Seat No.: Enrolment No.:

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma Engineering – SEMESTER – 2(CtoD) New – EXAMINATION – Winter-2023

Subject Code: C4320002 Date: 12-01-2024

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 & 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.	The Order of Matrix $\begin{bmatrix}1 & 2\\0 & -1\\3 & 4\end{bmatrix}$ is _____.			
	A.	2×3	B.	3×2
	C.	2×2	D.	3×3
૧.	શ્રેણિક $\begin{bmatrix}1 & 2\\0 & -1\\3 & 4\end{bmatrix}$ નો ક્રમ(કક્ષા) _____છે.			
	A.	2×3	B.	3×2
	C.	2×2	D.	3×3
2.	$If\ A=\begin{bmatrix}0 & -3\\5 & -4\end{bmatrix}\ then\ adjoint\ matrix\ of\ A=$ _____.			
	A.	$\begin{bmatrix}4 & 3\\5 & 0\end{bmatrix}$	B.	$\begin{bmatrix}-4 & -3\\-5 & 0\end{bmatrix}$
	C.	$\begin{bmatrix}0 & 5\\3 & -4\end{bmatrix}$	D.	$\begin{bmatrix}-4 & 3\\-5 & 0\end{bmatrix}$
૨.	જો $A=\begin{bmatrix}0 & -3\\5 & -4\end{bmatrix}$ તો A નો સહ અવયજ શ્રેણિક _____થાય .			
	A.	$\begin{bmatrix}4 & 3\\5 & 0\end{bmatrix}$	B.	$\begin{bmatrix}-4 & -3\\-5 & 0\end{bmatrix}$
	C.	$\begin{bmatrix}0 & 5\\3 & -4\end{bmatrix}$	D.	$\begin{bmatrix}-4 & 3\\-5 & 0\end{bmatrix}$
3.	$\begin{bmatrix}1 & 2\\3 & 4\end{bmatrix}+\begin{bmatrix}1 & -1\\1 & 1\end{bmatrix}=$ _____.			
	A.	$\begin{bmatrix}1 & -2\\3 & 4\end{bmatrix}$	B.	$\begin{bmatrix}2 & -1\\4 & 5\end{bmatrix}$
	C.	$\begin{bmatrix}2 & 1\\4 & 5\end{bmatrix}$	D.	$\begin{bmatrix}2 & 1\\4 & 4\end{bmatrix}$
૩.	$\begin{bmatrix}1 & 2\\3 & 4\end{bmatrix}+\begin{bmatrix}1 & -1\\1 & 1\end{bmatrix}=$ _____.			
	A.	$\begin{bmatrix}1 & -2\\3 & 4\end{bmatrix}$	B.	$\begin{bmatrix}2 & -1\\4 & 5\end{bmatrix}$
	C.	$\begin{bmatrix}2 & 1\\4 & 5\end{bmatrix}$	D.	$\begin{bmatrix}2 & 1\\4 & 4\end{bmatrix}$
4.	$\begin{bmatrix}3 & -4 & 1\\7 & 2 & -3\end{bmatrix}^{T}=$ _____			
	A.	$\begin{bmatrix}3 & 7\\-4 & 2\\1 & 3\end{bmatrix}$	B.	$\begin{bmatrix}3 & 7\\4 & 2\\1 & 3\end{bmatrix}$

