

GUJARAT TECHNOLOGICAL UNIVERSITY**Diploma Engineering – SEMESTER – 2(CtoD) – EXAMINATION – Winter-2025****Subject Code: C320002****Date: 02-02-2026****Subject Name: ADVANCED MATHEMATICS (GROUP-1)****Time: 10:30 AM TO 12:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make Suitable assumptions wherever necessary.
3. Use of simple calculators and non-programmable scientific calculators are permitted.
4. English version is authentic.
5. English version is authentic.
6. Use only OMR to answer this question paper.
7. There is No negative marking.

No.	Question Text and Option. પ્રશ્ન અને વિકલ્પો.			
1.	Square root of $-1 = \underline{\hspace{2cm}}$.			
	A.	1	B.	$i, -i$
	C.	0	D.	-1
૧.	-1 નું વર્ગમૂળ = $\underline{\hspace{2cm}}$			
	A.	1	B.	$i, -i$
	C.	0	D.	-1
2.	For the complex number $z = 1 + i\sqrt{3}$, $\arg(z) = \underline{\hspace{2cm}}$.			
	A.	π	B.	0
	C.	2π	D.	$\pi/6$
૨.	સંકર સંખ્યા $z = 1 + i\sqrt{3}$ માટે, $\arg(z) = \underline{\hspace{2cm}}$.			
	A.	π	B.	0
	C.	2π	D.	$\pi/6$
3.	If $z = -2 - 5i$ then $\bar{z} = \underline{\hspace{2cm}}$.			
	A.	$-2 - 5i$	B.	$2 + 5i$
	C.	$-2 + 5i$	D.	$2 - 5i$
૩.	જો $z = -2 - 5i$ હોય તો $\bar{z} = \underline{\hspace{2cm}}$.			
	A.	$-2 - 5i$	B.	$2 + 5i$
	C.	$-2 + 5i$	D.	$2 - 5i$
4.	If $z = 3 - 2i$ then $ z = \underline{\hspace{2cm}}$.			
	A.	$\sqrt{13}$	B.	$\sqrt{-13}$
	C.	13	D.	-13
૪.	જો $z = 3 - 2i$ હોય તો $ z = \underline{\hspace{2cm}}$.			
	A.	$\sqrt{13}$	B.	$\sqrt{-13}$
	C.	13	D.	-13
5.	$i^5 + i^6 + i^7 + i^8 = \underline{\hspace{2cm}}$.			
	A.	0	B.	i
	C.	$-i$	D.	1
૫.	$i^5 + i^6 + i^7 + i^8 = \underline{\hspace{2cm}}$.			
	A.	0	B.	i

	C.	$-i$	D.	1
6.	$\left(\cos\frac{\theta}{3} + i\sin\frac{\theta}{3}\right)^3 = \underline{\hspace{2cm}}$.			
	A.	$\cos\frac{\theta}{3} + i\sin\frac{\theta}{3}$	B.	$\cos\frac{\theta}{3} - i\sin\frac{\theta}{3}$
	C.	$\cos\theta + i\sin\theta$	D.	$\cos\theta - i\sin\theta$
9.	$\left(\cos\frac{\theta}{3} + i\sin\frac{\theta}{3}\right)^3 = \underline{\hspace{2cm}}$.			
	A.	$\cos\frac{\theta}{3} + i\sin\frac{\theta}{3}$	B.	$\cos\frac{\theta}{3} - i\sin\frac{\theta}{3}$
	C.	$\cos\theta + i\sin\theta$	D.	$\cos\theta - i\sin\theta$
7.	If $z_1 = 3 - i$, $z_2 = 1 + 5i$ then $z_1 + z_2 = \underline{\hspace{2cm}}$.			
	A.	$2 - 4i$	B.	$2 + 4i$
	C.	$4 - 4i$	D.	$4 + 4i$
9.	જો $z_1 = 3 - i$, $z_2 = 1 + 5i$ હોય તો $z_1 + z_2 = \underline{\hspace{2cm}}$.			
	A.	$2 - 4i$	B.	$2 + 4i$
	C.	$4 - 4i$	D.	$4 + 4i$
8.	$(3 + 2i)(3 - 2i) = \underline{\hspace{2cm}}$.			
	A.	$\sqrt{13}$	B.	13
	C.	$(3 + 2i)^2$	D.	$(3 - 2i)^2$
૮.	$(3 + 2i)(3 - 2i) = \underline{\hspace{2cm}}$.			
