

GUJARAT TECHNOLOGICAL UNIVERSITY**Diploma Engineering – SEMESTER – 2(CtoD) New EXAMINATION – Summer-2023****Subject Code: C4320002****Date: 03-08-2023****Subject Name: ENGINEERING MATHEMATICS****Time: 10:30 AM TO 12:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Use of programmable and communication aids are strictly prohibited.
5. Use of non-programmable scientific calculator is permitted.
6. English version is authentic.

No.	Question Text and Option. પ્રશ્ન અને વિકલ્પો.			
1.	If $A = \begin{bmatrix} 3 & 5 \\ 1 & 2 \end{bmatrix}$ then $A^T = \underline{\hspace{2cm}}$.			
	A.	$\begin{bmatrix} 3 & 1 \\ 5 & 2 \end{bmatrix}$	B.	$\begin{bmatrix} 3 & 5 \\ 1 & 2 \end{bmatrix}$
	C.	$\begin{bmatrix} -3 & -5 \\ -1 & -2 \end{bmatrix}$	D.	$\begin{bmatrix} -3 & 5 \\ 1 & -2 \end{bmatrix}$
૧.	$A = \begin{bmatrix} 3 & 8 \\ 1 & 2 \end{bmatrix}$ માટે $A^T = \underline{\hspace{2cm}}$.			
	A.	$\begin{bmatrix} 3 & 1 \\ 5 & 2 \end{bmatrix}$	B.	$\begin{bmatrix} 3 & 5 \\ 1 & 2 \end{bmatrix}$
	C.	$\begin{bmatrix} -3 & -5 \\ -1 & -2 \end{bmatrix}$	D.	$\begin{bmatrix} -3 & 5 \\ 1 & -2 \end{bmatrix}$
2.	If $A = \begin{bmatrix} 3 & 5 \\ -1 & -2 \end{bmatrix}$ then $adj(A) = \underline{\hspace{2cm}}$.			
	A.	$\begin{bmatrix} -2 & -5 \\ -1 & -3 \end{bmatrix}$	B.	$\begin{bmatrix} -2 & -5 \\ 1 & 3 \end{bmatrix}$
	C.	$\begin{bmatrix} 2 & 5 \\ 1 & 3 \end{bmatrix}$	D.	$\begin{bmatrix} 2 & -5 \\ 1 & -3 \end{bmatrix}$
૨.	If $A = \begin{bmatrix} 3 & 5 \\ -1 & -2 \end{bmatrix}$ then $adj(A) = \underline{\hspace{2cm}}$.			
	A.	$\begin{bmatrix} -2 & -5 \\ -1 & -3 \end{bmatrix}$	B.	$\begin{bmatrix} -2 & -5 \\ 1 & 3 \end{bmatrix}$
	C.	$\begin{bmatrix} 2 & 5 \\ 1 & 3 \end{bmatrix}$	D.	$\begin{bmatrix} 2 & -5 \\ 1 & -3 \end{bmatrix}$
3.	If order of matrix is 2×3 then it has _____ elements.			
	A.	2	B.	3
	C.	6	D.	12
૩.	શ્રેણિકની કક્ષા 2×3 હોય તો તેમાં કુલ _____ ઘટકો હોય.			
	A.	2	B.	3

	C.	6	D.	12
4.	Order of the matrix $A = \begin{bmatrix} 5 & 3 & -1 \\ 1 & 4 & 2 \end{bmatrix}$ is ____ .			
	A.	3x3	B.	3x2
	C.	2x2	D.	2x3
૪.	$A = \begin{bmatrix} 5 & 3 & -1 \\ 1 & 4 & 2 \end{bmatrix}$ હોય તો A નો ક્રમ ____ છે.			
	A.	3x3	B.	3x2
	C.	2x2	D.	2x3
5.	$i^2 + 1 = \underline{\hspace{2cm}}$.			
	A.	0	B.	i
	C.	$-i$	D.	-1
૫.	$i^2 + 1 = \underline{\hspace{2cm}}$			
	A.	0	B.	i
	C.	$-i$	D.	-1
6.	If $z = 1 - 2i$ then $\text{Im}(z) = \underline{\hspace{2cm}}$.			
	A.	1	B.	i
	C.	$-i$	D.	-2
૬.	$z = 1 - 2i$ માટે $\text{Im}(z) = \underline{\hspace{2cm}}$.			
	A.	1	B.	i
	C.	$-i$	D.	-2
7.	If $z_1 = 5 + 2i$ and $z_2 = 1 + 3i$ then $z_1 \cdot z_2 = \underline{\hspace{2cm}}$.			
	A.	$7 - 3i$	B.	$-1 + 17i$
	C.	$3 + 7i$	D.	$3 - 7i$
૭.	જો $z_1 = 5 + 2i$ અને $z_2 = 1 + 3i$ તો $z_1 \cdot z_2 = \underline{\hspace{2cm}}$.			
