

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA ENGINEERING – SEMESTER –2(CtoD) New• EXAMINATION – SUMMER - 2023

Subject Code: C320002**Date: 14-08-2023****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. 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 વિકલ્પ.			
1.	If $z_1 = 2 + i$ and $z_2 = 1 + 3i$ then $i \operatorname{Re}(z_1 - z_2) = \dots\dots\dots$			
	A.	1	B.	i
	C.	$2i$	D.	2
૧.	જો $z_1 = 2 + i$ અને $z_2 = 1 + 3i$ તો $i \operatorname{Re}(z_1 - z_2) = \dots\dots\dots$			
	A.	1	B.	i
	C.	$2i$	D.	2
2.	If $z = 4 + 5i$, then $2z = \dots\dots\dots$			
	A.	$-8 - 10i$	B.	$18i$
	C.	$8 + 10i$	D.	$11i$
૨.	જો $z = 4 + 5i$, તો $2z = \dots\dots\dots$			
	A.	$-8 - 10i$	B.	$18i$
	C.	$8 + 10i$	D.	$11i$
3.	$(a + ib)(a - ib) = \dots\dots\dots$			
	A.	$a^2 + b^2$	B.	$a^2 - b^2$
	C.	$a^2 + i^2b$	D.	$a - ib^2$
૩.	$(a + ib)(a - ib) = \dots\dots\dots$			
	A.	$a^2 + b^2$	B.	$a^2 - b^2$
	C.	$a^2 + i^2b$	D.	$a - ib^2$
4.	$i^4 = \dots\dots\dots$			
	A.	-1	B.	i
	C.	$-i$	D.	1
૪.	$i^4 = \dots\dots\dots$			
	A.	-1	B.	i
	C.	$-i$	D.	1
5.	The principal argument ($\operatorname{Arg}(z)$) of the complex number $z = -1 + i$ is $\theta = \dots\dots\dots$			
	A.	$\frac{\pi}{4}$	B.	$-\frac{\pi}{4}$
	C.	$-\frac{3\pi}{4}$	D.	$\frac{3\pi}{4}$
૫.	સંકર સંખ્યા $z = -1 + i$ નો મુખ્ય કોણાંક ($\operatorname{Arg}(z)$), $\theta = \dots\dots\dots$			
	A.	$\frac{\pi}{4}$	B.	$-\frac{\pi}{4}$
	C.	$-\frac{3\pi}{4}$	D.	$\frac{3\pi}{4}$

	C.	$-\frac{3\pi}{4}$	D.	$\frac{3\pi}{4}$
6.	$\frac{1}{i} = \dots\dots$			
	A.	1	B.	$-i$
	C.	i	D.	-1
૬.	$\frac{1}{i} = \dots\dots$			
	A.	1	B.	$-i$
	C.	i	D.	-1
7.	Conjugate of the complex number $z = 1 + 3i$ is $\bar{z} = \dots\dots$			
	A.	$1 - 3i$	B.	$-1 + 3i$
	C.	$-1 - 3i$	D.	$-3i$
૭.	સંકર સંખ્યા $z = 1 + 3i$ માટે અનુબદ્ધ સંકર સંખ્યા $\bar{z} = \dots\dots$			
	A.	$1 - 3i$	B.	$-1 + 3i$
	C.	$-1 - 3i$	D.	$-3i$
8.	By De Moivre's Theorem, $(\cos \theta + i \sin \theta)^7 = \dots\dots$			
	A.	$\cos^7 \theta + i \sin^7 \theta$	B.	$7 \cos \theta + i 7 \sin \theta$
	C.	$\cos 7\theta + i \sin 7\theta$	D.	$\cos 7\theta - i \sin 7\theta$
૮.	દ' મુવ્રેના પ્રમેય પરથી $(\cos \theta + i \sin \theta)^7 = \dots\dots$			
	A.	$\cos^7 \theta + i \sin^7 \theta$	B.	$7 \cos \theta + i 7 \sin \theta$
	C.	$\cos 7\theta + i \sin 7\theta$	D.	$\cos 7\theta - i \sin 7\theta$
9.	If $z_1 = 2 + 2i$ and $z_2 = 5 - 4i$ then $z_1 + z_2 = \dots\dots$			
	A.	$7 + 2i$	B.	$7 - 2i$
	C.	$2 + i$	D.	$-3 - 2i$
૯.	જો $z_1 = 2 + 2i$ અને $z_2 = 5 - 4i$ તો $z_1 + z_2 = \dots\dots$			
	A.	$7 + 2i$	B.	$7 - 2i$
	C.	$2 + i$	D.	$-3 - 2i$
10.	If $z = 9 + 0i$ then $\sqrt{z} = \dots\dots$			
	A.	3	B.	-3
	C.	$3i$	D.	± 3
૧૦.	જો $z = 9 + 0i$ તો $\sqrt{z} = \dots\dots$			
	A.	3	B.	-3
	C.	$3i$	D.	± 3
11.	If $z = -5 - 5i$ then $ z = \dots\dots$			
	A.	5	B.	$5\sqrt{2}$
	C.	$10\sqrt{5}$	D.	-5
૧૧.	જો $z = -5 - 5i$ તો $ z = \dots\dots$			
	A.	5	B.	$5\sqrt{2}$
	C.	$10\sqrt{5}$	D.	-5
12.	If $z = 4 + 6i$ then $\text{Im}(z) = \dots\dots$			
	A.	4	B.	i
	C.	6	D.	0
૧૨.	જો $z = 4 + 6i$ તો $\text{Im}(z) = \dots\dots$			
	A.	4	B.	i
	C.	6	D.	0
13.	If $f(x) = \frac{2x+5}{5x+2}$ then $f(x) \square f\left(\frac{1}{x}\right) = \dots\dots$			