	A.	$\sqrt{13}$	B.	13
	C.	$(3 + 2i)^2$	D.	$(3 - 2i)^2$
9.	If $z_1 = 5 - 2i$, $z_2 = -2 + 3i$ then $Im(z_1 - z_2) = \underline{\hspace{2cm}}$.			
	A.	-5	B.	-3
	C.	3	D.	5
૯.	જો $z_1 = 5 - 2i$, $z_2 = -2 + 3i$ હોય તો $Im(z_1 - z_2) = \underline{\hspace{2cm}}$.			
	A.	-5	B.	-3
	C.	3	D.	5
10.	If $z_1 = -4 + 6i$, $z_2 = 2 - 3i$ then $Re(z_1 + z_2) = \underline{\hspace{2cm}}$.			
	A.	3	B.	-3
	C.	2	D.	-2
૧૦.	જો $z_1 = -4 + 6i$, $z_2 = 2 - 3i$ હોય તો $Re(z_1 + z_2) = \underline{\hspace{2cm}}$.			
	A.	3	B.	-3
	C.	2	D.	-2
11.	If z is any complex number then $z + \bar{z} = \underline{\hspace{2cm}}$.			
	A.	$2 Im(z)$	B.	$Im(z)$
	C.	$Re(z)$	D.	$2 Re(z)$
૧૧.	જો z કોઈ સંકર સંખ્યા હોય તો $z + \bar{z} = \underline{\hspace{2cm}}$.			
	A.	$2 Im(z)$	B.	$Im(z)$
	C.	$Re(z)$	D.	$2 Re(z)$
12.	If $z_1 = 1 + 5i$, $z_2 = 3 - i$ then $z_1 \cdot z_2 = \underline{\hspace{2cm}}$.			
	A.	$8 + 14i$	B.	$-8 + 14i$
	C.	$8 - 14i$	D.	$-8 - 14i$
૧૨.	જો $z_1 = 1 + 5i$, $z_2 = 3 - i$ હોય તો $z_1 \cdot z_2 = \underline{\hspace{2cm}}$.			
	A.	$8 + 14i$	B.	$-8 + 14i$
	C.	$8 - 14i$	D.	$-8 - 14i$

13.	$i^{27} = \underline{\hspace{2cm}}$.			
	A.	1	B.	$-i$
	C.	- 1	D.	i
૧૩.	$i^{27} = \underline{\hspace{2cm}}$.			
	A.	1	B.	$-i$
	C.	- 1	D.	i
14.	If z is any complex number then $z \cdot \bar{z} = \underline{\hspace{2cm}}$.			
	A.	Complex number	B.	i
	C.	Real number	D.	None of these
૧૪.	જો z કોઈ સંકર સંખ્યા હોય તો $z \cdot \bar{z} = \underline{\hspace{2cm}}$.			
	A.	સંકર સંખ્યા	B.	i
	C.	વાસ્તવિક સંખ્યા	D.	કોઈ પણ નહિ
15.	If $f(x) = 2x^2 + \sqrt{x}$ then $f(1) = \underline{\hspace{2cm}}$.			
	A.	$\sqrt{3}$	B.	$-\sqrt{3}$
	C.	3	D.	- 3
૧૫.	જો $f(x) = 2x^2 + \sqrt{x}$ હોય તો $f(1) = \underline{\hspace{2cm}}$.			
	A.	$\sqrt{3}$	B.	$-\sqrt{3}$
	C.	3	D.	- 3
16.	If $f(x) = \log_2 x$ then $f(16) = \underline{\hspace{2cm}}$.			
	A.	1	B.	- 4
	C.	0	D.	4
૧૬.	જો $f(x) = \log_2 x$ હોય તો $f(16) = \underline{\hspace{2cm}}$.			
	A.	1	B.	- 4
	C.	0	D.	4
17.	If $f(x) = 2x^2 + x + 1$ then $f(3) = \underline{\hspace{2cm}}$.			
	A.	22	B.	-1
	C.	21	D.	1
૧૭.	જો $f(x) = 2x^2 + x + 1$ હોય તો $f(3) = \underline{\hspace{2cm}}$.			
	A.	22	B.	-1
	C.	21	D.	1
18.	If $f(x) = \log x$ and $g(x) = e^{-x}$ then $f \circ g(-1) = \underline{\hspace{2cm}}$.			
	A.	1	B.	0
	C.	-1	D.	e
૧૮.	જો $f(x) = \log x$ અને $g(x) = e^{-x}$ હોય તો $f \circ g(-1) = \underline{\hspace{2cm}}$.			
