

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY**DIPLOMA ENGINEERING – SEMESTER- 1,2(C2D) EXAMINATION –SUMMER-2020****Subject Code: C320002****Date: 06-11-2020****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 only simple calculator is permitted in Mathematics.

	Question Text and Option. પ્રશ્ન અને વિકલ્પો.			
1.	If $p = \frac{1}{\cos \theta - i \sin \theta}$ then $\cos \theta + i \sin \theta =$ _____.			
	A.	p	B.	$\frac{1}{p}$
	C.	1	D.	0
૧.	જો $p = \frac{1}{\cos \theta - i \sin \theta}$ હોય તો $\cos \theta + i \sin \theta =$ _____.			
	A.	p	B.	$\frac{1}{p}$
	C.	1	D.	0
2.	If $Z = 1 + \sqrt{3}i$ then $ Z =$ _____.			
	A.	2	B.	4
	C.	$1 + \sqrt{3}$	D.	None of these
૨.	જો $Z = 1 + \sqrt{3}i$ હોય તો $ Z =$ _____.			
	A.	2	B.	4
	C.	$1 + \sqrt{3}$	D.	આમાંથી એકપણ નહીં
3.	$i^{998} =$ _____.			
	A.	1	B.	-1
	C.	i	D.	$-i$
૩.	$i^{998} =$ _____.			
	A.	1	B.	-1
	C.	i	D.	$-i$
4.	If $(x + iy) - (7 + 4i) = 3 - 5i$ then $x =$ _____, $y =$ _____.			
	A.	$x = -1, y = 10$	B.	$x = -1, y = -10$
	C.	$x = 10, y = -1$	D.	$x = 10, y = 1$
૪.	જો $(x + iy) - (7 + 4i) = 3 - 5i$ હોય તો $x =$ _____, $y =$ _____.			
	A.	$x = -1, y = 10$	B.	$x = -1, y = -10$
	C.	$x = 10, y = -1$	D.	$x = 10, y = 1$
5.	$\sqrt{-9} =$ _____.			
	A.	$3i$	B.	$3i$
	C.	$\pm 3i$	D.	None of these
૫.	$\sqrt{-9} =$ _____.			
	A.	$3i$	B.	$3i$
	C.	$\pm 3i$	D.	આમાંથી એકપણ નહીં
6.	Inverse of complex number $3 - 2i$ is _____.			

	A.	$\frac{-3-2i}{13}$	B.	$\frac{3+2i}{13}$
	C.	$\frac{3-2i}{13}$	D.	$\frac{-3+2i}{13}$
૬.	3-2i ને વ્યસ્ત સંકર સંખ્યા _____ છે.			
	A.	$\frac{-3-2i}{13}$	B.	$\frac{3+2i}{13}$
	C.	$\frac{3-2i}{13}$	D.	$\frac{-3+2i}{13}$
7.	The principle argument of the complex number $Z = \sqrt{3} + i$ is _____.			
	A.	$\frac{\pi}{6}$	B.	$\frac{\pi}{4}$
	C.	$\frac{\pi}{3}$	D.	$\frac{\pi}{2}$
૭.	$Z = \sqrt{3} + i$ નો મુખ્ય કોણાંક _____ છે.			
	A.	$\frac{\pi}{6}$	B.	$\frac{\pi}{4}$
	C.	$\frac{\pi}{3}$	D.	$\frac{\pi}{2}$
8.	If $\bar{Z} = \cos \theta + i \sin \theta$ then $Z + \bar{Z} =$ _____.			
	A.	$2i \sin \theta$	B.	$2 \cos \theta$
	C.	$\cos \theta$	D.	$i \sin \theta$
૮.	જો $\bar{Z} = \cos \theta + i \sin \theta$ હોય તો $Z + \bar{Z} =$ _____.			
	A.	$2i \sin \theta$	B.	$2 \cos \theta$
	C.	$\cos \theta$	D.	$i \sin \theta$
9.	$i^n + i^{n+1} + i^{n+2} + i^{n+3} + i^{n+4} =$ _____.			
	A.	$-i^n$	B.	-1
	C.	1	D.	0
૯.	$i^n + i^{n+1} + i^{n+2} + i^{n+3} + i^{n+4} =$ _____.			
	A.	$-i^n$	B.	-1
	C.	1	D.	0
10.	If $Z = 3i + \frac{4}{3}$ then $\bar{Z} =$ _____.			
	A.	$\frac{4}{3} - 3i$	B.	$\frac{4}{3} + 3i$
	C.	$-3i - \frac{4}{3}$	D.	$3i - \frac{4}{3}$
૧૦.	જો $Z = 3i + \frac{4}{3}$ હોય તો $\bar{Z} =$ _____.			
	A.	$\frac{4}{3} - 3i$	B.	$\frac{4}{3} + 3i$
	C.	$-3i - \frac{4}{3}$	D.	$3i - \frac{4}{3}$
11.	If $f(x) = 2x - 3$ and $g(x) = x^2 - x + 7$ then the value of $gof(-1) =$ _____.			
	A.	11	B.	14
	C.	37	D.	None of these
૧૧.	જો $f(x) = 2x - 3$ અને $g(x) = x^2 - x + 7$ હોય તો $gof(-1) =$ _____ થાય.			
	A.	11	B.	14