	C.	$\begin{bmatrix} 3 & 7 \\ -4 & 2 \\ 1 & -3 \end{bmatrix}$	D.	$\begin{bmatrix} -3 & -7 \\ 4 & -2 \\ -1 & 3 \end{bmatrix}$
૪.	$\begin{bmatrix} 3 & -4 & 1 \\ 7 & 2 & -3 \end{bmatrix}^T =$ _____			
	A.	$\begin{bmatrix} 3 & 7 \\ -4 & 2 \\ 1 & 3 \end{bmatrix}$	B.	$\begin{bmatrix} 3 & 7 \\ 4 & 2 \\ 1 & 3 \end{bmatrix}$
	C.	$\begin{bmatrix} 3 & 7 \\ -4 & 2 \\ 1 & -3 \end{bmatrix}$	D.	$\begin{bmatrix} -3 & -7 \\ 4 & -2 \\ -1 & 3 \end{bmatrix}$
5.	If A is the matrix of order 3×5 and B is the matrix of order 5×4 then order of $A \cdot B =$_____			
	A.	3×4	B.	3×3
	C.	4×3	D.	5×5
૫.	જો શ્રેણિક A નો ક્રમ 3×5 અને શ્રેણિક B નો ક્રમ 5×4 હોય તો શ્રેણિક $A \cdot B$ નો ક્રમ ____થશે .			
	A.	3×4	B.	3×3
	C.	4×3	D.	5×5
6.	$If\ [0 \quad x \quad -2] \cdot \begin{bmatrix} 1 \\ 4 \\ -2 \end{bmatrix} = [8]\ then\ x =$ _____.			
	A.	$x = 1$	B.	$x = 3$
	C.	$x = 0$	D.	$x = -1$
૬.	જો $[0 \quad x \quad -2] \cdot \begin{bmatrix} 1 \\ 4 \\ -2 \end{bmatrix} = [8]$ તો $x =$ _____.			
	A.	$x = 1$	B.	$x = 3$
	C.	$x = 0$	D.	$x = -1$
7.	$If\ A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}\ then\ A^2 =$ _____.			
	A.	$\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$	B.	$\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$
	C.	$\begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix}$	D.	$\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$
૭.	જો $A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ તો $A^2 =$ _____.			
	A.	$\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$	B.	$\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$
	C.	$\begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix}$	D.	$\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$
8.	$\begin{bmatrix} 1 & 5 \\ -3 & 2 \\ -5 & -4 \end{bmatrix} - \begin{bmatrix} 0 & 4 \\ 3 & -2 \\ 4 & 3 \end{bmatrix} =$ _____			
	A.	$\begin{bmatrix} 1 & 1 \\ 6 & 4 \\ -9 & 7 \end{bmatrix}$	B.	$\begin{bmatrix} 1 & 1 \\ -6 & 4 \\ -9 & -7 \end{bmatrix}$
	C.	$\begin{bmatrix} 1 & -1 \\ 0 & 0 \\ -9 & -7 \end{bmatrix}$	D.	$\begin{bmatrix} 1 & -1 \\ 0 & -4 \\ -9 & -7 \end{bmatrix}$
૮.	$\begin{bmatrix} 1 & 5 \\ -3 & 2 \\ -5 & -4 \end{bmatrix} - \begin{bmatrix} 0 & 4 \\ 3 & -2 \\ 4 & 3 \end{bmatrix} =$ _____			
	A.	$\begin{bmatrix} 1 & 1 \\ 6 & 4 \\ -9 & 7 \end{bmatrix}$	B.	$\begin{bmatrix} 1 & 1 \\ -6 & 4 \\ -9 & -7 \end{bmatrix}$
	C.	$\begin{bmatrix} 1 & -1 \\ 0 & 0 \\ -9 & -7 \end{bmatrix}$	D.	$\begin{bmatrix} 1 & -1 \\ 0 & -4 \\ -9 & -7 \end{bmatrix}$

9.	$If\ A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 8 & -6 \\ 7 & 9 & 6 \end{bmatrix} then\ cofactor\ of\ \ 8 =$ _____			
	A.	27	B.	-27
	C.	-15	D.	15
૯.	જો $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 8 & -6 \\ 7 & 9 & 6 \end{bmatrix}$ તો 8 નો સહઅવયવ____ થશે.			
	A.	27	B.	-27
	C.	-15	D.	15
10.	$(AB)^{-1} =$ ____			
	A.	$A^{-1}B^{-1}$	B.	$B^{-1}A^{-1}$
	C.	AB	D.	I
૧૦.	$(AB)^{-1} =$ ____			
	A.	$A^{-1}B^{-1}$	B.	$B^{-1}A^{-1}$
	C.	AB	D.	I
11.	$If\ A\ is\ Non-singular\ Matrix\ then$_____			
	A.	$A^T = A$	B.	$\|A\| = 0$
	C.	$A^T = -A$	D.	$\|A\| \neq 0$
૧૧.	જો A સામાન્ય શ્રેણિક હોય તો _____.			
	A.	$A^T = A$	B.	$\|A\| = 0$
	C.	$A^T = -A$	D.	$\|A\| \neq 0$
12.	$If\ A = [5 \quad 3]\ and\ B = \begin{bmatrix} 4 \\ 6 \end{bmatrix}\ then\ A - B =$ ____			
	A.	$[1 \quad -3]$	B.	$\begin{bmatrix} 1 \\ -3 \end{bmatrix}$
	C.	[38]	D.	Not possible
૧૨.	જો $A = [5 \quad 3]$ અને $B = \begin{bmatrix} 4 \\ 6 \end{bmatrix}$ તો $A - B =$ ____			
	A.	$[1 \quad -3]$	B.	$\begin{bmatrix} 1 \\ -3 \end{bmatrix}$
	C.	[38]	D.	શક્ય નથી
13.	$The\ \ Matrix\ \ A = [8 \quad -1 \quad 7]\ is$ _____.			
	A.	Row Matrix	B.	Square Matrix
	C.	Column Matrix	D.	Unit/Identity Matrix
૧૩.	$A = [8 \quad -1 \quad 7]$ એ ____ શ્રેણિક છે .			
	A.	હાર શ્રેણિક	B.	યોરસ શ્રેણિક
	C.	સ્તંભ શ્રેણિક	D.	એકમ શ્રેણિક
14.	$\begin{bmatrix} 1 & 2 \\ 5 & 6 \end{bmatrix} \times \begin{bmatrix} 5 & 6 \\ 2 & 1 \end{bmatrix} =$ _____			
	A.	$\begin{bmatrix} 9 & 37 \\ 8 & 36 \end{bmatrix}$	B.	$\begin{bmatrix} 5 & 10 \\ 12 & 6 \end{bmatrix}$
	C.	$\begin{bmatrix} 9 & 8 \\ 37 & 36 \end{bmatrix}$	D.	$\begin{bmatrix} 5 & 12 \\ 10 & 6 \end{bmatrix}$
૧૪.	$\begin{bmatrix} 1 & 2 \\ 5 & 6 \end{bmatrix} \times \begin{bmatrix} 5 & 6 \\ 2 & 1 \end{bmatrix} =$ _____			
	A.	$\begin{bmatrix} 9 & 37 \\ 8 & 36 \end{bmatrix}$	B.	$\begin{bmatrix} 5 & 10 \\ 12 & 6 \end{bmatrix}$
	C.	$\begin{bmatrix} 9 & 8 \\ 37 & 36 \end{bmatrix}$	D.	$\begin{bmatrix} 5 & 12 \\ 10 & 6 \end{bmatrix}$
15.	$If\ \begin{bmatrix} x+3 & -2 \\ 0 & y-1 \end{bmatrix} = \begin{bmatrix} 6 & -2 \\ 0 & 5 \end{bmatrix} then\ x =$ ___			
	A.	9	B.	-3