	A.	$7 - 3i$	B.	$-1 + 17i$
	C.	$3 + 7i$	D.	$3 - 7i$
8.	$(\cos \theta + i \sin \theta)^3 = \underline{\hspace{2cm}}$			
	A.	$\cos 2\theta + i \sin 2\theta$	B.	$\cos 2\theta - i \sin 2\theta$
	C.	$\cos 3\theta + i \sin 3\theta$	D.	$\sin 3\theta - i \cos 3\theta$
૮.	$(\cos \theta + i \sin \theta)^3 = \underline{\hspace{2cm}}$			
	A.	$\cos 2\theta + i \sin 2\theta$	B.	$\cos 2\theta - i \sin 2\theta$
	C.	$\cos 3\theta + i \sin 3\theta$	D.	$\sin 3\theta - i \cos 3\theta$
9.	If A is non singular matrix then ____ .			
	A.	$A = A^T$	B.	$ A = 0$
	C.	$ A \neq 0$	D.	$A = -A^T$
૯.	જો A સામાન્ય શ્રેણિક હોય તો ____ .			
	A.	$A = A^T$	B.	$ A = 0$
	C.	$ A \neq 0$	D.	$A = -A^T$
10.	For complex number z , $z \cdot \bar{z} = \underline{\hspace{2cm}}$.			
	A.	$ z $	B.	$ z ^2$
	C.	$ \bar{z} $	D.	1
૧૦.	સંકર સંખ્યા z , માટે $z \cdot \bar{z} = \underline{\hspace{2cm}}$.			
	A.	$ z $	B.	$ z ^2$
	C.	$ \bar{z} $	D.	1

11.	$\frac{dy}{dx}(e^x) = \underline{\hspace{2cm}}$.			
	A.	1	B.	0
	C.	e^x	D.	$\sin x$
૧૧.	$\frac{dy}{dx}(e^x) = \underline{\hspace{2cm}}$.			
	A.	1	B.	0
	C.	e^x	D.	$\sin x$
12.	If $z_1 = 2+3i$ and $z_2 = 3+8i$ then $z_1 + z_2 = \underline{\hspace{2cm}}$.			
	A.	$5+11i$	B.	$11+5i$
	C.	$5-i$	D.	5
૧૨.	જો $z_1 = 2+3i$ અને $z_2 = 3+8i$ તો $z_1 + z_2 = \underline{\hspace{2cm}}$.			
	A.	$5+11i$	B.	$11+5i$
	C.	$5-i$	D.	5
13.	For $A = \begin{bmatrix} 4 & 2 \\ 1 & 3 \end{bmatrix}$, $A+A = \underline{\hspace{2cm}}$.			
	A.	$\begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix}$	B.	$\begin{bmatrix} 8 & 4 \\ 2 & 2 \end{bmatrix}$
	C.	$\begin{bmatrix} 8 & 4 \\ 2 & 6 \end{bmatrix}$	D.	$\begin{bmatrix} 8 & 4 \\ 4 & 6 \end{bmatrix}$
૧૩.	$A = \begin{bmatrix} 4 & 2 \\ 1 & 3 \end{bmatrix}$ માટે $A+A = \underline{\hspace{2cm}}$			
	A.	$\begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix}$	B.	$\begin{bmatrix} 8 & 4 \\ 2 & 2 \end{bmatrix}$
	C.	$\begin{bmatrix} 8 & 4 \\ 2 & 6 \end{bmatrix}$	D.	$\begin{bmatrix} 8 & 4 \\ 4 & 6 \end{bmatrix}$
14.	If $\begin{bmatrix} x & 2 \\ 1 & 1 \end{bmatrix} = \begin{bmatrix} 0 & 2 \\ 1 & y \end{bmatrix}$ then $x = \underline{\hspace{2cm}}$ and $y = \underline{\hspace{2cm}}$.			
	A.	$x=0$ and $y=1$	B.	$x=1$ and $y=1$
	C.	$x=0$ and $y=0$	D.	$x=1$ and $y=0$
૧૪.	જો $\begin{bmatrix} x & 2 \\ 1 & 1 \end{bmatrix} = \begin{bmatrix} 0 & 2 \\ 1 & y \end{bmatrix}$ તો $x = \underline{\hspace{2cm}}$ અને $y = \underline{\hspace{2cm}}$.			
	A.	$x=0$ અને $y=1$	B.	$x=1$ અને $y=1$
	C.	$x=0$ અને $y=0$	D.	$x=1$ અને $y=0$
15.	If $f(x) = 4x^2 + 5x + 7$ then $f'(0) = \underline{\hspace{2cm}}$.			
	A.	12	B.	7
	C.	8	D.	5
૧૫.	જો $f(x) = 4x^2 + 5x + 7$ તો $f'(0) = \underline{\hspace{2cm}}$.			