	A.	1	B.	0
	C.	-1	D.	e
19.	If $f(x) = \log x$ then $f(x/y) = \underline{\hspace{2cm}}$.			
	A.	$f(x) \cdot f(y)$	B.	$f(x) + f(y)$
	C.	$f(x)/f(y)$	D.	$f(x) - f(y)$
૧૯.	જો $f(x) = \log x$ હોય તો $f(x/y) = \underline{\hspace{2cm}}$.			
	A.	$f(x) \cdot f(y)$	B.	$f(x) + f(y)$
	C.	$f(x)/f(y)$	D.	$f(x) - f(y)$
20.	$\lim_{x \rightarrow 1} \frac{x^3 - 1}{x - 1} = \underline{\hspace{2cm}}$.			
	A.	0	B.	1
	C.	3	D.	-3

20.	$\lim_{x \rightarrow 1} \frac{x^3 - 1}{x - 1} = \underline{\hspace{2cm}}.$			
	A.	0	B.	1
	C.	3	D.	-3
21.	$\lim_{n \rightarrow \infty} \frac{3n^4 - 7n^2 + 17}{n^4 + 1} = \underline{\hspace{2cm}}.$			
	A.	∞	B.	3
	C.	1	D.	-3
22.	$\lim_{\theta \rightarrow 0} \frac{\sin \theta}{\theta} = \underline{\hspace{2cm}}.$			
	A.	1	B.	2
	C.	-1	D.	0
23.	$\lim_{x \rightarrow 2} \frac{2x^2 - 3}{x + 5} = \underline{\hspace{2cm}}.$			
	A.	$\frac{5}{7}$	B.	$-\frac{3}{5}$
	C.	$\frac{3}{5}$	D.	$-\frac{5}{7}$
24.	$\lim_{x \rightarrow 2} \frac{2x^2 - 3}{x + 5} = \underline{\hspace{2cm}}.$			
	A.	$\frac{5}{7}$	B.	$-\frac{3}{5}$
	C.	$\frac{3}{5}$	D.	$-\frac{5}{7}$
25.	$\lim_{x \rightarrow 0} \frac{2^x - 3^x}{x} = \underline{\hspace{2cm}}.$			
	A.	1	B.	0
	C.	$\log_s \left(\frac{2}{3} \right)$	D.	$\log_s \left(\frac{3}{2} \right)$
26.	$\lim_{x \rightarrow 0} \frac{2^x - 3^x}{x} = \underline{\hspace{2cm}}.$			
	A.	1	B.	0
	C.	$\log_s \left(\frac{2}{3} \right)$	D.	$\log_s \left(\frac{3}{2} \right)$
27.	$\lim_{x \rightarrow 0} (1 + x)^{\frac{1}{x}} = \underline{\hspace{2cm}}.$			
	A.	E	B.	1
	C.	0	D.	-e
28.	$\lim_{x \rightarrow 0} (1 + x)^{\frac{1}{x}} = \underline{\hspace{2cm}}.$			
	A.	E	B.	1
	C.	0	D.	-e
29.	$\lim_{x \rightarrow \infty} \left(1 + \frac{2}{x} \right)^x = \underline{\hspace{2cm}}.$			

	A.	e^{-2}	B.	2^e
	C.	2^{-e}	D.	e^2
26.	$\lim_{x \rightarrow \infty} \left(1 + \frac{2}{x}\right)^x = \underline{\hspace{2cm}}.$			
	A.	e^{-2}	B.	2^e
	C.	2^{-e}	D.	e^2
27.	$\frac{d}{dx}(3^3 + x^3 - 3^x) = \underline{\hspace{2cm}}.$			
	A.	$x^3 \cdot \log 3 - x \cdot 3^{x-1}$	B.	0
	C.	$3 \cdot x^2 - 3^x \cdot \log 3$	D.	$27 + 3 \cdot x^2 - 3^x \cdot \log 3$
28.	$\frac{d}{dx}(3^3 + x^3 - 3^x) = \underline{\hspace{2cm}}.$			
	A.	$x^3 \cdot \log 3 - x \cdot 3^{x-1}$	B.	0
	C.	$3 \cdot x^2 - 3^x \cdot \log 3$	D.	$27 + 3 \cdot x^2 - 3^x \cdot \log 3$
29.	$\frac{d}{dx}(\sin^{-1}x + \cos^{-1}x) = \underline{\hspace{2cm}}.$			