	C.	3	D.	2
૧૫.	જો $\begin{bmatrix} x+3 & -2 \\ 0 & y-1 \end{bmatrix} = \begin{bmatrix} 6 & -2 \\ 0 & 5 \end{bmatrix}$ તો $x =$ ___			
	A.	9	B.	-3
	C.	3	D.	2
16.	*which one of the following is symmetric Matrix?*			
	A.	$\begin{bmatrix} 3 & 5 & -1 \\ -5 & -2 & 7 \\ 1 & -7 & 1 \end{bmatrix}$	B.	$\begin{bmatrix} -3 & 5 & -1 \\ -5 & 2 & 7 \\ 1 & 7 & -1 \end{bmatrix}$
	C.	$\begin{bmatrix} 0 & 5 & -1 \\ -5 & 0 & 7 \\ 1 & -7 & 0 \end{bmatrix}$	D.	$\begin{bmatrix} 3 & 5 & -1 \\ 5 & -2 & 7 \\ -1 & 7 & 1 \end{bmatrix}$
૧૬.	નીચેના માંથી કયો શ્રેણિક સંમિત શ્રેણિક છે?			
	A.	$\begin{bmatrix} 3 & 5 & -1 \\ -5 & -2 & 7 \\ 1 & -7 & 1 \end{bmatrix}$	B.	$\begin{bmatrix} -3 & 5 & -1 \\ -5 & 2 & 7 \\ 1 & 7 & -1 \end{bmatrix}$
	C.	$\begin{bmatrix} 0 & 5 & -1 \\ -5 & 0 & 7 \\ 1 & -7 & 0 \end{bmatrix}$	D.	$\begin{bmatrix} 3 & 5 & -1 \\ 5 & -2 & 7 \\ -1 & 7 & 1 \end{bmatrix}$
17.	$\frac{d}{dx}(e^x) =$ _____.			
	A.	xe^{x-1}	B.	xe^x
	C.	e^x	D.	1
૧૭.	$\frac{d}{dx}(e^x) =$ _____.			
	A.	xe^{x-1}	B.	xe^x
	C.	e^x	D.	1
18.	$\frac{d}{dx}(\tan x) =$ _____.			
	A.	$\sin^2 x$	B.	$\cot x$
	C.	$-\sec^2 x$	D.	$\sec^2 x$
૧૮.	$\frac{d}{dx}(\tan x) =$ _____.			
	A.	$\sin^2 x$	B.	$\cot x$
	C.	$-\sec^2 x$	D.	$\sec^2 x$
19.	$\frac{d}{dx}(x^2 + 3^x + 6) =$ _____.			
	A.	$2x + 3^x \log_e 3$	B.	$2x + 3^x$
	C.	$2x + 3^x + 1$	D.	$2x + 3^x \log_e 3 + 1$
૧૯.	$\frac{d}{dx}(x^2 + 3^x + 6) =$ _____.			
	A.	$2x + 3^x \log_e 3$	B.	$2x + 3^x$
	C.	$2x + 3^x + 1$	D.	$2x + 3^x \log_e 3 + 1$
20.	*If* $y = \log(3x + 2)$ *then* $y'(x) =$ _____.			
	A.	$\frac{1}{3x+2}$	B.	$\frac{3}{3x+2}$
	C.	0	D.	1
૨૦.	જો $y = \log(3x + 2)$ તો $y'(x) =$ _____.			
	A.	$\frac{1}{3x+2}$	B.	$\frac{3}{3x+2}$
	C.	0	D.	1