	A.	1	B.	-1
	C.	$\frac{2}{5}$	D.	$\frac{5}{2}$
13.	$\text{જો } f(x) = \frac{2x+5}{5x+2} \text{ તો } f(x) \circ f\left(\frac{1}{x}\right) = \dots$			
	A.	1	B.	-1
	C.	$\frac{2}{5}$	D.	$\frac{5}{2}$
14.	If $f(x) = \log_x 1$ then $f(32) = \dots$			
	A.	1	B.	0
	C.	-1	D.	32
18.	$\text{જો } f(x) = \log_x 1 \text{ તો } f(32) = \dots$			
	A.	1	B.	0
	C.	-1	D.	32
15.	$\lim_{\theta \rightarrow 0} \frac{\sin m\theta}{\sin n\theta} = \dots$			
	A.	$\frac{n}{m}$	B.	$m+n$
	C.	$\frac{m}{n}$	D.	$m-n$
14.	$\lim_{\theta \rightarrow 0} \frac{\sin m\theta}{\sin n\theta} = \dots$			
	A.	$\frac{n}{m}$	B.	$m+n$
	C.	$\frac{m}{n}$	D.	$m-n$
16.	$\lim_{x \rightarrow 0} (1+x)^{\frac{1}{x}} = \dots$			
	A.	0	B.	$\frac{1}{e^x}$
	C.	∞	D.	e
15.	$\lim_{x \rightarrow 0} (1+x)^{\frac{1}{x}} = \dots$			
	A.	0	B.	$\frac{1}{e^x}$
	C.	∞	D.	e
17.	$\lim_{x \rightarrow \infty} \frac{x+8}{x-8} = \dots$			
	A.	8	B.	1
	C.	-1	D.	∞
19.	$\lim_{x \rightarrow \infty} \frac{x+8}{x-8} = \dots$			
	A.	8	B.	1
	C.	-1	D.	∞
18.	$\lim_{x \rightarrow 0} \frac{\sqrt{9+x}-3}{x} = \dots$			
	A.	0	B.	$\frac{1}{9}$