	A.	12	B.	7
	C.	8	D.	5
16.	If $z = 4+7i$ then $\text{Re}(z) = \underline{\hspace{2cm}}$.			
	A.	2	B.	7
	C.	4	D.	0
૧૬.	$z = 4+7i$ માટે $\text{Re}(z) = \underline{\hspace{2cm}}$.			
	A.	2	B.	7
	C.	4	D.	0

17.	For complex number $z = -3 + 4i$, $ z = \underline{\hspace{1cm}}$.			
	A.	0	B.	5
	C.	-5	D.	25
૧૭.	સંકર સંખ્યા $z = -3 + 4i$ માટે $ z = \underline{\hspace{1cm}}$.			
	A.	0	B.	5
	C.	-5	D.	25
18.	If $z = -1 - i$ then $\bar{z} = \underline{\hspace{1cm}}$.			
	A.	$1 + i$	B.	$-1 + i$
	C.	$1 - i$	D.	$-1 - i$
૧૮.	જો $z = -1 - i$ તો $\bar{z} = \underline{\hspace{1cm}}$.			
	A.	$1 + i$	B.	$-1 + i$
	C.	$1 - i$	D.	$-1 - i$
19.	If $A = \begin{bmatrix} 2 & 1 \\ 1 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 0 & 3 \\ 0 & 1 \end{bmatrix}$ then $AB = \underline{\hspace{1cm}}$.			
	A.	$\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$	B.	$\begin{bmatrix} 0 & 7 \\ 2 & 0 \end{bmatrix}$
	C.	$\begin{bmatrix} 0 & 0 \\ 7 & 0 \end{bmatrix}$	D.	$\begin{bmatrix} 0 & 7 \\ 0 & 3 \end{bmatrix}$
૧૯.	જો $A = \begin{bmatrix} 2 & 1 \\ 1 & 0 \end{bmatrix}$ અને $B = \begin{bmatrix} 0 & 3 \\ 0 & 1 \end{bmatrix}$ હોય તો $AB = \underline{\hspace{1cm}}$.			
	A.	$\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$	B.	$\begin{bmatrix} 0 & 7 \\ 2 & 0 \end{bmatrix}$
	C.	$\begin{bmatrix} 0 & 0 \\ 7 & 0 \end{bmatrix}$	D.	$\begin{bmatrix} 0 & 7 \\ 0 & 3 \end{bmatrix}$
20.	If $A = \begin{bmatrix} 1 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 4 \\ 2 \end{bmatrix}$ then $AB = \underline{\hspace{1cm}}$.			
	A.	$\begin{bmatrix} 4 & 2 \\ 2 & 4 \end{bmatrix}$	B.	$\begin{bmatrix} 3 & 2 \\ 9 & 6 \end{bmatrix}$
	C.	$\begin{bmatrix} 4 & 6 \end{bmatrix}$	D.	$\begin{bmatrix} 8 \end{bmatrix}$
૨૦.	જો $A = \begin{bmatrix} 1 & 2 \end{bmatrix}$ અને $B = \begin{bmatrix} 4 \\ 2 \end{bmatrix}$ તો $AB = \underline{\hspace{1cm}}$.			
	A.	$\begin{bmatrix} 4 & 2 \\ 2 & 4 \end{bmatrix}$	B.	$\begin{bmatrix} 3 & 2 \\ 9 & 6 \end{bmatrix}$
	C.	$\begin{bmatrix} 4 & 6 \end{bmatrix}$	D.	$\begin{bmatrix} 8 \end{bmatrix}$
21.	$\begin{bmatrix} 2 & 1 \\ 1 & 0 \end{bmatrix} + \begin{bmatrix} 0 & 3 \\ 0 & 1 \end{bmatrix} = \underline{\hspace{1cm}}$			
	A.	$\begin{bmatrix} 2 & 4 \\ 1 & 1 \end{bmatrix}$	B.	$\begin{bmatrix} 2 & 4 \\ 0 & 1 \end{bmatrix}$
	C.	$\begin{bmatrix} 2 & 4 \\ 1 & 0 \end{bmatrix}$	D.	$\begin{bmatrix} 2 & 0 \\ 1 & 0 \end{bmatrix}$
૨૧.	$\begin{bmatrix} 2 & 1 \\ 1 & 0 \end{bmatrix} + \begin{bmatrix} 0 & 3 \\ 0 & 1 \end{bmatrix} = \underline{\hspace{1cm}}$			
	A.	$\begin{bmatrix} 2 & 4 \\ 1 & 1 \end{bmatrix}$	B.	$\begin{bmatrix} 2 & 4 \\ 0 & 1 \end{bmatrix}$

	C.	$\begin{bmatrix} 2 & 4 \\ 1 & 0 \end{bmatrix}$	D.	$\begin{bmatrix} 2 & 0 \\ 1 & 0 \end{bmatrix}$
22.	For $z = 2i$, $\arg(z) = \underline{\hspace{1cm}}$.			
	A.	2π	B.	π
	C.	$\frac{\pi}{2}$	D.	$\frac{\pi}{4}$
૨૨.	સંકર સંખ્યા $z = 2i$ માટે $\arg(z) = \underline{\hspace{1cm}}$.			