21.	$If\ xy = 1\ then\ \frac{dy}{dx} =$ _____			
	A.	$-\frac{y}{x}$	B.	$\frac{x}{y}$
	C.	$-\frac{1}{x^2}$	D.	$-\frac{1}{x}$
૨૧.	જો $xy = 1$ તો $\frac{dy}{dx} =$ _____			
	A.	$-\frac{y}{x}$	B.	$\frac{x}{y}$
	C.	$-\frac{1}{x^2}$	D.	$-\frac{1}{x}$
22.	If $y = \sin x$ then $\frac{d^2y}{dx^2} =$ _____			
	A.	y	B.	$\cos x$
	C.	-y	D.	$-\cos x$
૨૨.	જો $y = \sin x$ તો $\frac{d^2y}{dx^2} =$ _____			
	A.	y	B.	$\cos x$
	C.	-y	D.	$-\cos x$
23.	$\frac{d}{dx}(\tan^{-1} x + \cot^{-1} x) =$ _____.			
	A.	1	B.	$\frac{2}{1+x^2}$
	C.	0	D.	$\frac{-2}{1+x^2}$
૨૩.	$\frac{d}{dx}(\tan^{-1} x + \cot^{-1} x) =$ _____.			
	A.	1	B.	$\frac{2}{1+x^2}$
	C.	0	D.	$\frac{-2}{1+x^2}$
24.	$If\ x = t^3\ and\ y = t + 1\ then\ \frac{dy}{dx} =$ ___.			
	A.	$-3t^2$	B.	$3t^2$
	C.	$-\frac{1}{3t^2}$	D.	$\frac{1}{3t^2}$
૨૪.	જો $x = t^3$ અને $y = t + 1$ તો $\frac{dy}{dx} =$ ___.			
	A.	$-3t^2$	B.	$3t^2$
	C.	$-\frac{1}{3t^2}$	D.	$\frac{1}{3t^2}$
25.	$If\ the\ equation\ of\ motion\ of\ a\ particle\ is\ s = 3t^2 - 1\ then\ velocity\ at\ = 2\ second\ is$_____.			
	A.	12 m/sec	B.	18 m/s
	C.	6 m/s	D.	None of these
૨૫.	જો એક કણની ગતિનું સમીકરણ $s = 3t^2 - 1$ હોય તો t = 2 સેકન્ડે કણનો વેગ____થશે			
	A.	12 m/s	B.	18 m/s
	C.	6 m/s	D.	None of these

26.	$f(x)$ has minimum value 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.	$f'(a)=0, f''(a)<0$
૨૬.	$x=a$ આગળ વિધેય $f(x)$ ની કિંમત ન્યુનત્તમ હોય તો _____			
	A.	$f'(a)=0, f''(a)=0$	B.	$f'(a)>0, f''(a)<0$
	C.	$f'(a)=0, f''(a)>0$	D.	$f'(a)=0, f''(a)<0$
27.	$\frac{d}{dx}(\log 4) =$ _____.			
	A.	$\frac{1}{4}$	B.	0
	C.	4	D.	1
૨૭.	$\frac{d}{dx}(\log 4) =$ _____.			
	A.	$\frac{1}{4}$	B.	0
	C.	4	D.	1
28.	$y = \log(\sin x)$ then $\frac{dy}{dx}$			
	A.	$\cot x$	B.	$-\cot x$
	C.	$\tan x$	D.	$\operatorname{cosec} x$
૨૮.	$y = \log(\sin x)$ તો $\frac{dy}{dx}$ =_____.			
	A.	$\cot x$	B.	$-\cot x$
	C.	$\tan x$	D.	$\operatorname{cosec} x$
29.	$\frac{d}{dx}(\sqrt{x}) =$ _____.			
	A.	$\frac{1}{\sqrt{x}}$	B.	$\frac{1}{2\sqrt{x}}$
	C.	$2\sqrt{x}$	D.	1
૨૯.	$\frac{d}{dx}(\sqrt{x}) =$ _____.			
	A.	$\frac{1}{\sqrt{x}}$	B.	$\frac{1}{2\sqrt{x}}$
	C.	$2\sqrt{x}$	D.	1
30.	$If\ f(x) = x^4 - 2x^3 + 5\ then\ f'(-1) =$ ___			
	A.	-10	B.	2
	C.	10	D.	-2
૩૦.	જો $f(x) = x^4 - 2x^3 + 5$ તો $f'(-1) =$ ___			
	A.	-10	B.	2
	C.	10	D.	-2
31.	$\frac{d}{dx}(\log x^2) =$ ____			
	A.	$\frac{1}{x^2}$	B.	$2x$
	C.	$\frac{2}{x}$	D.	$\frac{1}{x}$
૩૧.	$\frac{d}{dx}(\log x^2) =$ ____			
	A.	$\frac{1}{x^2}$	B.	$2x$