	C.	$\frac{1}{6}$	D.	3
૧૮.	$\lim_{x \rightarrow 0} \frac{\sqrt{9+x}-3}{x} = \dots\dots\dots$			
	A.	0	B.	$\frac{1}{9}$
	C.	$\frac{1}{6}$	D.	3
19.	$\lim_{x \rightarrow 0} \frac{7^x - 1}{x} = \dots\dots\dots$			
	A.	7	B.	$\log_7 e$
	C.	$\log_e \left(\frac{1}{7}\right)$	D.	$\log_e 7$
૧૯.	$\lim_{x \rightarrow 0} \frac{7^x - 1}{x} = \dots\dots\dots$			
	A.	7	B.	$\log_7 e$
	C.	$\log_e \left(\frac{1}{7}\right)$	D.	$\log_e 7$
20.	$\lim_{x \rightarrow 0} \frac{\tan x}{x} = \dots\dots\dots$			
	A.	$\tan x$	B.	1
	C.	x	D.	0
૨૦.	$\lim_{x \rightarrow 0} \frac{\tan x}{x} = \dots\dots\dots$			
	A.	$\tan x$	B.	1
	C.	x	D.	0
21.	If $f(x) = x^2$ and $g(x) = x+1$ then $f \circ g(1) = \dots\dots$			
	A.	4	B.	2
	C.	3	D.	1
૨૧.	જો $f(x) = x^2$ અને $g(x) = x+1$ તો $f \circ g(1) = \dots\dots$			
	A.	4	B.	2
	C.	3	D.	1
22.	$\lim_{x \rightarrow 1} \frac{x^2 - 1}{x - 1} = \dots\dots\dots$			
	A.	0	B.	1
	C.	2	D.	-2
૨૨.	$\lim_{x \rightarrow 1} \frac{x^2 - 1}{x - 1} = \dots\dots\dots$			
	A.	0	B.	1
	C.	2	D.	-2
23.	If $f(x) = x^2 - 3x + 1$ then $f(2) = \dots\dots\dots$			
	A.	1	B.	-1
	C.	11	D.	9
૨૩.	જો $f(x) = x^2 - 3x + 1$ તો $f(2) = \dots\dots\dots$			
	A.	1	B.	-1
	C.	11	D.	9
24.	$\frac{d}{dx}(\cos x) = \dots\dots\dots$			

	A.	$\sec x$	B.	$-\cos x$
	C.	$-\sin x$	D.	$\cos x$
23.	$\frac{d}{dx}(\cos x) = \dots\dots\dots$			
	A.	$\sec x$	B.	$-\cos x$
	C.	$-\sin x$	D.	$\cos x$
25.	$\frac{d}{dx}(e^x) = \dots\dots\dots$			
	A.	$\log x$	B.	e^{-x}
	C.	e^x	D.	x
24.	$\frac{d}{dx}(e^x) = \dots\dots\dots$			
	A.	$\log x$	B.	e^{-x}
	C.	e^x	D.	x
26.	$\frac{d}{dx}(\sin^2 x + \cos^2 x) = \dots\dots\dots$			
	A.	1	B.	0
	C.	$\sin 2x$	D.	None of above.
25.	$\frac{d}{dx}(\sin^2 x + \cos^2 x) = \dots\dots\dots$			
	A.	1	B.	0
	C.	$\sin 2x$	D.	None of above.
27.	$\frac{d}{dx}(286) = \dots\dots\dots$			
	A.	0	B.	286
	C.	$\frac{1}{286}$	D.	1
29.	$\frac{d}{dx}(286) = \dots\dots\dots$			
	A.	0	B.	286
	C.	$\frac{1}{286}$	D.	1
28.	$\frac{d}{dx}(x^x) = \dots\dots\dots$			
	A.	$x^x(1 + \log x)$	B.	$1 - \log x$
	C.	$\log x + x$	D.	$x^x \log x$
26.	$\frac{d}{dx}(x^x) = \dots\dots\dots$			
	A.	$x^x(1 + \log x)$	B.	$1 - \log x$
	C.	$\log x + x$	D.	$x^x \log x$
29.	For $y = \log 4x$, $\frac{dy}{dx} = \dots\dots\dots$			
	A.	$\frac{4}{x}$	B.	$\frac{1}{4x}$
	C.	$\frac{1}{x}$	D.	$4x$
26.	$y = \log 4x$ 412 $\frac{dy}{dx} = \dots\dots\dots$			