	A.	2π	B.	π
	C.	$\frac{\pi}{2}$	D.	$\frac{\pi}{4}$
23.	$y = \sin x$ then $\frac{dy}{dx} = \underline{\hspace{1cm}}$.			
	A.	$\cos x$	B.	0
	C.	$x \cos x + \sin x$	D.	$\sin x$
૨૩.	$y = \sin x$ માટે $\frac{dy}{dx} = \underline{\hspace{1cm}}$.			
	A.	$\cos x$	B.	0
	C.	$x \cos x + \sin x$	D.	$\sin x$
24.	Degree of the differential equation $\left(\frac{d^3y}{dx^3}\right)^3 - \frac{dy}{dx} + y = 0$ is $\underline{\hspace{1cm}}$.			
	A.	1	B.	2
	C.	3	D.	4
૨૪.	વિકલ સમીકરણ $\left(\frac{d^3y}{dx^3}\right)^3 - \frac{dy}{dx} + y = 0$ ની પરિમાણ $\underline{\hspace{1cm}}$ છે.			
	A.	1	B.	2
	C.	3	D.	4
25.	For $A = \begin{bmatrix} 1 & -1 \\ 0 & 3 \end{bmatrix}$, $2A = \underline{\hspace{1cm}}$.			
	A.	$\begin{bmatrix} 1 & -1 \\ 0 & 3 \end{bmatrix}$	B.	$\begin{bmatrix} 1 & -1 \\ 2 & 3 \end{bmatrix}$
	C.	$\begin{bmatrix} 2 & -2 \\ 0 & 6 \end{bmatrix}$	D.	$\begin{bmatrix} 2 & 2 \\ 4 & 6 \end{bmatrix}$
૨૫.	$A = \begin{bmatrix} 1 & -1 \\ 0 & 3 \end{bmatrix}$ માટે $2A = \underline{\hspace{1cm}}$			
	A.	$\begin{bmatrix} 1 & -1 \\ 0 & 3 \end{bmatrix}$	B.	$\begin{bmatrix} 1 & -1 \\ 2 & 3 \end{bmatrix}$
	C.	$\begin{bmatrix} 2 & -2 \\ 0 & 6 \end{bmatrix}$	D.	$\begin{bmatrix} 2 & 2 \\ 4 & 6 \end{bmatrix}$
26.	$x = a \cos \theta + 1, y = a \sin \theta + 1$ then $\frac{dy}{dx} = \underline{\hspace{1cm}}$.			
	A.	$-\cot \theta$	B.	$a \cot \theta$
	C.	$\tan \theta$	D.	$a \tan \theta$
૨૬.	$x = a \cos \theta + 1, y = a \sin \theta + 1$ માટે $\frac{dy}{dx} = \underline{\hspace{1cm}}$.			
	A.	$-\cot \theta$	B.	$a \cot \theta$
	C.	$\tan \theta$	D.	$a \tan \theta$

27.	$\frac{d}{dx}(\cot^{-1} x) = \underline{\hspace{1cm}}.$			
	A.	$\frac{-1}{1+x^2}$	B.	$\frac{1}{1+x^2}$
	C.	$\frac{-1}{1-x^2}$	D.	$\frac{1}{1-x^2}$
૨૭.	$\frac{d}{dx}(\cot^{-1} x) = \underline{\hspace{1cm}}$			
	A.	$\frac{-1}{1+x^2}$	B.	$\frac{1}{1+x^2}$
	C.	$\frac{-1}{1-x^2}$	D.	$\frac{1}{1-x^2}$
28.	$\frac{d}{dx}[\log(\sin x)] = \underline{\hspace{1cm}}.$			
	A.	$\frac{1}{\sin x}$	B.	$\frac{1}{\cos x}$
	C.	$\tan \theta$	D.	$\cot \theta$
૨૮.	$\frac{d}{dx}[\log(\sin x)] = \underline{\hspace{1cm}}.$			
	A.	$\frac{1}{\sin x}$	B.	$\frac{1}{\cos x}$
	C.	$\tan \theta$	D.	$\cot \theta$
29.	Degree of the differential equation $\frac{dy}{dx} + y = 0$ is ____.			
	A.	0	B.	1
	C.	2	D.	3
૨૯.	વિકલ સમીકરણ $\frac{dy}{dx} + y = 0$ નું પરિમાણ ____ છે.			
	A.	0	B.	1
	C.	2	D.	3
30.	$\frac{d}{dx}\left(\frac{1}{11}\right) = \underline{\hspace{1cm}}.$			
	A.	11	B.	0
	C.	$\frac{-2}{x}$	D.	$\frac{1}{2x}$
૩૦.	$\frac{d}{dx}\left(\frac{1}{11}\right) = \underline{\hspace{1cm}}.$			
	A.	11	B.	0
	C.	$\frac{-2}{x}$	D.	$\frac{1}{2x}$
31.	Order of the differential equation $\left(\frac{d^2 y}{dx^2}\right)^2 - \frac{dy}{dx} + y = 0$ is ____.			
	A.	1	B.	3
	C.	2	D.	4
૩૧.	વિકલ સમીકરણ $\left(\frac{d^2 y}{dx^2}\right)^2 - \frac{dy}{dx} + y = 0$ ની કક્ષા ____ છે.			