	C.	$\frac{2}{x}$	D.	$\frac{1}{x}$
32.	$\frac{d}{dx}\left(\sin\frac{\pi}{2}\right) =$ ____			
	A.	0	B.	2
	C.	1	D.	$\frac{\pi}{2}$
૩૨.	$\frac{d}{dx}\left(\sin\frac{\pi}{2}\right) =$ ____			
	A.	0	B.	2
	C.	1	D.	$\frac{\pi}{2}$
33.	$\int 2\,dx\ =$ _____			
	A.	$2x + c$	B.	0
	C.	$2 + c$	D.	$x + c$
૩૩.	$\int 2\,dx\ =$ _____			
	A.	$2x + c$	B.	0
	C.	$2 + c$	D.	$x + c$
34.	$\int \frac{1}{x^2+1}\,dx =$ _____			
	A.	$sec^{-1}x + c$	B.	$sin^{-1}x + c$
	C.	$tan^{-1}x + c$	D.	$cos^{-1}x + c$
૩૪.	$\int \frac{1}{x^2+1}\,dx =$ _____			
	A.	$sec^{-1}x + c$	B.	$sin^{-1}x + c$
	C.	$tan^{-1}x + c$	D.	$cos^{-1}x + c$
35.	$\int (sin^{-1}x + cos^{-1}x)\,dx =$ _____ $+ c$			
	A.	x	B.	$\frac{\pi}{2}\cdot x$
	C.	π	D.	$\frac{\pi}{2}$
૩૫.	$\int (sin^{-1}x + cos^{-1}x)\,dx =$ _____ $+ c$			
	A.	x	B.	$\frac{\pi}{2}\cdot x$
	C.	π	D.	$\frac{\pi}{2}$
36.	$\int u \cdot v\ dx =$ ____$(here\ u\ and\ v\ are\ functions\ of\ variable\ x)$			
	A.	$u\int v\,dx - \int\left(\frac{d}{dx}(u) \bullet \int v\,dx\right)dx$	B.	$u\int v\,dx + v\int u\,dx$
	C.	$\int v\,dx - \int\left(\frac{d}{dx}(u)\right)dx$	D.	None of These
૩૬.	$\int u \cdot v\ dx =$ ____(અહી u અને v ચલ x ના વિધેયો છે)			
	A.	$u\int v\,dx - \int\left(\frac{d}{dx}(u) \bullet \int v\,dx\right)dx$	B.	$u\int v\,dx + v\int u\,dx$

	C.	$\int u\,dx - \int \left(\frac{d}{dx}(u) \bullet \int v\,dx\right) dx$	D.	આમાંથી એક પણ નહિ
37.	$\int_0^1 3x^2 + 1\ dx =$ _____			
	A.	4	B.	1
	C.	0	D.	2
૩૭.	$\int_0^1 3x^2 + 1\ dx =$ _____			
	A.	4	B.	1
	C.	0	D.	2
38.	$\int \frac{f'(x)}{f(x)}\ dx =$ _____ $+ c$			
	A.	$f'(x)$	B.	$f(x)$
	C.	x	D.	$\log\lvert f(x)\rvert$
૩૮.	$\int \frac{f'(x)}{f(x)}\ dx =$ _____ $+ c$			
	A.	$f'(x)$	B.	$f(x)$
	C.	x	D.	$\log\lvert f(x)\rvert$
39.	$\int \sin x\,dx =$ _____ $+ c$			
	A.	$-\text{cosec}\,x$	B.	$\cos x$
	C.	$\text{cosec}\,x$	D.	$-\cos x$
૩૯.	$\int \sin x\,dx =$ _____ $+ c$			
	A.	$-\text{cosec}\,x$	B.	$\cos x$
	C.	$\text{cosec}\,x$	D.	$-\cos x$
40.	$\int_0^{\frac{\pi}{2}} \frac{\sqrt{\sin x}}{\sqrt{\cos x} + \sqrt{\sin x}}\ dx =$ _____			
	A.	$\frac{\pi}{2}$	B.	$\frac{\pi}{4}$
	C.	π	D.	0
૪૦.	$\int_0^{\frac{\pi}{2}} \frac{\sqrt{\sin x}}{\sqrt{\cos x} + \sqrt{\sin x}}\ dx =$ _____			
	A.	$\frac{\pi}{2}$	B.	$\frac{\pi}{4}$
	C.	π	D.	0
41.	The area of the region bounded by the line $y = x, x = 0, x = 2\ and\ X - axis$ is _____sq. Unit.			
	A.	4	B.	6
	C.	2	D.	8
૪૧.	રેખાઓ $y = x, x = 0, x = 2$ અને $X - axis$ વચ્ચે ઘેરાતા પ્રદેશનું ક્ષેત્રફળ=___ચો. એકમ			
	A.	4	B.	6
	C.	2	D.	8
42.	$\int sin^3x \cdot \cos x\,dx =$ _____ + c			
	A.	$\frac{sin^2x}{2}$	B.	$\frac{sin^4x}{4}$