	A.	$\frac{4}{x}$	B.	$\frac{1}{4x}$
	C.	$\frac{1}{x}$	D.	$4x$
30.	If $x = at^2$ and $y = 2at$ then $\frac{dy}{dx} = \dots\dots\dots$			
	A.	$\frac{a}{t}$	B.	$\frac{1}{t}$
	C.	at	D.	t
30.	જો $x = at^2$ અને $y = 2at$ તો $\frac{dy}{dx} = \dots\dots\dots$			
	A.	$\frac{a}{t}$	B.	$\frac{1}{t}$
	C.	at	D.	t
31.	$\frac{d}{dx}(\sin 6x) = \dots\dots\dots$			
	A.	$-6 \cos 6x$	B.	$6 \cos 6x$
	C.	$\cos 6x$	D.	$-\cos 6x$
31.	$\frac{d}{dx}(\sin 6x) = \dots\dots\dots$			
	A.	$-6 \cos 6x$	B.	$6 \cos 6x$
	C.	$\cos 6x$	D.	$-\cos 6x$
32.	If $y = x^4 e^x$ then $\frac{dy}{dx} = \dots\dots\dots$			
	A.	$4x^3 e^x$	B.	$x^3 e^x$
	C.	$e^x(4x^3 + 1)$	D.	$e^x(4x^3 + x^4)$
32.	જો $y = x^4 e^x$ તો $\frac{dy}{dx} = \dots\dots\dots$			
	A.	$4x^3 e^x$	B.	$x^3 e^x$
	C.	$e^x(4x^3 + 1)$	D.	$e^x(4x^3 + x^4)$
33.	If $f(x) = x^2 + 9x + 1$ then $f''(x) = \dots\dots$			
	A.	10	B.	$2x + 9$
	C.	9	D.	2
33.	જો $f(x) = x^2 + 9x + 1$ તો $f''(x) = \dots\dots$			
	A.	10	B.	$2x + 9$
	C.	9	D.	2
34.	$\frac{d}{dx}\left(\frac{u}{v}\right) = \dots\dots\dots$			
	A.	$\frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2}$	B.	$\frac{v \frac{du}{dx} + u \frac{dv}{dx}}{v^2}$
	C.	$\frac{v \frac{du}{dx} - v \frac{dv}{dx}}{v^2}$	D.	$\frac{v \frac{du}{dx} + v \frac{dv}{dx}}{v^2}$
34.	$\frac{d}{dx}\left(\frac{u}{v}\right) = \dots\dots\dots$			
	A.	$\frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2}$	B.	$\frac{v \frac{du}{dx} + u \frac{dv}{dx}}{v^2}$

	C.	$v \frac{du}{dx} - v \frac{dv}{dx}$ v^2	D.	$v \frac{du}{dx} + v \frac{dv}{dx}$ v^2
35.	$\frac{d}{dx}(x^n) = \dots\dots$			
	A.	nx^{n+1}	B.	x^{n-1}
	C.	n^{n-1}	D.	nx^{n-1}
3૫.	$\frac{d}{dx}(x^n) = \dots\dots$			
	A.	nx^{n+1}	B.	x^{n-1}
	C.	n^{n-1}	D.	nx^{n-1}
36.	$\frac{d}{dx}(2^x) = \dots\dots\dots$			
	A.	2^x	B.	2
	C.	$2^x \log_e 2$	D.	$\log_e 2$
૩૬.	$\frac{d}{dx}(2^x) = \dots\dots\dots$			
	A.	2^x	B.	2
	C.	$2^x \log_e 2$	D.	$\log_e 2$
37.	$\frac{d}{dx}(\tan^{-1} x) = \dots\dots\dots$			
	A.	$-\frac{1}{1+x^2}$	B.	$1+x^2$
	C.	x^2	D.	$\frac{1}{1+x^2}$
૩૭.	$\frac{d}{dx}(\tan^{-1} x) = \dots\dots\dots$			
	A.	$-\frac{1}{1+x^2}$	B.	$1+x^2$
	C.	x^2	D.	$\frac{1}{1+x^2}$
38.	If $S = f(t)$ is equation of motion of particle then acceleration $a = \dots\dots\dots$			
	A.	$\frac{d^2s}{dt^2}$	B.	$\frac{dv}{dt}$, where $v = \text{velocity}$
	C.	Both A and B.	D.	None of above.
૩૮.	જો કણની ગતિનું સમીકરણ $S = f(t)$ હોય તો પ્રવેગ $a = \dots\dots\dots$			
	A.	$\frac{d^2s}{dt^2}$	B.	$\frac{dv}{dt}$, where $v = \text{velocity}$
	C.	A અને B બંને.	D.	એક પણ નહીં.
39.	If equation of motion of particle is $S = t^3 + 3t, t > 0$ then its velocity at time $t = 3$ second is $v = \dots\dots\dots$			
	A.	13 m/s	B.	30 m/s^2
	C.	21 m/s	D.	30 m/s
૩૯.	જો કોઈ કણની ગતિનું સમીકરણ $S = t^3 + 3t, t > 0$ તો $t = 3$ સેકન્ડે તેનો વેગ $v = \dots\dots\dots$			
	A.	13 m/s	B.	30 m/s^2
	C.	21 m/s	D.	30 m/s