	A.	1	B.	π
	C.	0	D.	$\pi/2$
30.	$\frac{d}{dx}(\sin^{-1}x + \cos^{-1}x) = \underline{\hspace{2cm}}.$			
	A.	1	B.	π
	C.	0	D.	$\pi/2$
31.	$\frac{d}{dx}(\log x) = \underline{\hspace{2cm}}.$			
	A.	0	B.	x
	C.	1	D.	x^{-1}
32.	$\frac{d}{dx}(\log x) = \underline{\hspace{2cm}}.$			
	A.	0	B.	x
	C.	1	D.	x^{-1}
33.	$\frac{d}{dx}(\sec x) = \underline{\hspace{2cm}}.$			
	A.	$\sec x \cdot \operatorname{cosec} x$	B.	$-\sec x \cdot \tan x$
	C.	$-\operatorname{cosec} x \cdot \cot x$	D.	$\sec x \cdot \tan x$
34.	$\frac{d}{dx}(\sec x) = \underline{\hspace{2cm}}.$			
	A.	$\sec x \cdot \operatorname{cosec} x$	B.	$-\sec x \cdot \tan x$
	C.	$-\operatorname{cosec} x \cdot \cot x$	D.	$\sec x \cdot \tan x$
35.	$\frac{d}{dx} \log(\sin x) = \underline{\hspace{2cm}}.$			
	A.	$-\sin x$	B.	$-\tan x$
	C.	$\cos x$	D.	$\cot x$
36.	$\frac{d}{dx} \log(\sin x) = \underline{\hspace{2cm}}.$			
	A.	$-\sin x$	B.	$-\tan x$
	C.	$\cos x$	D.	$\cot x$
37.	$\frac{d}{dx}(\cos^2 x + \sin^2 x) = \underline{\hspace{2cm}}.$			
	A.	1	B.	π
	C.	-1	D.	0
38.	$\frac{d}{dx}(\cos^2 x + \sin^2 x) = \underline{\hspace{2cm}}.$			

	A.	1	B.	π
	C.	-1	D.	0
33.	$\frac{d}{dx}(e^{2\log x}) = \underline{\hspace{2cm}}$.			
	A.	$-2x$	B.	$-2/x$
	C.	$2x$	D.	$2/x$
33.	$\frac{d}{dx}(e^{2\log x}) = \underline{\hspace{2cm}}$.			
	A.	$-2x$	B.	$-2/x$
	C.	$2x$	D.	$2/x$
34.	$\frac{d}{dx}(\cos x \cdot \sqrt{x}) = \underline{\hspace{2cm}}$.			
	A.	$\cos x \cdot \frac{1}{2\sqrt{x}} - \sin x \cdot \sqrt{x}$	B.	$\sin x \cdot \frac{1}{2\sqrt{x}} - \cos x \cdot \sqrt{x}$
	C.	$\cos x \cdot \frac{1}{2\sqrt{x}} + \sin x \cdot \sqrt{x}$	D.	$\sin x \cdot \frac{1}{2\sqrt{x}} + \cos x \cdot \sqrt{x}$
34.	$\frac{d}{dx}(\cos x \cdot \sqrt{x}) = \underline{\hspace{2cm}}$.			
	A.	$\cos x \cdot \frac{1}{2\sqrt{x}} - \sin x \cdot \sqrt{x}$	B.	$\sin x \cdot \frac{1}{2\sqrt{x}} - \cos x \cdot \sqrt{x}$
	C.	$\cos x \cdot \frac{1}{2\sqrt{x}} + \sin x \cdot \sqrt{x}$	D.	$\sin x \cdot \frac{1}{2\sqrt{x}} + \cos x \cdot \sqrt{x}$
35.	$\frac{d}{dx}\left(\frac{\sin x^3}{x^3}\right) = \underline{\hspace{2cm}}$.			
	A.	$\frac{3(\sin x^3 - x^3 \cdot \cos x^3)}{x^4}$	B.	$\frac{3(x^3 \cdot \cos x^3 + \sin x^3)}{x^4}$
	C.	$\frac{3(x^3 \cdot \cos x^3 - \sin x^3)}{x^4}$	D.	$\frac{3(\sin x^3 + x^3 \cdot \cos x^3)}{x^4}$
35.	$\frac{d}{dx}\left(\frac{\sin x^3}{x^3}\right) = \underline{\hspace{2cm}}$.			