	C.	$\log\|\sin x\|$	D.	$\log\|\cos x\|$
૪૨.	$\int sin^3x \cdot \cos x \, dx =$ _____ + c			
	A.	$\frac{sin^2x}{2}$	B.	$\frac{sin^4x}{4}$
	C.	$\log\|\sin x\|$	D.	$\log\|\cos x\|$
43.	$\int \left(x^2 + 2\sec^2 x + \frac{1}{x}\right) dx =$ _____ + c			
	A.	$x^3 + 2\cot x + \log\|x\|$	B.	$2x + 2\sec x \tan x + \log\|x\|$
	C.	$\frac{x^3}{3} + 2\tan x + \log\|x\|$	D.	None of these
૪૩.	$\int \left(x^2 + 2\sec^2 x + \frac{1}{x}\right) dx =$ _____ + c			
	A.	$x^3 + 2\cot x + \log\|x\|$	B.	$2x + 2\sec x \tan x + \log\|x\|$
	C.	$\frac{x^3}{3} + 2\tan x + \log\|x\|$	D.	આમાંથી એક પણ નહિ
44.	$\int_{-5}^{5} x^3 \, dx =$ _____ + c			
	A.	1250	B.	0
	C.	312.5	D.	250
૪૪.	$\int_{-5}^{5} x^3 \, dx =$ _____ + c			
	A.	1250	B.	0
	C.	312.5	D.	250
45.	$for\ a = b, \quad \int_{a}^{b} f(x) \, dx =$ ___			
	A.	0	B.	2
	C.	1	D.	None of these
૪૫.	$a = b$ માટે, $\int_{a}^{b} f(x) \, dx =$ ___			
	A.	0	B.	2
	C.	1	D.	આમાંથી એક પણ નહિ
46.	$\int e^{-3x} \, dx =$ _____ + c			
	A.	e^{-3x}	B.	$-3x$
	C.	$-\frac{e^{-3x}}{3}$	D.	$-3e^{-3x}$
૪૬.	$\int e^{-3x} \, dx =$ _____ + c			
	A.	e^{-3x}	B.	$-3x$
	C.	$-\frac{e^{-3x}}{3}$	D.	$-3e^{-3x}$
47.	The order of a differential equation $\left(\frac{dy}{dx}\right)^3 + 5y = x$ is _____			
	A.	0	B.	1
	C.	2	D.	3

૪૭.	વિકલ સમીકરણ $\left(\frac{dy}{dx}\right)^3 + 5y = x$ ની કક્ષા _____છે.			
	A.	0	B.	1
	C.	2	D.	3
48.	The degree of a differential equation $\frac{d^2y}{dx^2} + \left(\frac{dy}{dx}\right)^3 - 4y = 0$ is _____			
	A.	1	B.	2
	C.	3	D.	0
૪૮.	વિકલ સમીકરણ $\frac{d^2y}{dx^2} + \left(\frac{dy}{dx}\right)^3 - 4y = 0$ નું પરિમાણ ____છે.			
	A.	1	B.	2
	C.	3	D.	0
49.	The order of a differential equation $\left(\frac{d^4y}{dx^4}\right)^4 + \left(\frac{d^3y}{dx^3}\right)^2 + 6y = 0$ is _____			
	A.	3	B.	1
	C.	4	D.	2
૪૯.	વિકલ સમીકરણ $\left(\frac{d^4y}{dx^4}\right)^4 + \left(\frac{d^3y}{dx^3}\right)^2 + 6y = 0$ ની કક્ષા _____છે.			
	A.	3	B.	1
	C.	4	D.	2
50.	The degree of a differential equation $\left[1 + \left(\frac{dy}{dx}\right)^2\right]^{4/3} = \frac{d^2y}{dx^2}$ is _____			
	A.	1	B.	2
	C.	3	D.	4
૫૦.	વિકલ સમીકરણ $\left[1 + \left(\frac{dy}{dx}\right)^2\right]^{4/3} = \frac{d^2y}{dx^2}$ નું પરિમાણ ____છે.			
	A.	1	B.	2
	C.	3	D.	4
51.	Which one of the following is a linear differential equation of first order?			
	A.	$\frac{dy}{dx} + x\,siny = e^y$	B.	$\frac{dy}{dx} + y^2 = \sqrt{x+y}$
	C.	$\frac{\mathrm{dy}}{\mathrm{dx}} - 2\mathrm{y} = \mathrm{e}^{\mathrm{x}}$	D.	$\left(\frac{\mathrm{dy}}{\mathrm{dx}}\right)^2 + \mathrm{xy} = \sqrt{\mathrm{x}}$
૫૧.	નીચેનામાંથી કયું પ્રથમ કક્ષાનું સુરેખ વિકલ સમીકરણ છે?			
	A.	$\frac{dy}{dx} + x\,siny = e^y$	B.	$\frac{dy}{dx} + y^2 = \sqrt{x+y}$
	C.	$\frac{\mathrm{dy}}{\mathrm{dx}} - 2\mathrm{y} = \mathrm{e}^{\mathrm{x}}$	D.	$\left(\frac{\mathrm{dy}}{\mathrm{dx}}\right)^2 + \mathrm{xy} = \sqrt{\mathrm{x}}$
52.	*The Integrating Factor of* $\frac{dy}{dx} + P(x)y = Q(x)$ *is*_____.			
	A.	$e^{\int P(x)\,dx}$	B.	$e^{x\int P(x)\,dx}$
	C.	$e^{\int Q(x)\,dx}$	D.	$e^{x\int Q(x)\,dx}$
૫૨.	સમીકરણ $\frac{dy}{dx} + P(x)y = Q(x)$ નો સંકલ્યકારક અવયવ _____છે.			
	A.	$e^{\int P(x)\,dx}$	B.	$e^{x\int P(x)\,dx}$
	C.	$e^{\int Q(x)\,dx}$	D.	$e^{x\int Q(x)\,dx}$
53.	The solution of linear differential equation $\frac{dy}{dx} + P(x)y = Q(x)$ is given by_____ .Where $I.F =$ Integrating Factor.			
	A.	$x\,(I.F.) = \int P \bullet (I.F.)\,dx + c$	B.	$x\,(I.F.) = \int Q \bullet (I.F.)\,dx + c$