40.	If function $f(x)$ has maximum value at $x = x_1$ then.....			
	A.	$f'(x_1) = 0$	B.	$f'(x_1) > 0$
	C.	$f'(x_1) < 0$	D.	$f'(x_1) > 0$ or $f'(x_1) < 0$
૪૦.	જો વિધેય $f(x)$ નું મૂલ્ય $x = x_1$ આગળ મહત્તમ હોય તો			
	A.	$f'(x_1) = 0$	B.	$f'(x_1) > 0$
	C.	$f'(x_1) < 0$	D.	$f'(x_1) > 0$ or $f'(x_1) < 0$
41.	If $y = \frac{1}{x^2}$ then $\frac{dy}{dx} = \dots\dots\dots$			
	A.	$-\frac{2}{x^3}$	B.	$-\frac{2}{x}$
	C.	$\frac{2}{x^3}$	D.	$\frac{1}{2x}$
૪૧.	જો $y = \frac{1}{x^2}$ તો $\frac{dy}{dx} = \dots\dots\dots$			
	A.	$-\frac{2}{x^3}$	B.	$-\frac{2}{x}$
	C.	$\frac{2}{x^3}$	D.	$\frac{1}{2x}$
42.	$\int \frac{1}{x} dx = \dots\dots\dots + c$			
	A.	$\log x $	B.	$-\frac{1}{x^2}$
	C.	$\log\left \frac{1}{x}\right $	D.	x
૪૨.	$\int \frac{1}{x} dx = \dots\dots\dots + c$			
	A.	$\log x $	B.	$-\frac{1}{x^2}$
	C.	$\log\left \frac{1}{x}\right $	D.	x
43.	$\int_{-1}^1 x^2 + 1 dx = \dots\dots\dots$			
	A.	$\frac{8}{3}$	B.	$\frac{4}{3}$
	C.	$-\frac{8}{3}$	D.	$-\frac{4}{3}$
૪૩.	$\int_{-1}^1 x^2 + 1 dx = \dots\dots\dots$			
	A.	$\frac{8}{3}$	B.	$\frac{4}{3}$
	C.	$-\frac{8}{3}$	D.	$-\frac{4}{3}$
44.	$\int \frac{\log x}{x} dx = \dots\dots\dots$			
	A.	$\log x + c$	B.	$(\log x)^2 + c$

	C.	$\frac{(\log x)^2}{2} + c$	D.	e^x
۴۴.	$\int \frac{\log x}{x} dx = \dots\dots\dots$			
	A.	$\log x + c$	B.	$(\log x)^2 + c$
	C.	$\frac{(\log x)^2}{2} + c$	D.	e^x
45.	$\int_1^2 x^2 dx = \dots\dots\dots$			
	A.	1	B.	2
	C.	3	D.	$\frac{7}{3}$
۴۵.	$\int_1^2 x^2 dx = \dots\dots\dots$			
	A.	1	B.	2
	C.	3	D.	$\frac{7}{3}$
46.	$\int \cos 3x dx = \dots\dots\dots + c$			
	A.	$-\frac{\sin 3x}{3}$	B.	$\sin 3x$
	C.	$-\cos 3x$	D.	$\frac{\sin 3x}{3}$
۴۶.	$\int \cos 3x dx = \dots\dots\dots + c$			
	A.	$-\frac{\sin 3x}{3}$	B.	$\sin 3x$
	C.	$-\cos 3x$	D.	$\frac{\sin 3x}{3}$
47.	$\int e^x + \sin x dx = \dots\dots\dots$			
	A.	$1 + \cos x + c$	B.	$1 + \sin x + c$
	C.	$e^x - \cos x + c$	D.	$e^x + \cos x + c$
۴۷.	$\int e^x + \sin x dx = \dots\dots\dots$			
	A.	$1 + \cos x + c$	B.	$1 + \sin x + c$
	C.	$e^x - \cos x + c$	D.	$e^x + \cos x + c$
48.	$\int \sec^2 x dx = \dots\dots\dots$			
	A.	$\tan x + c$	B.	$\tan^2 x + c$
	C.	$-\tan x + c$	D.	$\sec x + c$
۴۸.	$\int \sec^2 x dx = \dots\dots\dots$			
	A.	$\tan x + c$	B.	$\tan^2 x + c$
	C.	$-\tan x + c$	D.	$\sec x + c$
49.	$\int x^{\frac{1}{3}} dx = \dots\dots\dots + c$			
	A.	$\frac{4}{3} x^{\frac{4}{3}}$	B.	$\frac{3}{4} x^{\frac{4}{3}}$