	A.	1	B.	3
	C.	2	D.	4

32.	If $f(x) = 3^x$ then $f'(0) = \underline{\hspace{1cm}}$.		
	A.	0	B. $\log 3$
	C.	$3\log 3$	D. 4
3૨.	જો $f(x) = 3^x$ તો $f'(0) = \underline{\hspace{1cm}}$.		
	A.	0	B. $\log 3$
	C.	$3\log 3$	D. 4
33.	$\frac{d}{dx} \sin(2x-3) = \underline{\hspace{1cm}}$.		
	A.	$\sin(2x-3)$	B. $2\sin(2x-3)$
	C.	$2\cos(2x-3)$	D. $\cos(2x-3)$
33.	$\frac{d}{dx} \sin(2x-3) = \underline{\hspace{1cm}}$.		
	A.	$\sin(2x-3)$	B. $2\sin(2x-3)$
	C.	$2\cos(2x-3)$	D. $\cos(2x-3)$
34.	$\frac{d}{dx}(x) = \underline{\hspace{1cm}}$.		
	A.	0	B. e
	C.	1	D. π
3૪.	$\frac{d}{dx}(x) = \underline{\hspace{1cm}}$.		
	A.	0	B. e
	C.	1	D. π
35.	$\frac{d}{dx}(\sec x) = \underline{\hspace{1cm}}$.		
	A.	$\tan x$	B. $\sec x + \tan x$
	C.	$\sec^2 x$	D. $\sec x \cdot \tan x$
3૫.	$\frac{d}{dx}(\sec x) = \underline{\hspace{1cm}}$.		
	A.	$\tan x$	B. $\sec x + \tan x$
	C.	$\sec^2 x$	D. $\sec x \cdot \tan x$
36.	$x = 2t, y = t^2$ then $\frac{dy}{dx} = \underline{\hspace{1cm}}$.		
	A.	t	B. t^2
	C.	$3t$	D. 0
3૬.	$x = 2t, y = t^2$ માટે $\frac{dy}{dx} = \underline{\hspace{1cm}}$.		
	A.	t	B. t^2
	C.	$3t$	D. 0
37.	$f(x)$ has maxima at $x = a$ if _____.		
	A.	$f'(a) = 0, f''(a) = 0$	B. $f'(a) = 0, f''(a) > 0$
	C.	$f'(a) > 0, f''(a) < 0$	D. $f'(a) = 0, f''(a) < 0$
39.	$f(x)$ ને $x = a$ પાસે મહત્તમ મુલ્ય હશે જો _____ થાય.		
	A.	$f'(a) = 0, f''(a) = 0$	B. $f'(a) = 0, f''(a) > 0$
	C.	$f'(a) > 0, f''(a) < 0$	D. $f'(a) = 0, f''(a) < 0$
38.	For $y = \cos x, \frac{d^2 y}{dx^2} = \underline{\hspace{1cm}}$.		
	A.	$\cos x$	B. $-\sin x$
	C.	$-\cos x$	D. $\sin x$

36.	$y = \cos x$ માટે $\frac{d^2 y}{dx^2} = \underline{\hspace{2cm}}$.			
	A.	$\cos x$	B.	$-\sin x$
	C.	$-\cos x$	D.	$\sin x$
39.	If $y = e^{3x}$ then $\frac{d^2 y}{dx^2} = \underline{\hspace{2cm}}$.			
	A.	$3e^x$	B.	$9e^{3x}$
	C.	e^{9x}	D.	$3e^{2x}$
3૯.	જો $y = e^{3x}$ તો $\frac{d^2 y}{dx^2} = \underline{\hspace{2cm}}$.			
	A.	$3e^x$	B.	$9e^{3x}$
	C.	e^{9x}	D.	$3e^{2x}$
40.	Equation of the motion of moving particle is given by $s = 2t^2 - 3t + 6$, then velocity at $t = 1$ seconds is ____.			
	A.	2 units	B.	1 units
	C.	4 units	D.	6 units
૪૦.	એક ગતિ કરતા કણનું સમીકરણ $s = 2t^2 - 3t + 6$ છે, $t = 1$ સેકન્ડે તેનો વેગ ____ હશે.			
	A.	2 એકમ	B.	1 એકમ
	C.	4 એકમ	D.	6 એકમ
41.	$\int \sec x \cdot \tan x \, dx = \underline{\hspace{2cm}}$.			
