GIET UNIVERSITY, GUNUPUR – 765022
B. Sc. (Ag.) (First Semester) Examinations, March – 2023
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 perpendicular distance of P(x,y) from X-axis is -------.
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 Sin ax is --------.
f.   The integration of Cosx is --------.
g.   The Transpose of A is -----------
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 x^5 is ----------

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

a.   Find the order of matrix if A=[6   7   8].
b.   Find the no.of rows and column in 4 ×5 matrix.
c.   Find the derivative of Cos 10x
d.   Find $\int a^x \, dx$
e.   Write the equation of Circle for two points .

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

	Column – A			Column – B
(a)	$\int_0^1 2\,dx$		(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)	2
(g)	Centre of circle		(vii)	$\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$
(h)	X-axis		(viii)	$\dfrac{1}{x}$
(i)	Identity Matrix		(ix)	Horizontal
(j)	Order of [2 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* $\dfrac{e^{2x}}{2}$.

j. The value of $\int_0^1 x\ dx$ *is* $\dfrac{1}{4}$.

PART – B

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

5.	*Find the adjoint of a matrix* $A = \begin{bmatrix} 3 & 2 & 0 \\ 0 & 1 & 2 \\ 1 & 2 & 1 \end{bmatrix}$.
6.	Find the equation of straight line passing through the points $A(6,8)\ and\ B(10,16)$.

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

8.	Find the Maximum and Minimum values of $y = x^2 - 1$.
9.	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 $A + B$, $A - B$, , $A + B + C$, $2A$, $3C$, $2B$.
10.	Find the area under the Curve $f(x) = x^2 + 1$ in between $x = 2\ to\ x = 3$.

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