	A.	$\frac{3(\sin x^3 - x^3 \cdot \cos x^3)}{x^4}$	B.	$\frac{3(x^3 \cdot \cos x^3 + \sin x^3)}{x^4}$
	C.	$\frac{3(x^3 \cdot \cos x^3 - \sin x^3)}{x^4}$	D.	$\frac{3(\sin x^3 + x^3 \cdot \cos x^3)}{x^4}$
36.	If $x = at^2, y = 2at$ then $\frac{dy}{dx} = \underline{\hspace{2cm}}$.			
	A.	$\frac{1}{t}$	B.	$-\frac{1}{t}$
	C.	$-t$	D.	t
36.	જો $x = at^2, y = 2at$ હોય તો $\frac{dy}{dx} = \underline{\hspace{2cm}}$.			
	A.	$\frac{1}{t}$	B.	$-\frac{1}{t}$
	C.	$-t$	D.	t
37.	If $y = 19x^2 - 17x - 91$ then $y_3 = \underline{\hspace{2cm}}$.			
	A.	6	B.	0
	C.	12	D.	-1
37.	જો $y = 19x^2 - 17x - 91$ હોય તો $y_3 = \underline{\hspace{2cm}}$.			
	A.	6	B.	0
	C.	12	D.	-1
38.	If $x - y = xy$ then $\frac{dy}{dx} = \underline{\hspace{2cm}}$.			

	A.	$\frac{y+1}{1+x}$	B.	$\frac{1-y}{1+x}$
	C.	$\frac{1-y}{1-x}$	D.	$\frac{y+1}{1-x}$
3૮.	જો $x - y = xy$ હોય તો $\frac{dy}{dx} = \underline{\hspace{2cm}}$.			
	A.	$\frac{y+1}{1+x}$	B.	$\frac{1-y}{1+x}$
	C.	$\frac{1-y}{1-x}$	D.	$\frac{y+1}{1-x}$
39.	If $y = x^x$ then $\frac{dy}{dx} = \underline{\hspace{2cm}}$.			
	A.	$x^x(1 + \log x)$	B.	$x^x(1 - \log x)$
	C.	$x^x(\log x - 1)$	D.	0
૩૯.	જો $y = x^x$ હોય તો $\frac{dy}{dx} = \underline{\hspace{2cm}}$.			
	A.	$x^x(1 + \log x)$	B.	$x^x(1 - \log x)$
	C.	$x^x(\log x - 1)$	D.	0
40.	If motion of a particle is given by $s = 5t^3 + 9t - 1$ then velocity = <u> </u> at $t = 1$.			
	A.	24	B.	13
	C.	0	D.	40
૪૦.	જો કણની ગતિનું ગતિસૂત્ર $s = 5t^3 + 9t - 1$ હોય તો $t = 1$ આગળ વેગ = <u> </u> .			
	A.	24	B.	13
	C.	0	D.	40
41.	Function $f(x)$ has minima at a point $x = x_1$, if <u> </u> .			
	A.	$f''(x_1) > 0$	B.	$f''(x_1) = 0$
	C.	$f''(x_1) < 0$	D.	None of these
૪૧.	$x = x_1$ આગળ વિધેય $f(x)$ નું ન્યૂનત્તમ બિંદુ હોવાની શરત <u> </u> છે.			
	A.	$f''(x_1) > 0$	B.	$f''(x_1) = 0$
	C.	$f''(x_1) < 0$	D.	કોઈપણ નહીં
42.	Minimum value of function $f(x) = \cos x$ is <u> </u> .			
	A.	0	B.	1
	C.	2	D.	-1
૪૨.	વિધેય $f(x) = \cos x$ ની ન્યૂનત્તમ કિંમત = <u> </u> .			
	A.	0	B.	1
	C.	2	D.	-1
43.	If $f(x) = e^x$ then $f''(0) = \underline{\hspace{2cm}}$.			
	A.	4	B.	e
	C.	0	D.	1
૪૩.	જો $f(x) = e^x$ હોય તો $f''(0) = \underline{\hspace{2cm}}$.			
	A.	4	B.	e
	C.	0	D.	1
44.	$\frac{d}{dx}(\cos^{-1}x) = \underline{\hspace{2cm}}$.			
	A.	$\frac{-1}{\sqrt{1-x^2}}$	B.	$\frac{1}{\sqrt{1-x^2}}$
	C.	$\frac{1}{1-x^2}$	D.	$\frac{1}{1+x^2}$
૪૪.	$\frac{d}{dx}(\cos^{-1}x) = \underline{\hspace{2cm}}$.			