	C.	37	D.	આમાંથી એકપણ નહીં
12.	If $f(x) = x^2$ then $f(x+1) - f(x-1) = \underline{\hspace{2cm}}$.			
	A.	$2(x^2 + 1)$	B.	$4x$
	C.	$2x$	D.	2
૧૨.	જો $f(x) = x^2$ હોય તો $f(x+1) - f(x-1) = \underline{\hspace{2cm}}$.			
	A.	$2(x^2 + 1)$	B.	$4x$
	C.	$2x$	D.	2
13.	If $f(x) = ax + \frac{1}{x}$ and $f\left(\frac{1}{3}\right) = \frac{14}{3}$ then $a = \underline{\hspace{2cm}}$.			
	A.	3	B.	5
	C.	$\frac{5}{3}$	D.	15
૧૩.	જો $f(x) = ax + \frac{1}{x}$ અને $f\left(\frac{1}{3}\right) = \frac{14}{3}$ હોય તો $a = \underline{\hspace{2cm}}$.			
	A.	3	B.	5
	C.	$\frac{5}{3}$	D.	15
14.	$\lim_{n \rightarrow \infty} \left(1 + \frac{1}{n}\right)^n = \underline{\hspace{2cm}}$.			
	A.	-1	B.	0
	C.	1	D.	e
૧૪.	$\lim_{n \rightarrow \infty} \left(1 + \frac{1}{n}\right)^n = \underline{\hspace{2cm}}$.			
	A.	-1	B.	0
	C.	1	D.	e
15.	$\lim_{x \rightarrow 2} \frac{x^3 - 8}{x - 2} = \underline{\hspace{2cm}}$.			
	A.	12	B.	4
	C.	-4	D.	8
૧૫.	$\lim_{x \rightarrow 2} \frac{x^3 - 8}{x - 2} = \underline{\hspace{2cm}}$.			
	A.	2	B.	4
	C.	16	D.	8
16.	$\lim_{n \rightarrow \infty} \frac{n(n+1)}{n^2 + 5n + 6} = \underline{\hspace{2cm}}$.			
	A.	$\frac{1}{3}$	B.	1
	C.	∞	D.	None of these
૧૬.	$\lim_{n \rightarrow \infty} \frac{n(n+1)}{n^2 + 5n + 6} = \underline{\hspace{2cm}}$			
	A.	$\frac{1}{3}$	B.	1
	C.	∞	D.	આમાંથી એકપણ નહીં
17.	$\lim_{x \rightarrow 0} \frac{a^x - b^x}{x} = \underline{\hspace{2cm}}$			
	A.	$\log_e ab$	B.	$\log_e \left(\frac{b}{a}\right)$