	C.	$\frac{3}{2}x^{\frac{2}{3}}$	D.	$\frac{1}{3}x^{-\frac{2}{3}}$
૪૯.	$\int x^{\frac{1}{3}} dx = \dots\dots\dots + c$			
	A.	$\frac{4}{3}x^{\frac{4}{3}}$	B.	$\frac{3}{4}x^{\frac{4}{3}}$
	C.	$\frac{3}{2}x^{\frac{2}{3}}$	D.	$\frac{1}{3}x^{-\frac{2}{3}}$
50.	$\int \sec x dx = \dots\dots\dots + c$			
	A.	$\log \sec x - \tan x $	B.	$\log \operatorname{cosec} x - \cot x $
	C.	$\log \sec x + \tan x $	D.	$\log \tan x $
૫૦.	$\int \sec x dx = \dots\dots\dots + c$			
	A.	$\log \sec x - \tan x $	B.	$\log \operatorname{cosec} x - \cot x $
	C.	$\log \sec x + \tan x $	D.	$\log \tan x $
51.	$\int_0^1 10 dx = \dots\dots\dots$			
	A.	1	B.	9
	C.	10	D.	11
૫૧.	$\int_0^1 10 dx = \dots\dots\dots$			
	A.	1	B.	9
	C.	10	D.	11
52.	The area of a region bounded by line $y = x$, X-axis and lines $x = 2$ and $x = 3$ is.....sq.unit			
	A.	2	B.	4
	C.	$\frac{3}{2}$	D.	$\frac{5}{2}$
૫૨.	વક્ર $y = x$, X-અક્ષ અને રેખાઓ $x = 2$ અને $x = 3$ વડે ઘેરાયેલ પ્રદેશનું ક્ષેત્રફળ.....ચો.એકમ છે.			
	A.	2	B.	4
	C.	$\frac{3}{2}$	D.	$\frac{5}{2}$
53.	$\int_0^{\pi/2} \frac{\sin x}{\sin x + \cos x} dx = \dots\dots\dots$			
	A.	$\frac{\pi}{4}$	B.	$\frac{\pi}{2}$
	C.	π	D.	2π
૫૩.	$\int_0^{\pi/2} \frac{\sin x}{\sin x + \cos x} dx = \dots\dots\dots$			
	A.	$\frac{\pi}{4}$	B.	$\frac{\pi}{2}$
	C.	π	D.	2π
54.	$\int \frac{1}{x^2 + 9} dx = \dots\dots\dots + c$			