	C.	$y\,(I.F.) = \int Q \bullet (I.F.)\,dx + c$	D.	None of these
૫૩.	સુરેખ વિકલ સમીકરણ $\frac{dy}{dx} + P(x)y = Q(x)$ નો ઉકેલ _____છે. જ્યાં $I.F$ = સંકલ્યકારક અવયવ			
	A.	$x\,(I.F.) = \int P \bullet (I.F.)\,dx + c$	B.	$x\,(I.F.) = \int Q \bullet (I.F.)\,dx + c$
	C.	$y\,(I.F.) = \int Q \bullet (I.F.)\,dx + c$	D.	આમાંથી એક પણ નહિ
54.	The integrating factor of $\frac{dy}{dx} + \frac{y}{x} = logx$ is _____			
	A.	x	B.	x^2
	C.	$x \bullet logx$	D.	$logx$
૫૪.	સમીકરણ $\frac{dy}{dx} + \frac{y}{x} = logx$ નો સંકલ્યકારક અવયવ _____છે.			
	A.	x	B.	x^2
	C.	$x \bullet logx$	D.	$logx$
55.	The integrating factor of $\frac{dy}{dx} - y\,tanx = log(\cos x)$ is _____			
	A.	$cosx$	B.	$tanx$
	C.	$sinx$	D.	$log\,(tanx)$
૫૫.	સમીકરણ $\frac{dy}{dx} - y\,tanx = log(\cos x)$ નો સંકલ્યકારક અવયવ _____છે.			
	A.	$cosx$	B.	$tanx$
	C.	$sinx$	D.	$log\,(tanx)$
56.	The general solution of $\frac{dy}{dx} + y = 0$ is _____			
	A.	$ye^x = c$	B.	$ye^x = x + c$
	C.	$xy = c$	D.	$y = cx$
૫૬.	સમીકરણ $\frac{dy}{dx} + y = 0$ નો વ્યાપક ઉકેલ _____છે.			
	A.	$ye^x = c$	B.	$ye^x = x + c$
	C.	$xy = c$	D.	$y = cx$
57.	The order and degree of $\left(\frac{d^2y}{dx^2}\right)^3 = \sqrt{1 + \left(\frac{dy}{dx}\right)^5}$ is _____respectively			
	A.	5 *and* 3	B.	3 *and* 2
	C.	2 *and* 5	D.	2 *and* 6
૫૭.	વિકલ સમીકરણ $\left(\frac{d^2y}{dx^2}\right)^3 = \sqrt{1 + \left(\frac{dy}{dx}\right)^5}$ ની કક્ષા અને પરિમાણ _____છે.			
	A.	5 *and* 3	B.	3 *and* 2
	C.	2 *and* 5	D.	2 *and* 6
58.	The general solution of variable separable form differential equation, $f(x)\,dx = g(y)\,dy$ is _____			
	A.	$f(x) = \int g(y)\,dy + c$	B.	$\int f(x)\,dx = \int g(y)\,dy + c$
	C.	$g(y) = \int f(x)\,dx + c$	D.	None of these
૫૮.	વિયોજનીય ચલ પ્રકારના વિકલ સમીકરણ $f(x)\,dx = g(y)\,dy$ નો વ્યાપક ઉકેલ __છે.			
	A.	$f(x) = \int g(y)\,dy + c$	B.	$\int f(x)\,dx = \int g(y)\,dy + c$
	C.	$g(y) = \int f(x)\,dx + c$	D.	આમાંથી એક પણ નહિ
59.	$i^4 =$ _____			