	C.	$\log_e \left(\frac{a}{b} \right)$	D.	$a - b$
17.	$\lim_{x \rightarrow 0} \frac{a^x - b^x}{x} = \underline{\hspace{2cm}}$			
	A.	$\log_e ab$	B.	$\log_e \left(\frac{b}{a} \right)$
	C.	$\log_e \left(\frac{a}{b} \right)$	D.	$a - b$
18.	$\lim_{x \rightarrow 1} \frac{x^2 + x + 2}{x + 2} = \underline{\hspace{2cm}}.$			
	A.	2	B.	4
	C.	$\frac{4}{3}$	D.	$\frac{3}{4}$
17.	$\lim_{x \rightarrow 1} \frac{x^2 + x + 2}{x + 2} = \underline{\hspace{2cm}}$			
	A.	2	B.	4
	C.	$\frac{4}{3}$	D.	$\frac{3}{4}$
19.	$\lim_{n \rightarrow \infty} \left(1 + \frac{3}{n} \right)^n = \underline{\hspace{2cm}}.$			
	A.	e	B.	e^3
	C.	$e^{\frac{n}{3}}$	D.	e^n
17.	$\lim_{n \rightarrow \infty} \left(1 + \frac{3}{n} \right)^n = \underline{\hspace{2cm}}.$			
	A.	e	B.	e^3
	C.	$e^{\frac{n}{3}}$	D.	e^n
20.	$\lim_{x \rightarrow -1} \frac{\sin(x-1)}{x^2 + x - 2} = \underline{\hspace{2cm}}.$			
	A.	-1	B.	3
	C.	$\frac{1}{3}$	D.	$-\frac{1}{3}$
20.	$\lim_{x \rightarrow -1} \frac{\sin(x-1)}{x^2 + x - 2} = \underline{\hspace{2cm}}.$			
	A.	-1	B.	3
	C.	$\frac{1}{3}$	D.	$-\frac{1}{3}$
21.	$\lim_{x \rightarrow 0} \frac{\sin 3x}{\tan 5x} = \underline{\hspace{2cm}}.$			
	A.	2	B.	8
	C.	$\frac{5}{3}$	D.	$\frac{3}{5}$
21.	$\lim_{x \rightarrow 0} \frac{\sin 3x}{\tan 5x} = \underline{\hspace{2cm}}.$			
	A.	2	B.	8
	C.	$\frac{5}{3}$	D.	$\frac{3}{5}$

22.	$\lim_{x \rightarrow \frac{\pi}{2}} \frac{1 - \sin x}{\cos^2 x} = \underline{\hspace{2cm}}.$			
	A.	2	B.	∞
	C.	0	D.	$\frac{1}{2}$
૨૨.	$\lim_{x \rightarrow \frac{\pi}{2}} \frac{1 - \sin x}{\cos^2 x} = \underline{\hspace{2cm}}.$			
	A.	2	B.	∞
	C.	0	D.	$\frac{1}{2}$
23.	$\frac{d}{dx}(\tan x) = \underline{\hspace{2cm}}.$			
	A.	$\cot x$	B.	$\sec x \cdot \tan x$
	C.	$\cos \sec x \cdot \tan x$	D.	$\sec^2 x$
૨૩.	$\frac{d}{dx}(\tan x) = \underline{\hspace{2cm}}.$			
	A.	$\cot x$	B.	$\sec x \cdot \tan x$
	C.	$\cos \sec x \cdot \tan x$	D.	$\sec^2 x$
24.	If $f(x) = e^{3x}$ then $f'(0) = \underline{\hspace{2cm}}.$			
	A.	0	B.	1
	C.	e^3	D.	3
૨૪.	જો $f(x) = e^{3x}$ હોય તો $f'(0) = \underline{\hspace{2cm}}.$			
	A.	0	B.	1
	C.	e^3	D.	3
25.	If $y = \frac{\log x}{x}$ then $\frac{dy}{dx} = \underline{\hspace{2cm}}.$			
	A.	$\frac{1}{x^2}$	B.	$\frac{1 - \log x}{x^2}$
	C.	$\frac{\log x - 1}{x^2}$	D.	None of these
૨૫.	જો $y = \frac{\log x}{x}$ હોય તો $\frac{dy}{dx} = \underline{\hspace{2cm}}$ થાય.			
	A.	$\frac{1}{x^2}$	B.	$\frac{1 - \log x}{x^2}$
	C.	$\frac{\log x - 1}{x^2}$	D.	આમાંથી એકપણ નહીં
26.	$\frac{d}{dx}(x^3 + 3^x + 3^3) = \underline{\hspace{2cm}}.$			
	A.	$3x^2$	B.	$3x^2 + 3^x \log_e 3$
	C.	$3x^2 + 3^x$	D.	None of these
૨૬.	$\frac{d}{dx}(x^3 + 3^x + 3^3) = \underline{\hspace{2cm}}.$			
	A.	$3x^2$	B.	$3x^2 + 3^x \log_e 3$
	C.	$3x^2 + 3^x$	D.	આમાંથી એકપણ નહીં
27.	$\frac{d}{dx}[\cos(2x+3)] = \underline{\hspace{2cm}}.$			
	A.	$2 \sin(2x+3)$	B.	$\sin(2x+3)$