	A.	$\tan x + c$	B.	$\sec x + \tan x + c$
	C.	$\sec x + c$	D.	$\sec x \cdot \tan x + c$
૪૧.	$\int \sec x \cdot \tan x \, dx = \underline{\hspace{2cm}}$.			
	A.	$\tan x + c$	B.	$\sec x + \tan x + c$
	C.	$\sec x + c$	D.	$\sec x \cdot \tan x + c$
42.	$\int \frac{1}{\sqrt{1-x^2}} \, dx = \underline{\hspace{2cm}}$.			
	A.	$\tan^{-1} x + c$	B.	$\sin^{-1} x + c$
	C.	$\cos^{-1} x + c$	D.	$\cot^{-1} x + c$
૪૨.	$\int \frac{1}{\sqrt{1-x^2}} \, dx = \underline{\hspace{2cm}}$.			
	A.	$\tan^{-1} x + c$	B.	$\sin^{-1} x + c$
	C.	$\cos^{-1} x + c$	D.	$\cot^{-1} x + c$
43.	$\int (2x+5) \, dx = \underline{\hspace{2cm}} + c$.			
	A.	$x^2 + 5x$	B.	$x^2 + 5x^2$
	C.	2	D.	$(2x-3)^2$
૪૩.	$\int (2x+5) \, dx = \underline{\hspace{2cm}} + c$.			
	A.	$x^2 + 5x$	B.	$x^2 + 5x^2$
	C.	2	D.	$(2x-3)^2$
44.	$\int (1) \, d\theta = \underline{\hspace{2cm}} + c$			
	A.	0	B.	1
	C.	θ	D.	x
૪૪.	$\int (1) \, d\theta = \underline{\hspace{2cm}} + c$			
	A.	0	B.	1
	C.	θ	D.	x
45.	$\int (\sin x - \cos x) \, dx = \underline{\hspace{2cm}}$.			

	A.	$\cos x - \sin x + c$	B.	$\cos x + \sin x + c$
	C.	$-\sin x - \cos x + c$	D.	$-\sin x + \cos x + c$
୪୩.	$\int (\sin x - \cos x) dx = \underline{\hspace{2cm}}.$			
	A.	$\cos x - \sin x + c$	B.	$\cos x + \sin x + c$
	C.	$-\sin x - \cos x + c$	D.	$-\sin x + \cos x + c$
46.	$\int e^{3x} dx = \underline{\hspace{2cm}} + c.$			
	A.	e^{3x}	B.	$3e^{3x}$
	C.	$\frac{e^{3x}}{3}$	D.	$3e^{2x}$
୪୫.	$\int e^{3x} dx = \underline{\hspace{2cm}} + c$			
	A.	e^{3x}	B.	$3e^{3x}$
	C.	$\frac{e^{3x}}{3}$	D.	$3e^{2x}$
47.	If $z_1 = 5 + 7i$ and $z_2 = 1 + 3i$ then $z_1 - z_2 = \underline{\hspace{2cm}}.$			
	A.	$4 + 4i$	B.	$1 + 3i$
	C.	$4 - 4i$	D.	$1 - 3i$
୪୭.	୪୩ $z_1 = 5 + 7i$ ଓ ୪୫ $z_2 = 1 + 3i$ ନି $z_1 - z_2 = \underline{\hspace{2cm}}.$			
	A.	$4 + 4i$	B.	$1 + 3i$
	C.	$4 - 4i$	D.	$1 - 3i$
48.	$\int_0^1 \frac{1}{1+x^2} dx = \underline{\hspace{2cm}}.$			
	A.	0	B.	1
	C.	$\frac{\pi}{4}$	D.	$\frac{\pi}{2}$
୪୮.	$\int_0^1 \frac{1}{1+x^2} dx = \underline{\hspace{2cm}}.$			
	A.	0	B.	1
	C.	$\frac{\pi}{4}$	D.	$\frac{\pi}{2}$
49.	$\int \frac{1}{x-4} dx = \underline{\hspace{2cm}} + c.$			
	A.	$\log(x)$	B.	$\log(x-4)$
	C.	$x-4$	D.	x
୪୯.	$\int \frac{1}{x-4} dx = \underline{\hspace{2cm}} + c.$			
	A.	$\log(x)$	B.	$\log(x-4)$
	C.	$x-4$	D.	x
50.	$\int_{-3}^3 x^3 dx = \underline{\hspace{2cm}}.$			
	A.	9	B.	2
	C.	1	D.	0
୫୦.	$\int_{-3}^3 x^3 dx = \underline{\hspace{2cm}}.$			
	A.	9	B.	2
	C.	1	D.	0
51.	$x - 3i = 4 + yi$ then $x = \underline{\hspace{1cm}}, y = \underline{\hspace{1cm}}$			
	A.	4, -3	B.	-4, -3

	C.	-4, 3	D.	4, 3
૫૧.	જો $x - 3i = 4 + yi$ તો $x = _, y = _$			
	A.	4, -3	B.	-4, -3
	C.	-4, 3	D.	4, 3
52.	Let be I an identity matrix then $(I)^T = _$.			
	A.	$2I$	B.	A^T
	C.	I	D.	0
૫૨.	જો I એ એકમ શ્રેણિક હોય તો $(I)^T = _$.			