	A.	i	B.	-1
	C.	$-i$	D.	1
૫૯.	$i^4 =$ _____			
	A.	i	B.	-1
	C.	$-i$	D.	1
60.	$If\ Z = 7 - 5i\ then\ \bar{z} =$ _____			
	A.	$-7 - 5i$	B.	$7 + 5i$
	C.	$-7 + 5i$	D.	$None\ of these$
૬૦.	જો $Z = 7 - 5i$ તો $\bar{z} =$ _____			
	A.	$-7 - 5i$	B.	$7 + 5i$
	C.	$-7 + 5i$	D.	આમાંથી એક પણ નહિ
61.	$If\ Z = 3 + 4i\ then\ \|z\| =$ _____			
	A.	5	B.	9
	C.	16	D.	1
૬૧.	જો $Z = 3 + 4i$ તો $\|z\| =$ _____			
	A.	5	B.	9
	C.	16	D.	1
62.	$If\ the\ polar\ form\ of\ Z = x + iy\ is\ z = r(\cos\theta + i\sin\theta)\ then\ r =$ _____			
	A.	$\sqrt{x^2 - y^2}$	B.	$\sqrt{x^2 + y^2}$
	C.	$\tan^{-1}\left(\frac{y}{x}\right)$	D.	$\tan^{-1}\left(\frac{x}{y}\right)$
૬૨.	જો $Z = x + iy$ નું ધ્રુવીય સ્વરૂપ $z = r(\cos\theta + i\sin\theta)$ તો $r =$ _____			
	A.	$\sqrt{x^2 - y^2}$	B.	$\sqrt{x^2 + y^2}$
	C.	$\tan^{-1}\left(\frac{y}{x}\right)$	D.	$\tan^{-1}\left(\frac{x}{y}\right)$
63.	$z \cdot \bar{z} =$ ___			
	A.	$\|z\|$	B.	$\|z\|^2$
	C.	0	D.	None of these
૬૩.	$z \cdot \bar{z} =$ ___			
	A.	$\|z\|$	B.	$\|z\|^2$
	C.	0	D.	આમાંથી એક પણ નહિ
64.	$(2 + 3i) + (-1 + i) =$ _____			
	A.	$1 + 4i$	B.	$-1 + 4i$
	C.	$3 + 4i$	D.	$1 + 3i$
૬૪.	$(2 + 3i) + (-1 + i) =$ _____			
	A.	$1 + 4i$	B.	$-1 + 4i$
	C.	$3 + 4i$	D.	$1 + 3i$
65.	$The\ principle\ argument\ of\ z = 1 + \sqrt{3}i\ is$ _____			
	A.	$\frac{\pi}{3}$	B.	$\frac{\pi}{6}$

	C.	$\frac{\pi}{4}$	D.	$\frac{\pi}{2}$
૬૫.	$z = 1 + \sqrt{3}i$ માટે મુખ્ય કોણાંક arg(Z) = _____.			
	A.	$\frac{\pi}{3}$	B.	$\frac{\pi}{6}$
	C.	$\frac{\pi}{4}$	D.	$\frac{\pi}{2}$
66.	$\sqrt{-25} =$ _____			
	A.	5	B.	5i
	C.	-5	D.	25i
૬૬.	$\sqrt{-25} =$ _____			
	A.	5	B.	5i
	C.	-5	D.	25i
67.	If $x + 2iy = 3 + 8i$, then $(x, y) =$ _____.			
	A.	(-3,4)	B.	(3,4)
	C.	(-3,-4)	D.	(3,-4)
૬૭.	If $x + 2iy = 3 + 8i$, then $(x, y) =$ _____.			
	A.	(-3,4)	B.	(3,4)
	C.	(-3,-4)	D.	(3,-4)
68.	$(2 + 3i)(3 - 2i) =$ _____.			
	A.	$-12 + 5i$	B.	$12 - 5i$
	C.	$12 + 5i$	D.	$-12 - 5i$
૬૮.	$(2 + 3i)(3 - 2i) =$ _____.			
	A.	$-12 + 5i$	B.	$12 - 5i$
	C.	$12 + 5i$	D.	$-12 - 5i$
69.	$\frac{cos4\theta + isin4\theta}{cos2\theta + isin2\theta} =$ _____.			
	A.	$cos8\theta + isin8\theta$	B.	$cos4\theta + isin4\theta$
	C.	$cos2\theta + isin2\theta$	D.	$cos3\theta + isin3\theta$
૬૯.	$\frac{cos4\theta + isin4\theta}{cos2\theta + isin2\theta} =$ _____.			
	A.	$cos8\theta + isin8\theta$	B.	$cos4\theta + isin4\theta$
	C.	$cos2\theta + isin2\theta$	D.	$cos3\theta + isin3\theta$
70.	$(cos\theta + isin\theta)^4 + (cos\theta + isin\theta)^{-4} =$ _____.			
	A.	$2sin4\theta$	B.	$2icos4\theta$
	C.	$2isin4\theta$	D.	$2cos4\theta$
૭૦.	$(cos\theta + isin\theta)^4 + (cos\theta + isin\theta)^{-4} =$ _____.			
	A.	$2sin4\theta$	B.	$2icos4\theta$
	C.	$2isin4\theta$	D.	$2cos4\theta$

****