	C.	$-\sin(2x+3)$	D.	$-2\sin(2x+3)$
૨૭.	$\frac{d}{dx}[\cos(2x+3)] = \underline{\hspace{2cm}}.$			
	A.	$2\sin(2x+3)$	B.	$\sin(2x+3)$
	C.	$-\sin(2x+3)$	D.	$-2\sin(2x+3)$
28.	If $x = at^2$ and $y = 2at$ then $\frac{dy}{dx} = \underline{\hspace{2cm}}.$			
	A.	t	B.	at
	C.	$\frac{1}{t}$	D.	$\frac{a}{t}$
૨૮.	જો $x = at^2$ અને $y = 2at$ હોય તો $\frac{dy}{dx} = \underline{\hspace{2cm}}.$			
	A.	t	B.	at
	C.	$\frac{1}{t}$	D.	$\frac{a}{t}$
29.	$\frac{d}{dx}[\sin^{-1}x + \cos^{-1}x] = \underline{\hspace{2cm}}.$			
	A.	1	B.	0
	C.	$\frac{\pi}{2}$	D.	None of these
૨૯.	$\frac{d}{dx}[\sin^{-1}x + \cos^{-1}x] = \underline{\hspace{2cm}}.$			
	A.	1	B.	0
	C.	$\frac{\pi}{2}$	D.	આમાંથી એકપણ નહીં
30.	For $x = \cos \theta, y = \sin \theta, \frac{dy}{dx} = \underline{\hspace{2cm}}.$			
	A.	$\tan \theta$	B.	$\cot \theta$
	C.	$-\cot \theta$	D.	$-\tan \theta$
૩૦.	$x = \cos \theta, y = \sin \theta$ માટે $\frac{dy}{dx} = \underline{\hspace{2cm}}$ થાય.			
	A.	$\tan \theta$	B.	$\cot \theta$
	C.	$-\cot \theta$	D.	$-\tan \theta$
31.	If $y = e^x + 4x$ then $\frac{d^2y}{dx^2} = \underline{\hspace{2cm}}.$			
	A.	e^x	B.	e^{2x}
	C.	e^{x^2}	D.	$e^x + 4$
૩૧.	જો $y = e^x + 4x$ હોય તો $\frac{d^2y}{dx^2} = \underline{\hspace{2cm}}.$			
	A.	e^x	B.	e^{2x}
	C.	e^{x^2}	D.	$e^x + 4$
32.	If $y = \log(ax+b)$ then $\frac{dy}{dx} = \underline{\hspace{2cm}}.$			
	A.	$\frac{a}{ax+b}$	B.	$\frac{b}{ax+b}$
	C.	$\frac{1}{ax+b}$	D.	$\frac{a+b}{ax+b}$

32.	જો $y = \log(ax+b)$ હોય તો $\frac{dy}{dx} =$ _____.			
	A.	$\frac{a}{ax+b}$	B.	$\frac{b}{ax+b}$
	C.	$\frac{1}{ax+b}$	D.	$\frac{a+b}{ax+b}$
33.	$\frac{d}{dx} \tan^{-1} x =$ _____			
	A.	$\frac{1}{1+x^2}$	B.	$-\frac{1}{1+x^2}$
	C.	$\frac{1}{1-x^2}$	D.	$-\frac{1}{1-x^2}$
33.	$\frac{d}{dx} \tan^{-1} x =$ _____			
	A.	$\frac{1}{1+x^2}$	B.	$-\frac{1}{1+x^2}$
	C.	$\frac{1}{1-x^2}$	D.	$-\frac{1}{1-x^2}$
34.	For a function $f(x)$, at $x=5$, $f(x)$ has minima if _____.			
	A.	$f'(5)=0, f''(5)<0$	B.	$f'(5)=0, f''(5)>0$
	C.	$f'(5)<0, f''(5)<0$	D.	$f'(5)<0, f''(5)>0$
34.	વિધેય $f(x)$ માટે જો $x=5$, હોય તો વિધેય $f(x)$ ન્યૂનતમ હોય જો _____.			
	A.	$f'(5)=0, f''(5)<0$	B.	$f'(5)=0, f''(5)>0$
	C.	$f'(5)<0, f''(5)<0$	D.	$f'(5)<0, f''(5)>0$
35.	If $xy=1$ then $\frac{dy}{dx} =$ _____.			
	A.	0	B.	1
	C.	$x+y\frac{dy}{dx}=0$	D.	$y+x\frac{dy}{dx}=0$
34.	જો $xy=1$ હોય તો $\frac{dy}{dx} =$ _____.			
	A.	0	B.	1
	C.	$x+y\frac{dy}{dx}=0$	D.	$y+x\frac{dy}{dx}=0$
36.	If $y = \log 3$ then $\frac{dy}{dx} =$ _____.			
	A.	0	B.	1
	C.	$\frac{1}{3}$	D.	x
36.	જો $y = \log 3$ હોય તો $\frac{dy}{dx} =$ _____.			
	A.	0	B.	1
	C.	$\frac{1}{3}$	D.	x
37.	Minimum value of $f(x) = x + \frac{1}{x}$ is _____.			
	A.	2	B.	-2
	C.	1	D.	-1

