Reg. No.										

GIET UNIVERSITY, GUNUPUR – 765022

B. Sc. (Ag.) (First Semester) Examinations, Januray-2024

EM-111 - Elementary Mathematics

Time: 2 hrs | Maximum : 50 Marks

The figures in the right hand margin indicate marks.

PART – A

Q.1. Fill in the blanks with suitable word / figure. **(0.5 x 10 = 5 Marks)**

a. The vertical line is called ---------- in a matrix.
b. The Point $(0,3)$ lies on -------axis.
c. Circle has a fixed point from ----------.
d. The derivative of e^{ax} is --------.
e. The derivative of cosx is --------.
f. The integration of a^x is --------.
g. The Transpose of A is denoted as ----------
h. The matrix which has only one column is called---------
i. A square matrix has no of rows are equal to----------.
j. The integration of a function is ----------

Q. 2. Define (or) Explain the following in one or two sentences. **(1 x 5 = 5 Marks)**

a. Find $\lim_{x\to 2} x^2 + 3x + 5$
b. Write down the general form of 3×3 matrix.
c. Find the derivative of Cos 10x
d. Find $\int (e^{3x} + 5)\, dx$
e. Write the equation of Circle for two points.

Q3. Match the following **(0.5 x 10 = 5 Marks)**

Column – A			Column – B	
(a)	slope		(i)	Highest value
(b)	$\lim_{x\to 2} x + 3$		(ii)	1×2
(c)	Derivative of logx		(iii)	C(h,k)
(d)	$\int e^x\, dx$		(iv)	5
(e)	Maximum		(v)	$e^x + C$
(f)	Zero matrix		(vi)	straightline
(g)	Centre of circle		(vii)	$\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$
(h)	X-axis		(viii)	$\frac{1}{x}$

(i)	Identity Matrix		(ix)	Horizontal
(j)	Order of $[2 \quad 1]$		(x)	$\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$

Q4. Write True or False against each statement **(0.5 x 10 = 5 Marks)**

a. $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ is called identity matrix .

b. The transpose of $[2 \quad 5]$ is $[5 \quad 2]$.

c. In the X-axis the y coordinate is Zero.

d. The point $(3,0)$ lies on X-axis.

e. The equation of Circle is $x^2 + y^2 = a^2$

f. The derivative of $sinx \ \ is \ cosx$ . .

g. The integration of $e^x w.r.t\ x \ \ is\ e^x + C$.

h. The integration of Constant is zero.

i. The derivative of $e^{2x}\ is\ \frac{e^{2x}}{2}$.

j. The derivative of e^{2x} is $2e^x$.

PART – B

Attempt *ANY FIVE* questions. All question carries equal marks **(6 x 5 = 30 Marks)**

5. Find the minor, Cofactor and Adjoint of the matrix $\begin{bmatrix} 2 & 4 \\ 5 & 7 \end{bmatrix}$.

6. Find the equation of straight line passing through the points $A(6,8)\ and\ B(10,16)$.

7. Find $\frac{dy}{dx}$. $Where \quad y = sin10x \ \ ii. y = e^{8x} \ \ iii. y = a^{2x} \ \ iv. y = x^3 + 4x + 3 \ \ v. y = logx \ \ vi. y = 4$

8. If A=$\begin{bmatrix} 1 & 0 & -2 \\ 2 & 3 & -1 \end{bmatrix}$ B=$\begin{bmatrix} 4 & -1 & 3 \\ 0 & 2 & 1 \end{bmatrix}$ C=$\begin{bmatrix} 2 & -3 & 0 \\ 1 & 4 & 5 \end{bmatrix}$ Find A+B,A-B, ,A+B+C, 2A, 3C, 2B.

9. Find the Limit of i. $\lim_{x\to 1} \frac{2x^3-3x^2+1}{9x^2+8x+7}$ ii. $\lim_{x\to 2} \frac{2x^3-3x^2}{9x^2+8x}$ iii. $\lim_{x\to 3} \frac{2x^3-3}{9x^2+7}$

10. Find the integration of i.$\int (ax^2 + bx + c)\, dx$ ii. $\int (5x^2 + logx + 1)$dx iii. $\int (3x^2 + 3x + 5)$dx

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