	A.	$\frac{-1}{\sqrt{1-x^2}}$	B.	$\frac{1}{\sqrt{1-x^2}}$
	C.	$\frac{1}{1-x^2}$	D.	$\frac{1}{1+x^2}$
45.	$\int \frac{1}{x} dx = \text{_____} + c$			
	A.	$\log_{10} x$	B.	$\log_e x$
	C.	0	D.	$\log_2 x$
44.	$\int \frac{1}{x} dx = \text{_____} + c$			
	A.	$\log_{10} x$	B.	$\log_e x$
	C.	0	D.	$\log_2 x$
46.	$\int -\operatorname{cosec}^2 x dx = \text{_____} + c$			
	A.	$\cot x - x$	B.	$\operatorname{cosec} x$
	C.	$\cot x + x$	D.	$\cot x$
45.	$\int -\operatorname{cosec}^2 x dx = \text{_____} + c$			
	A.	$\cot x - x$	B.	$\operatorname{cosec} x$
	C.	$\cot x + x$	D.	$\cot x$
47.	$\int x e^x dx = \text{_____} + c$			
	A.	e^x	B.	$x e^x$
	C.	$e^x(x-1)$	D.	$x(e^x+1)$
49.	$\int x e^x dx = \text{_____} + c$			
	A.	e^x	B.	$x e^x$
	C.	$e^x(x-1)$	D.	$x(e^x+1)$
48.	$\int \sin^3 x \cos x dx = \text{_____} + c$			
	A.	$4 \sin^4 x$	B.	$3 \sin^2 x$
	C.	$\frac{1}{3} \sin^2 x$	D.	$\frac{1}{4} \sin^4 x$
46.	$\int \sin^3 x \cos x dx = \text{_____} + c$			
	A.	$4 \sin^4 x$	B.	$3 \sin^2 x$
	C.	$\frac{1}{3} \sin^2 x$	D.	$\frac{1}{4} \sin^4 x$
49.	$\int (3x^2 + e^x - \sin x) dx = \text{_____}$			
	A.	$x^3 + e^x - \sin x + c$	B.	$x^3 + e^x + \cos x + c$
	C.	$x^3 - e^x + \sin x + c$	D.	$x^3 - e^x - \sin x + c$
46.	$\int (3x^2 + e^x - \sin x) dx = \text{_____}$			
	A.	$x^3 + e^x - \sin x + c$	B.	$x^3 + e^x + \cos x + c$
	C.	$x^3 - e^x + \sin x + c$	D.	$x^3 - e^x - \sin x + c$
50.	$\int \cos(5x+9) dx = \text{_____}$			
	A.	$5 \sin(5x-9) + c$	B.	$5 \sin(5x+9) + c$

	C.	$\frac{1}{5} \sin(5x + 9) + c$	D.	$\frac{1}{5} \sin(x - 9) + c$
40.	$\int \cos(5x + 9) dx = \underline{\hspace{2cm}}$			
	A.	$5 \sin(5x - 9) + c$	B.	$5 \sin(5x + 9) + c$
	C.	$\frac{1}{5} \sin(5x + 9) + c$	D.	$\frac{1}{5} \sin(x - 9) + c$
51.	$\int \log x dx = \underline{\hspace{2cm}}$			
	A.	$x \log x - x + c$	B.	$-x \log x - x + c$
	C.	$-x \log x + x + c$	D.	$x \log x + x + c$
49.	$\int \log x dx = \underline{\hspace{2cm}}$			
	A.	$x \log x - x + c$	B.	$-x \log x - x + c$
	C.	$-x \log x + x + c$	D.	$x \log x + x + c$
52.	$\int e^{6 \log x} dx = \underline{\hspace{2cm}}$			
	A.	$7x^7 + c$	B.	$x^7 + c$
	C.	$\frac{1}{7} x^7 + c$	D.	$\frac{7}{6} x^7 + c$
42.	$\int e^{6 \log x} dx = \underline{\hspace{2cm}}$			
	A.	$7x^7 + c$	B.	$x^7 + c$
	C.	$\frac{1}{7} x^7 + c$	D.	$\frac{7}{6} x^7 + c$
53.	$\int (\tan x + \sec^2 x) e^x dx = \underline{\hspace{2cm}} + c$			
	A.	$e^x \sec x$	B.	$e^x \tan x$
	C.	$e^x \tan^2 x$	D.	$e^x \sec^2 x$