37.	$f(x) = x + \frac{1}{x}$ નું ન્યૂનતમ મૂલ્ય _____ છે.			
	A.	2	B.	-2
	C.	1	D.	-1
38.	The equation of motion of a particle is $s = t^3 - 5t^2 + 3t$, the acceleration at $t = 3$ is _____.			
	A.	18 cm/sec^2	B.	8 cm/sec^2
	C.	12 cm/sec^2	D.	24 cm/sec^2
38.	એક કણનું ગતિસૂત્ર $s = t^3 - 5t^2 + 3t$ છે, $t = 3$ સેકન્ડ હોય તો તે કણનો પ્રવેગ _____ એકમ થાય.			
	A.	18 cm/sec^2	B.	8 cm/sec^2
	C.	12 cm/sec^2	D.	24 cm/sec^2
39.	The equation of motion of a particle is $s = t^3 + 3t$, $t > 0$ at $t = \underline{\hspace{2cm}}$, the velocity and acceleration become equal.			
	A.	2	B.	3
	C.	1	D.	4
39.	એક કણનું ગતિસૂત્ર $s = t^3 + 3t$, $t > 0$ $t = \underline{\hspace{2cm}}$ સેકન્ડ હોય તો વેગ અને પ્રવેગ સરખા થાય.			
	A.	2	B.	3
	C.	1	D.	4
40.	If $y = e^{\cos x}$ then $\frac{dy}{dx} = \underline{\hspace{2cm}}$.			
	A.	$e^{\sin x}$	B.	$e^{\cos x}$
	C.	$-e^{\cos x} \cdot \sin x$	D.	$-e^{\sin x} \cdot \sin x$
40.	જો $y = e^{\cos x}$ હોય તો $\frac{dy}{dx} = \underline{\hspace{2cm}}$.			
	A.	$e^{\sin x}$	B.	$e^{\cos x}$
	C.	$-e^{\cos x} \cdot \sin x$	D.	$-e^{\sin x} \cdot \sin x$
41.	$\int \frac{1}{x^2 - 4} dx = \underline{\hspace{2cm}} + C.$			
	A.	$\frac{1}{4} \log \left \frac{2+x}{2-x} \right $	B.	$\frac{1}{4} \log \left \frac{x-2}{x+2} \right $
	C.	$\frac{1}{2} \log \left \frac{2+x}{2-x} \right $	D.	$\frac{1}{2} \log \left \frac{x-2}{x+2} \right $
41.	$\int \frac{1}{x^2 - 4} dx = \underline{\hspace{2cm}} + C.$			
	A.	$\frac{1}{4} \log \left \frac{2+x}{2-x} \right $	B.	$\frac{1}{4} \log \left \frac{x-2}{x+2} \right $
	C.	$\frac{1}{2} \log \left \frac{2+x}{2-x} \right $	D.	$\frac{1}{2} \log \left \frac{x-2}{x+2} \right $
42.	$\int (\sin^2 x + \cos^2 x) dx = \underline{\hspace{2cm}} + C$			
	A.	1	B.	x
	C.	0	D.	$\sin 2x$
42.	$\int (\sin^2 x + \cos^2 x) dx = \underline{\hspace{2cm}} + C$			
	A.	1	B.	x
	C.	0	D.	$\sin 2x$