	A.	$\sin^{-1} 3$	B.	$\tan^{-1} \frac{x}{3}$
	C.	$\frac{1}{3} \tan^{-1} \frac{x}{3}$	D.	$\frac{1}{3} \tan^{-1} x$
૫૪.	$\int \frac{1}{x^2+9} dx = \dots\dots\dots + c$			
	A.	$\sin^{-1} 3$	B.	$\tan^{-1} \frac{x}{3}$
	C.	$\frac{1}{3} \tan^{-1} \frac{x}{3}$	D.	$\frac{1}{3} \tan^{-1} x$
55.	$\int \frac{f'(x)}{f(x)} dx = \dots\dots\dots$			
	A.	$\log f(x) + c$	B.	$\log f'(x) + c$
	C.	$\log f(x) + f'(x) + c$	D.	$\log f(x) - f'(x) + c$
૫૫.	$\int \frac{f'(x)}{f(x)} dx = \dots\dots\dots$			
	A.	$\log f(x) + c$	B.	$\log f'(x) + c$
	C.	$\log f(x) + f'(x) + c$	D.	$\log f(x) - f'(x) + c$
56.	$\int \cos ec^2 5x dx = \dots\dots\dots + c$			
	A.	$\tan x + 5$	B.	$\cot x^5$
	C.	$\frac{\tan 5x}{5}$	D.	$-\frac{\cot 5x}{5}$
૫૬.	$\int \cos ec^2 5x dx = \dots\dots\dots + c$			
	A.	$\tan x + 5$	B.	$\cot x^5$
	C.	$\frac{\tan 5x}{5}$	D.	$-\frac{\cot 5x}{5}$
57.	Order of differential equation $\left(\frac{d^2 y}{dx^2}\right)^3 + \frac{dy}{dx} - 5y = 0$ is.....			
	A.	1	B.	2
	C.	3	D.	6
૫૭.	વિકલ સમીકરણ $\left(\frac{d^2 y}{dx^2}\right)^3 + \frac{dy}{dx} - 5y = 0$ ની કક્ષા છે.			
	A.	1	B.	2
	C.	3	D.	6
58.	Degree of differential equation $\left(\frac{d^3 y}{dx^3}\right) - 2\left(\frac{d^2 y}{dx^2}\right)^2 + \left(\frac{dy}{dx}\right)^3 + xy = 0$			
	A.	1	B.	2
	C.	3	D.	6
૫૮.	વિકલ સમીકરણ $\left(\frac{d^3 y}{dx^3}\right) - 2\left(\frac{d^2 y}{dx^2}\right)^2 + \left(\frac{dy}{dx}\right)^3 + xy = 0$ નું પરિમાણ છે.			
	A.	1	B.	2
	C.	3	D.	6
59.	Solution of linear differential equation $\frac{dy}{dx} + Py = Q$ is.....			

	A.	$y(I.F) = -\int Q(I.F) dx + c$	B.	$Q = \int y(I.F) dx + c$
	C.	$y(I.F) = \int Q(I.F) dx + c$	D.	$Py = \int (I.F) dx + c$
૫૯.	સુરેખ વિકલ સમીકરણ $\frac{dy}{dx} + Py = Q$ નો ઉકેલ છે.			
	A.	$y(I.F) = -\int Q(I.F) dx + c$	B.	$Q = \int y(I.F) dx + c$
	C.	$y(I.F) = \int Q(I.F) dx + c$	D.	$Py = \int (I.F) dx + c$
60.	Integrating factor (I.F.) of differential equation $\frac{dy}{dx} + y = 3x$ is.....			
	A.	1	B.	2
	C.	e^x	D.	$\log x$
૬૦.	વિકલ સમીકરણ $\frac{dy}{dx} + y = 3x$ નો સંકલ્પકારક અવયવ (I.F.) છે.			
	A.	1	B.	2
	C.	e^x	D.	$\log x$
61.	is/are homogeneous differential equation/s.			
	A.	$(x^2 + y^2)dx = 2xydy$	B.	$\frac{dy}{dx} = \frac{y^2}{xy - x^2}$
	C.	$(x^2 + xy)dy = (x^2 + y^2)dx$	D.	All of above.
૬૧.	એ સમપરિમાણ વિકલ સમીકરણ/સમીકરણો છે.			
	A.	$(x^2 + y^2)dx = 2xydy$	B.	$\frac{dy}{dx} = \frac{y^2}{xy - x^2}$
	C.	$(x^2 + xy)dy = (x^2 + y^2)dx$	D.	ઉપરોક્ત તમામ.
62.	Solution of differential equation $xdy + ydx = 0$ is.....			
	A.	$x^2 + y^2 = c$	B.	$x^2 - y^2 = c$
	C.	$xy = c$	D.	$x^2y^2 = c$
૬૨.	વિકલ સમીકરણ $xdy + ydx = 0$ નો ઉકેલ છે.			
	A.	$x^2 + y^2 = c$	B.	$x^2 - y^2 = c$
	C.	$xy = c$	D.	$x^2y^2 = c$
63.	Integrating factor (I.F.) of differential equation $\frac{dy}{dx} + \frac{y}{x} = x^2$ is.....			
	A.	$ x $	B.	x^2
	C.	$\frac{1}{x}$	D.	$-x^2$
૬૩.	વિકલ સમીકરણ $\frac{dy}{dx} + \frac{y}{x} = x^2$ નો સંકલ્પકારક અવયવ (I.F.) છે.			
	A.	$ x $	B.	x^2
	C.	$\frac{1}{x}$	D.	$-x^2$
64.	Degree of given homogeneous differential equation $f(x, y) = \frac{x^5 + y^5}{x^3 + y^3}$ is.....			
	A.	2	B.	5
	C.	3	D.	8