43.	$\int (\tan x + \sec^2 x) e^x dx = \underline{\hspace{2cm}} + c$			
	A.	$e^x \sec x$	B.	$e^x \tan x$
	C.	$e^x \tan^2 x$	D.	$e^x \sec^2 x$
54.	$\int \frac{f'(x)}{f(x)} dx = \underline{\hspace{2cm}} + c$			
	A.	$f(x)$	B.	$f'(x)$
	C.	$ \log(f(x)) $	D.	$\log f(x) $
48.	$\int \frac{f'(x)}{f(x)} dx = \underline{\hspace{2cm}} + c$			
	A.	$f(x)$	B.	$f'(x)$
	C.	$ \log(f(x)) $	D.	$\log f(x) $
55.	$\int_0^{2\pi} \cos x dx = \underline{\hspace{2cm}}$			
	A.	-1	B.	0
	C.	1	D.	2
44.	$\int_0^{2\pi} \cos x dx = \underline{\hspace{2cm}}$			

	A.	-1	B.	0
	C.	1	D.	2
56.	$\int_0^1 \frac{2x}{1+x^2} dx = \underline{\hspace{2cm}}$			
	A.	$-\log 2$	B.	1
	C.	-1	D.	$\log 2$
૫૬.	$\int_0^1 \frac{2x}{1+x^2} dx = \underline{\hspace{2cm}}$			
	A.	$-\log 2$	B.	1
	C.	-1	D.	$\log 2$
57.	$\int_0^1 \frac{1}{1+x^2} dx = \underline{\hspace{2cm}}$			
	A.	π	B.	$-\pi$
	C.	$-\pi/4$	D.	$\pi/4$
૫૭.	$\int_0^1 \frac{1}{1+x^2} dx = \underline{\hspace{2cm}}$			
	A.	π	B.	$-\pi$
	C.	$-\pi/4$	D.	$\pi/4$
58.	$\int_0^{\pi/2} \frac{\sqrt{\tan x}}{\sqrt{\tan x} + \sqrt{\cot x}} dx = \underline{\hspace{2cm}}$			
	A.	$\pi/4$	B.	$\pi/2$
	C.	π	D.	0
૫૮.	$\int_0^{\pi/2} \frac{\sqrt{\tan x}}{\sqrt{\tan x} + \sqrt{\cot x}} dx = \underline{\hspace{2cm}}$			
	A.	$\pi/4$	B.	$\pi/2$
	C.	π	D.	0
59.	Volume generated by revolving the rectangle of length h and breadth r, about the x-axis is _____.			
	A.	$\frac{\pi r^2 h}{3}$	B.	$\frac{4\pi r^3}{3}$
	C.	$\pi r^2 h$	D.	πr^2
૫૯.	h લંબાઈ અને r પહોળાઈ વાળા લંબચોરસને x - અક્ષ ફરતે પરિભ્રમણ કરાવતા રચાતા ઘનનું ઘનફળ = _____.			
	A.	$\frac{\pi r^2 h}{3}$	B.	$\frac{4\pi r^3}{3}$
	C.	$\pi r^2 h$	D.	πr^2
60.	Area of the region bounded by the curve $y = e^x$, x - axis, lines $x = a$ and $x = b$ is _____ units			
	A.	$e^b - e^a$	B.	$e^a - e^b$
	C.	e^{b-a}	D.	e^{a-b}
૬૦.	વક્રો $y = e^x$, x - axis, રેખાઓ $x = a$ અને $x = b$ વચ્ચે ઘેરાતા પ્રદેશનું ક્ષેત્રફળ = _____.			

	A.	$e^b - e^a$	B.	$e^a - e^b$
	C.	e^{b-a}	D.	e^{a-b}
61.	Order of the differential equation $\left(\frac{d^3y}{dx^3}\right)^2 + \sqrt{\frac{dy}{dx}} + y = 0$ is = _____.			
	A.	2	B.	3
	C.	1	D.	0
૬૧.	વિકલ સમીકરણ $\left(\frac{d^3y}{dx^3}\right)^2 + \sqrt{\frac{dy}{dx}} + y = 0$ ની કક્ષા = _____.			
	A.	2	B.	3
	C.	1	D.	0
62.	Degree of the differential equation $\left(\frac{d^2y}{dx^2}\right)^6 + \sqrt{\left(\frac{dy}{dx}\right)^7} + y = 0$ is = _____.			
	A.	7	B.	2
	C.	6	D.	0
૬૨.	વિકલ સમીકરણ $\left(\frac{d^2y}{dx^2}\right)^6 + \sqrt{\left(\frac{dy}{dx}\right)^7} + y = 0$ નું પરિમાણ = _____.			