43.	If f is continuous and even on $[-a, a]$, then $\int_{-a}^a f(x)dx = \underline{\hspace{2cm}}$.			
	A.	$2\int_0^a f(x)dx$	B.	$\int_0^a f(a-x)dx$
	C.	0	D.	None of these
૪૩.	જો f એ $[-a, a]$ પર સતત અને યુગ્મ હોય તો $\int_{-a}^a f(x)dx = \underline{\hspace{2cm}}$ થાય.			
	A.	$2\int_0^a f(x)dx$	B.	$\int_0^a f(a-x)dx$
	C.	0	D.	આમાંથી એકપણ નહીં
44.	$\int 3^x dx = \underline{\hspace{2cm}}$.			
	A.	$\frac{3}{\log 3^x} + C$	B.	$\frac{3^x}{\log 3^x} + C$
	C.	$\frac{3}{\log 3} + C$	D.	$\frac{3^x}{\log 3} + C$
૪૪.	$\int 3^x dx = \underline{\hspace{2cm}}$.			
	A.	$\frac{3}{\log 3^x} + C$	B.	$\frac{3^x}{\log 3^x} + C$
	C.	$\frac{3}{\log 3} + C$	D.	$\frac{3^x}{\log 3} + C$
45.	$\int \cos(3x-2)dx = \underline{\hspace{2cm}} + C$			
	A.	$\frac{1}{3}\sin(3x-2)$	B.	$\frac{1}{3}\cos(3x-2)$
	C.	$-\sin(3x-2)$	D.	None of these
૪૫.	$\int \cos(3x-2)dx = \underline{\hspace{2cm}} + C$			
	A.	$\frac{1}{3}\sin(3x-2)$	B.	$\frac{1}{3}\cos(3x-2)$
	C.	$-\sin(3x-2)$	D.	આમાંથી એકપણ નહીં
46.	$\int \frac{dx}{\sqrt{a^2-x^2}} = \underline{\hspace{2cm}} + C$.			
	A.	$\sec^{-1} \frac{x}{a}$	B.	$\sin^{-1} \frac{x}{a}$
	C.	$\log x+\sqrt{x^2-a^2} $	D.	$\log x+\sqrt{x^2+a^2} $
૪૬.	$\int \frac{dx}{\sqrt{a^2-x^2}} = \underline{\hspace{2cm}} + C$			
	A.	$\sec^{-1} \frac{x}{a}$	B.	$\sin^{-1} \frac{x}{a}$
	C.	$\log x+\sqrt{x^2-a^2} $	D.	$\log x+\sqrt{x^2+a^2} $
47.	$\int \cos ec^2 x dx = \underline{\hspace{2cm}} + C$.			
	A.	$\tan x$	B.	$-\tan x$
	C.	$\cot x$	D.	$-\cot x$
૪૭.	$\int \cos ec^2 x dx = \underline{\hspace{2cm}} + C$			
	A.	$\tan x$	B.	$-\tan x$

	C.	$\cot x$	D.	$-\cot x$
48.	$\int_0^{\frac{\pi}{4}} \cos x dx = \underline{\hspace{2cm}}.$			
	A.	$\frac{1}{2}$	B.	$\frac{1}{\sqrt{2}}$
	C.	$-\frac{1}{\sqrt{2}}$	D.	$-\frac{1}{2}$
۴۸.	$\int_0^{\frac{\pi}{4}} \cos x dx = \underline{\hspace{2cm}}.$			
	A.	$\frac{1}{2}$	B.	$\frac{1}{\sqrt{2}}$
	C.	$-\frac{1}{\sqrt{2}}$	D.	$-\frac{1}{2}$
49.	$\int_0^1 e^x dx = \underline{\hspace{2cm}}.$			
	A.	e	B.	$1-e$
	C.	$e-1$	D.	0
۴۹.	$\int_0^1 e^x dx = \underline{\hspace{2cm}}.$			
	A.	e	B.	$1-e$
	C.	$e-1$	D.	0
50.	$\int x e^x dx = \underline{\hspace{2cm}} + C.$			
	A.	$x e^x + e^x$	B.	$e^x + x$
	C.	$x e^x - e^x$	D.	$-x e^x + e^x$
۵۰.	$\int x e^x dx = \underline{\hspace{2cm}} + C.$			
	A.	$x e^x + e^x$	B.	$e^x + x$
	C.	$x e^x - e^x$	D.	$-x e^x + e^x$
51.	$\int e^{-\log_e \cos e^x} dx = \underline{\hspace{2cm}} + C.$			
	A.	$-\operatorname{cosec} x . \cot x$	B.	$-\cos x$
	C.	$\sin x$	D.	$\cot x$
۵۱.	$\int e^{-\log_e \cos e^x} dx = \underline{\hspace{2cm}} + C.$			
	A.	$-\operatorname{cosec} x . \cot x$	B.	$-\cos x$
	C.	4	D.	16π
52.	$\int e^{\sin x} . \cos x dx = \underline{\hspace{2cm}} + C.$			
	A.	$e^{\sin x}$	B.	$e^{\cos x} . \sin x$
	C.	$e^{\cos x}$	D.	$e^{\sin x} . \sin x$
۵۲.	$\int e^{\sin x} . \cos x dx = \underline{\hspace{2cm}} + C.$			
	A.	$e^{\sin x}$	B.	$e^{\cos x} . \sin x$
	C.	$e^{\cos x}$	D.	$e^{\sin x} . \sin x$
53.	The area region bounded by the curve $y = x$, the x -axis and $x = 0, x = 4$ is $\underline{\hspace{2cm}}$ units.			
	A.	4	B.	8
	C.	$\frac{3}{4}$	D.	$\frac{4}{3}$