	A.	$2I$	B.	A^T
	C.	I	D.	0
53.	Area of the region bounded by the curves $y = x^2$, $x = 0$ and $x = 3$ is _____.			
	A.	4	B.	6
	C.	7	D.	9
૫૩.	વક્રો $y = x^2$, $x = 0$ અને $x = 3$ થી ઘેરાયેલા પ્રદેશ નું ક્ષેત્રફલ _____ થશે.			
	A.	4	B.	6
	C.	7	D.	9
54.	$\int \frac{dx}{\sqrt{1-x^2}} = _$.			
	A.	$\sin^{-1} x + c$	B.	$\sin^{-1}\left(\frac{x}{2}\right) + c$
	C.	$\sin^{-1}(2x) + c$	D.	$2\sin^{-1}(x) + c$
૫૪.	$\int \frac{dx}{\sqrt{1-x^2}} = _$.			
	A.	$\sin^{-1} x + c$	B.	$\sin^{-1}\left(\frac{x}{2}\right) + c$
	C.	$\sin^{-1}(2x) + c$	D.	$2\sin^{-1}(x) + c$
55.	To find $\int f(x)dx$, for which function given below we have to use the rule of integration by parts?			
	A.	$f(x) = e^x$	B.	$f(x) = x^2 + \sin x$
	C.	$f(x) = \sin x$	D.	$f(x) = x \sin x$
૫૫.	$\int f(x)dx$ શોધવા માટે નીચેનામાંથી કયા વિધેય માટે ખંડશઃ સંકલન નો નિયમનો ઉપયોગ કરવો પડે?			
	A.	$f(x) = e^x$	B.	$f(x) = x^2 + \sin x$
	C.	$f(x) = \sin x$	D.	$f(x) = x \sin x$
56.	$\int \tan x dx = _ + c$.			
	A.	$\sec x$	B.	$\sec x \cdot \tan x$
	C.	$\log \sec x $	D.	$\log \cos x $
૫૬.	$\int \tan x dx = _ + c$.			
	A.	$\sec x$	B.	$\sec x \cdot \tan x$
	C.	$\log \sec x $	D.	$\log \cos x $
57.	Order of the differential equation $\left(\frac{d^3 y}{dx^3}\right)^2 - \left(\frac{dy}{dx}\right)^4 + 2y = \sin x$ is _____.			
	A.	4	B.	3
	C.	2	D.	1

૫૭.	વિકલ સમીકરણ $\left(\frac{d^3y}{dx^3}\right)^2 - \left(\frac{dy}{dx}\right)^4 + 2y = \sin x$ ની કક્ષા ____ છે.			
	A.	4	B.	3
	C.	2	D.	1
58.	Degree of the differential equation $\left(\frac{d^2y}{dx^2}\right)^4 + \left(\frac{dy}{dx}\right)^2 + y = 0$ is ____.			
	A.	3	B.	4
	C.	2	D.	1
૫૮.	વિકલ સમીકરણ $\left(\frac{d^2y}{dx^2}\right)^4 + \left(\frac{dy}{dx}\right)^2 + y = 0$ ની પરિમાણ ____ છે.			
	A.	3	B.	4
	C.	2	D.	1
59.	For any matrix A, $(A^T)^T =$ ____ .			
	A.	A	B.	A^T
	C.	I	D.	0
૫૯.	કોઈ પણ શ્રેણિક A માટે $(A^T)^T =$ ____ .			
	A.	A	B.	A^T
	C.	I	D.	0
60.	If A is of order 3×2 and B is of order 2×1 then order of matrix AB is ____.			
	A.	3×3	B.	1×3
	C.	3×1	D.	1×2
૬૦.	શ્રેણિક A નો ક્રમ 3×2 અને B નો ક્રમ 2×1 હોય તો શ્રેણિક AB નો ક્રમ ____ થાય.			
	A.	3×3	B.	1×3
	C.	3×1	D.	1×2
61.	Degree of the differential equation $\sin\left(\frac{dy}{dx}\right) + y = 0$ is ____.			
	A.	1	B.	2
	C.	0	D.	Not defined
૬૧.	વિકલ સમીકરણ $\sin\left(\frac{dy}{dx}\right) + y = 0$ નું પરિમાણ ____ થશે.			
	A.	1	B.	2
	C.	0	D.	વ્યાખ્યાયિત નથી.
62.	Which is a solution of differential equation $\frac{dy}{dx} - y = 0$			
	A.	$\sin x$	B.	6
	C.	$\cos x$	D.	e^x
૬૨.	નીચેનામાંથી કયું વિધેય વિકલ સમીકરણ $\frac{dy}{dx} - y = 0$ નું ઉકેલ થશે?			