૬૪.	સમપરિમાણ વિકલ સમીકરણ $f(x, y) = \frac{x^5 + y^5}{x^3 + y^3}$ ની ધાત છે.			
	A.	2	B.	5
	C.	3	D.	8
65.	Differential equation of straight line $y = 2x + 3$ is			
	A.	$\frac{dy}{dx} = 0$	B.	$\frac{d^2y}{dx^2} = 0$
	C.	$2\frac{dy}{dx} = 0$	D.	$3\frac{d^2y}{dx^2} = 0$
૬૫.	સુરેખા $y = 2x + 3$ નું વિકલ સમીકરણ છે.			
	A.	$\frac{dy}{dx} = 0$	B.	$\frac{d^2y}{dx^2} = 0$
	C.	$2\frac{dy}{dx} = 0$	D.	$3\frac{d^2y}{dx^2} = 0$
66.	Degree of differential equation $\frac{d^2y}{dx^2} + \log\left(\frac{dy}{dx}\right) + 2y = 0$ is.....			
	A.	2	B.	1
	C.	0	D.	Undefined
૬૬.	વિકલ સમીકરણ $\frac{d^2y}{dx^2} + \log\left(\frac{dy}{dx}\right) + 2y = 0$ નું પરિમાણ છે.			
	A.	2	B.	1
	C.	0	D.	અવ્યાખ્યાયિત.
67.	Order of differential equation $\frac{d^2y}{dx^2} + \frac{dy}{dx} + y = 0$ is.....			
	A.	2	B.	1
	C.	0	D.	None of above.
૬૭.	વિકલ સમીકરણ $\frac{d^2y}{dx^2} + \frac{dy}{dx} + y = 0$ ની કક્ષા છે.			
	A.	2	B.	1
	C.	0	D.	એક પણ નહીં.
68.	 is not a solution of differential equation $\frac{d^2y}{dx^2} = 0$			
	A.	$y = x$	B.	$y = 3x$
	C.	$y = 2x$	D.	$y = x^2$
૬૮.	 એ વિકલ સમીકરણ $\frac{d^2y}{dx^2} = 0$ નો ઉકેલ નથી.			
	A.	$y = x$	B.	$y = 3x$
	C.	$y = 2x$	D.	$y = x^2$
69.	For linear differential equation $\frac{dy}{dx} + \frac{y \cos x}{x} = e^x$, $P(x) = \dots\dots$			
	A.	$-\frac{\cos x}{x}$	B.	x
	C.	$\frac{\cos x}{x}$	D.	$-x$
૬૯.	સુરેખ વિકલ સમીકરણ $\frac{dy}{dx} + \frac{y \cos x}{x} = e^x$ માટે $P(x) = \dots\dots$			

	A.	$-\frac{\cos x}{x}$	B.	x
	C.	$\frac{\cos x}{x}$	D.	$-x$
70.	 is homogeneous function.			
	A.	$f(x, y) = x + y^2$	B.	$f(x, y) = x^3 - y^2$
	C.	$f(x, y) = x^3 + y^3$	D.	$f(x, y) = 4x^2 + y$
90.	એ સમપરિમાણીય છે.			
	A.	$f(x, y) = x + y^2$	B.	$f(x, y) = x^3 - y^2$
	C.	$f(x, y) = x^3 + y^3$	D.	$f(x, y) = 4x^2 + y$