૫૩.	વક્ર $y = x$, x -અક્ષ અને વડે ઘેરાયેલા પ્રદેશનું ક્ષેત્રફળ _____ એકમ થાય.			
	A.	4	B.	8
	C.	$\frac{3}{4}$	D.	$\frac{4}{3}$
54.	Volume of the regular cone having radius of base r and height h is _____.			
	A.	$\frac{4}{3}\pi r^2 h$	B.	$\frac{2}{3}\pi r h$
	C.	$\frac{2}{3}\pi r^3$	D.	$\frac{1}{3}\pi r^2 h$
૫૪.	આધાર ત્રિજ્યા r અને ઊંચાઈ h વાળા નિયમિત શંકુનું ઘનફળ _____ છે.			
	A.	$\frac{4}{3}\pi r^2 h$	B.	$\frac{2}{3}\pi r h$
	C.	$\frac{2}{3}\pi r^3$	D.	$\frac{1}{3}\pi r^2 h$
55.	$\int \frac{f'(x)}{f(x)} dx = \text{_____}.$			
	A.	$\log f(x) + f'(x) + C$	B.	$\log f(x) + C$
	C.	$\log f'(x) + C$	D.	$n[f(x)]^{n-1} + C$
૫૫.	$\int \frac{f'(x)}{f(x)} dx = \text{_____}.$			
	A.	$\log f(x) + f'(x) + C$	B.	$\log f(x) + C$
	C.	$\log f'(x) + C$	D.	$n[f(x)]^{n-1} + C$
56.	$\int_{-4}^4 x^7 dx = \text{_____}$			
	A.	7	B.	25
	C.	15	D.	0
૫૬.	$\int_{-4}^4 x^7 dx = \text{_____}$			
	A.	7	B.	25
	C.	15	D.	0
57.	The order of the differential equation $\frac{d^3 y}{dx^3} = \left[2 + \frac{dy}{dx}\right]^2$ is _____.			
	A.	3		1
	C.	2		None of these
૫૭.	વિકલ સમીકરણ $\frac{d^3 y}{dx^3} = \left[2 + \frac{dy}{dx}\right]^2$ ની કક્ષા _____ છે.			
	A.	3		1
	C.	2		આમાંથી એકપણ નહીં
58.	_____ is a homogeneous function.			
	A.	$f(x, y) = x^3 + xy$	B.	$f(x, y) = x + xy$
	C.	$f(x, y) = x^2 + y^2$	D.	None of these
૫૮.	_____ એ સપરિમાણ વિધેય છે.			
	A.	$f(x, y) = x^3 + xy$	B.	$f(x, y) = x + xy$
	C.	$f(x, y) = x^2 + y^2$	D.	આમાંથી એકપણ નહીં

59.	The integrating factor for the differential equation $x \frac{dy}{dx} = x + y$ is _____.			
	A.	$\frac{1}{x}$	B.	$\frac{1}{x^2}$
	C.	$\log x$	D.	$\frac{x^2}{2}$
૫૯.	વિકલ સમીકરણ $x \frac{dy}{dx} = x + y$ માટે સંકલ્પકારક અવયવ _____ છે.			
	A.	$\frac{1}{x}$	B.	$\frac{1}{x^2}$
	C.	$\log x$	D.	$\frac{x^2}{2}$
60.	The degree of the differential equation $\left(\frac{d^2y}{dx^2}\right)^4 + 4\left(\frac{dy}{dx}\right)^2 - 3y = 0$ is _____.			
	A.	4	B.	2
	C.	1	D.	undefined
૬૦.	વિકલ સમીકરણ $\left(\frac{d^2y}{dx^2}\right)^4 + 4\left(\frac{dy}{dx}\right)^2 - 3y = 0$ નું પરિમાણ _____ છે.			
	A.	4	B.	2
	C.	1	D.	અવ્યાખ્યાયિત
61.	$\frac{dy}{dx} = \frac{y}{x} + x \sin\left(\frac{y}{x}\right)$ is a _____ differential equation.			
	A.	Separable variable type	B.	Linear
	C.	Homogeneous	D.	Second order
૬૧.	$\frac{dy}{dx} = \frac{y}{x} + x \sin\left(\frac{y}{x}\right)$ એ _____ વિકલ સમીકરણ છે.			
	A.	વિયોજનીય ચલ	B.	સુરેખ
	C.	સપરિમાણ	D.	દ્વિતીય કક્ષાનું
62.	The degree of the homogeneous function $f(x, y) = \frac{x^3 - y^3}{x + y}$ is _____.			
	A.	1	B.	2
	C.	3	D.	undefined
૬૨.	સપરિમાણ વિધેય $f(x, y) = \frac{x^3 - y^3}{x + y}$ નું પરિમાણ _____ છે.			
	A.	1	B.	2
	C.	3	D.	અવ્યાખ્યાયિત
63.	The number of arbitrary constant in a particular solution of a second order differential equation is _____.			
	A.	2	B.	1
	C.	0	D.	4
૬૩.	દ્વિતીય કક્ષાના વિકલ સમીકરણના વ્યાપક ઉકેલમાં _____ સ્વૈર અચળોની સંખ્યા હોય છે.			
	A.	2	B.	1
	C.	0	D.	4
64.	$y = mx + c$ is a solution of the differential equation _____			
	A.	$\frac{d^2y}{dx^2} = 0$	B.	$\frac{dy}{dx} = 0$