	A.	7	B.	2
	C.	6	D.	0
63.	Which of the following equation do not represent the differential equation?			
	A.	$\frac{dy}{dx} + 5y = 0$	B.	$\frac{dy}{dx} + 2xy = 0$
	C.	$\frac{d^2y}{dx^2} + y = 0$	D.	$x^2 - y^2 = c$
૬૩.	નીચેના માંથી કયું સમીકરણ વિકલ સમીકરણ દર્શાવતું નથી?			
	A.	$\frac{dy}{dx} + 5y = 0$	B.	$\frac{dy}{dx} + 2xy = 0$
	C.	$\frac{d^2y}{dx^2} + y = 0$	D.	$x^2 - y^2 = c$
64.	$f(x,y)=$ _____ is a homogeneous function.			
	A.	$x^2 + y^2$	B.	$x^3 + y^2$
	C.	$x^2 + y^3$	D.	$x^2 + xy^2$
૬૪.	$f(x,y)=$ _____ સમ પરિમાણીય વિધેય છે.			
	A.	$x^2 + y^2$	B.	$x^3 + y^2$
	C.	$x^2 + y^3$	D.	$x^2 + xy^2$
65.	Solution of the differential equation $\frac{dy}{dx} - y = 0$ is _____.			
	A.	$y = ce^x$	B.	$y = ce^{-x}$
	C.	$y = ce^{-2x}$	D.	$y = ce^{2x}$
૬૫.	વિકલ સમીકરણ $\frac{dy}{dx} - y = 0$ નો ઉકેલ = _____.			
	A.	$y = ce^x$	B.	$y = ce^{-x}$
	C.	$y = ce^{-2x}$	D.	$y = ce^{2x}$
66.	Which of the following differential equation has the solution $x^2 - y^2 = c$?			
	A.	$y \frac{dy}{dx} - x = 0$	B.	$x \frac{dy}{dx} + y = 0$
	C.	$y \frac{dy}{dx} + x = 0$	D.	$x \frac{dy}{dx} - y = 0$
૬૬.	નીચેના માંથી કયા વિકલ સમીકરણનો ઉકેલ $x^2 - y^2 = c$ છે?			

	A.	$y \frac{dy}{dx} - x = 0$	B.	$x \frac{dy}{dx} + y = 0$
	C.	$y \frac{dy}{dx} + x = 0$	D.	$x \frac{dy}{dx} - y = 0$
67.	Integrating factor of the differential equation $\frac{dy}{dx} + y = 0$ is ____.			
	A.	e^x	B.	e^{-2x}
	C.	e^{-x}	D.	e^{2x}
૬૭.	વિકલ સમીકરણ $\frac{dy}{dx} + y = 0$ નો સંકલ્પકારક અવયવ = ____.			
	A.	e^x	B.	e^{-2x}
	C.	e^{-x}	D.	e^{2x}
68.	Under what condition the differential equation $\frac{dy}{dx} + Py = Q$ is linear?			
	A.	P is function of x and Q is function of y.	B.	P is function of y and Q is function of x.
	C.	P and Q both are functions of x or constant.	D.	P and Q both are functions of y.
૬૮.	કઈ શરત હેઠળ વિકલ સમીકરણ $\frac{dy}{dx} + Py = Q$ સુરેખ થશે?			
	A.	P એ x નું વિધેય છે અને Q એ y નું વિધેય છે.	B.	P એ y નું વિધેય છે અને Q એ x નું વિધેય છે.
	C.	P અને Q બંને x ના વિધેયો અથવા અચળ છે.	D.	P અને Q બંને y ના વિધેયો છે.
69.	Solution of the differential equation $(1+x) \frac{dy}{dx} = (1+y)$ is ____.			
	A.	$\frac{1+y}{1+x} = c$	B.	$\frac{1+2y}{1+2x} = c$
	C.	$\frac{1-y}{1-x} = c$	D.	$\frac{1-2y}{1-2x} = c$
૬૯.	વિકલ સમીકરણ $(1+x) \frac{dy}{dx} = (1+y)$ નો ઉકેલ = ____.			
	A.	$\frac{1+y}{1+x} = c$	B.	$\frac{1+2y}{1+2x} = c$
	C.	$\frac{1-y}{1-x} = c$	D.	$\frac{1-2y}{1-2x} = c$
70.	Degree of the homogeneous function $f(x,y) = x^2y^2 + xy^3$ is ____.			
	A.	2	B.	4
	C.	0	D.	3
૭૦.	સમ પરિમાણીય વિધેય $f(x,y) = x^2y^2 + xy^3$ નું પરિમાણ = ____.			
	A.	2	B.	4
	C.	0	D.	3
