
3. Show that $A = \begin{bmatrix} 3 & 4 \\ 5 & 2 \end{bmatrix}$ is a solution of the matrix equation $A^2 - 5A - 14I = 0$.

Q-3 Answer the following in detail. (Any Two)

[14]

1. Integrate with respect to x :
 1. $\int (3x^2 + 2x + 5) dx$
 2. $\int x(x + 1) dx$
2. The demand function of a commodity is $p = 50 - \frac{5}{2}x$. Determine demand and price for maximum revenue
3. If $A = \begin{bmatrix} 2 & 3 \\ 1 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & 1 \\ 2 & -3 \end{bmatrix}$, then prove that $(A + B)^T = A^T + B^T$.