	C.	$\frac{d^2 y}{dx^2} = m$	D.	$\frac{dy}{dx} = m$
૬૪.	રેખાઓની સંહિતિ $y = mx + c$ નું વિકલ સમીકરણ _____ છે.			
	A.	$\frac{d^2 y}{dx^2} = 0$	B.	$\frac{dy}{dx} = 0$
	C.	$\frac{d^2 y}{dx^2} = m$	D.	$\frac{dy}{dx} = m$
65.	Solution of the differential equation $xdy + ydx = 0$ is _____.			
	A.	$x + y = c$	B.	$x - y = c$
	C.	$x.y = c$	D.	None of these
૬૫.	વિકલ સમીકરણ $xdy + ydx = 0$ નો ઉકેલ _____ છે.			
	A.	$x + y = c$	B.	$x - y = c$
	C.	$x.y = c$	D.	આમાંથી એકપણ નહીં
66.	The order and degree of the differential equation $\frac{dy}{dx} + x^2 \frac{d^2 y}{dx^2} + 3y = \sin 2x$ are _____ and _____ respectively.			
	A.	1,2	B.	1,1
	C.	2,1	D.	2,undefined
૬૬.	વિકલ સમીકરણ $\frac{dy}{dx} + x^2 \frac{d^2 y}{dx^2} + 3y = \sin 2x$ માટે કક્ષા અને પરિમાણ અનુક્રમે _____ અને _____ છે.			
	A.	1,2	B.	1,1
	C.	2,1	D.	2, અવ્યાખ્યાયિત
67.	For solving $\frac{dy}{dx} + Py = Q$, the suitable method is _____.			
	A.	Homogeneous method	B.	Integrating factor method
	C.	Separation of variables method	D.	None of these
૬૭.	$\frac{dy}{dx} + Py = Q$ ના ઉકેલ માટે યોગ્ય રીત _____ છે.			
	A.	સપરિમાણની રીત	B.	સંકલ્યકારક અવયવની રીત
	C.	વિયોજનીય ચલની રીત	D.	આમાંથી એકપણ નહીં
68.	Differential equation of $y = ae^{2x} + be^{-2x}$, is _____.			
	A.	$\frac{d^2 y}{dx^2} + 4y = 0$	B.	$\frac{d^2 y}{dx^2} - 4y = 0$
	C.	$-\frac{d^2 y}{dx^2} + 4y = 0$	D.	None of these
૬૮.	$y = ae^{2x} + be^{-2x}$ નું વિકલ સમીકરણ _____ છે.			
	A.	$\frac{d^2 y}{dx^2} + 4y = 0$	B.	$\frac{d^2 y}{dx^2} - 4y = 0$
	C.	$-\frac{d^2 y}{dx^2} + 4y = 0$	D.	આમાંથી એકપણ નહીં
69.	Integrating factor of the differential equation $\frac{dy}{dx} + y = \cos x - \sin x$ is _____.			
	A.	e^x	B.	$\log x$
	C.	1	D.	None of these
૬૯.	વિકલ સમીકરણ $\frac{dy}{dx} + y = \cos x - \sin x$ માટે સંકલ્યકારક અવયવ _____ છે.			
	A.	e^x	B.	$\log x$
	C.	1	D.	આમાંથી એકપણ નહીં

70.	The order of the differential equation $\sqrt[3]{\frac{d^2y}{dx^2}} = \sqrt{\frac{dy}{dx}}$ is _____.			
	A.	1	B.	2
	C.	3	D.	undefined
૭૦.	વિકલ સમીકરણ $\sqrt[3]{\frac{d^2y}{dx^2}} = \sqrt{\frac{dy}{dx}}$ ની કક્ષા _____ છે.			
	A.	1	B.	2
	C.	3	D.	અવ્યાખ્યાયિત