	A.	$\sin x$	B.	6
	C.	$\cos x$	D.	e^x
63.	Solution of differential equation $xdx + ydy = 0$ is ____.			
	A.	$x + y = c$	B.	$x^2 + y^2 = c$
	C.	$xy = c$	D.	$x^2 - y^2 = c$
૬૩.	વિકલ સમીકરણ $xdx + ydy = 0$ નો ઉકેલ ____ છે.			
	A.	$x + y = c$	B.	$x^2 + y^2 = c$
	C.	$xy = c$	D.	$x^2 - y^2 = c$
64.	Which is a differential equation from given equations?			
	A.	$x + y = 3$	B.	$xy = c$

	C.	$\frac{dy}{dx} + y = 0$	D.	$x - \sin x = 0$
૬૪.	નીચેના માંથી કયું સમીકરણ એ વિકલ સમીકરણ છે?			
	A.	$x + y = 3$	B.	$xy = c$
	C.	$\frac{dy}{dx} + y = 0$	D.	$x - \sin x = 0$
65.	If $\begin{bmatrix} x & 1 \end{bmatrix} = \begin{bmatrix} 2 & y \end{bmatrix}$ then $x = \underline{\hspace{1cm}}$, $y = \underline{\hspace{1cm}}$.			
	A.	2, 1	B.	1, 2
	C.	2, 2	D.	1, 1
૬૫.	જો $\begin{bmatrix} x & 1 \end{bmatrix} = \begin{bmatrix} 2 & y \end{bmatrix}$ હોય તો $x = \underline{\hspace{1cm}}$, $y = \underline{\hspace{1cm}}$.			
	A.	2, 1	B.	1, 2
	C.	2, 2	D.	1, 1
66.	Solution of differential equation $ydx - xdy = 0$ is _____.			
	A.	$x - y = c$	B.	$x^2 - y^2 = c$
	C.	$x^2 + y^2 = c$	D.	$x = cy$
૬૬.	વિકલ સમીકરણ $ydx - xdy = 0$ નો ઉકેલ _____ છે.			
	A.	$x - y = c$	B.	$x^2 - y^2 = c$
	C.	$x^2 + y^2 = c$	D.	$x = cy$
67.	$\begin{bmatrix} 6 & 1 \end{bmatrix} + \begin{bmatrix} 2 & 5 \end{bmatrix} = \underline{\hspace{1cm}}$			
	A.	$\begin{bmatrix} 6 & 1 \end{bmatrix}$	B.	$\begin{bmatrix} 2 & 1 \end{bmatrix}$
	C.	$\begin{bmatrix} 8 & 6 \end{bmatrix}$	D.	$\begin{bmatrix} 6 & 6 \end{bmatrix}$
૬૭.	$\begin{bmatrix} 6 & 1 \end{bmatrix} + \begin{bmatrix} 2 & 5 \end{bmatrix} = \underline{\hspace{1cm}}$			
	A.	$\begin{bmatrix} 6 & 1 \end{bmatrix}$	B.	$\begin{bmatrix} 2 & 1 \end{bmatrix}$
	C.	$\begin{bmatrix} 8 & 6 \end{bmatrix}$	D.	$\begin{bmatrix} 6 & 6 \end{bmatrix}$
68.	Formula for solving linear differential equation $\frac{dy}{dx} + P(x)y = Q(x)$ is given by $y(I.F) = \int \underline{\hspace{1cm}} \cdot (I.F)dx + c$.			
	A.	$P(x)$	B.	$Q(x)$
	C.	$P(x) + Q(x)$	D.	$xP(x)$
૬૮.	સુરેખ વિકલ સમીકરણ $\frac{dy}{dx} + P(x)y = Q(x)$ નો ઉકેલ $y(I.F) = \int \underline{\hspace{1cm}} \cdot (I.F)dx + c$ છે.			
	A.	$P(x)$	B.	$Q(x)$
	C.	$P(x) + Q(x)$	D.	$xP(x)$
69.	Integrating factor (I.F.) of differential equation $\frac{dy}{dx} + \frac{y}{x} = e^x$ is _____.			
	A.	$\log x$	B.	e^x
	C.	$\frac{1}{x}$	D.	x
૬૯.	વિકલ સમીકરણ $\frac{dy}{dx} + \frac{y}{x} = e^x$ નો સંકલ્પકારક અવયવ _____ છે.			
	A.	$\log x$	B.	e^x
	C.	$\frac{1}{x}$	D.	x
70.	Integrating factor (I.F.) of differential equation $\frac{dy}{dx} + y \tan x = 2 \sin x$ is _____.			

	A.	$\tan x$	B.	$\cot x$
	C.	$\sec x$	D.	$\sin x$
૭૦.	વિકલ સમીકરણ $\frac{dy}{dx} + y \tan x = 2 \sin x$ નો સંકલ્પકારક અવયવ _____ છે.			
	A.	$\tan x$	B.	$\cot x$
	C.	$\sec x$	D.	$\sin x$
