

GUJARAT TECHNOLOGICAL UNIVERSITY**Diploma Engineering - SEMESTER-I (CtoD) • EXAMINATION – WINTER • 2014****Subject Code: C320002****Date: 22-12-2014****Subject Name: Advanced Mathematics (Group - 1)****Time: 10:30 am – 12:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumption wherever necessary.
3. Each question is of 1 mark.
4. Use of SIMPLE CALCULATOR is permissible. (Scientific/Higher Version not allowed)
5. English version is authentic.

No.	Question Text and Option			
1.	If complex number $z = 3 + 2i$ then its conjugate $\bar{z} = \underline{\hspace{1cm}}$.			
	A.	$3 + 2i$	B.	$-3 - 2i$
	C.	$3 - 2i$	D.	$-3 + 2i$
2.	For complex number $z = 4 + 3i$ then $ z = \underline{\hspace{1cm}}$.			
	A.	16	B.	5
	C.	25	D.	9
3.	$i^3 = \underline{\hspace{1cm}}$.			
	A.	i	B.	1
	C.	-1	D.	$-i$
4.	$(\cos \theta + i \sin \theta)^4 = \underline{\hspace{1cm}}$.			
	A.	$(\cos 4\theta + i \sin 4\theta)$	B.	$(\cos 4\theta - i \sin 4\theta)$
	C.	$(-\cos 4\theta + i \sin 4\theta)$	D.	$\left(\cos \frac{\theta}{4} + i \sin \frac{\theta}{4}\right)$
5.	For complex number $z = 4i$, $\arg(z) = \underline{\hspace{1cm}}$.			
	A.	0	B.	$\pi/2$
	C.	$\pi/4$	D.	$3\pi/2$
6.	$\sqrt{-3} = \underline{\hspace{1cm}}$.			
	A.	$\pm 3i$	B.	3
	C.	-3	D.	i
7.	Let $z \in \mathbb{C}$ be any complex number then $z + \bar{z} = \underline{\hspace{1cm}}$.			
	A.	$\operatorname{Re}(z)$	B.	$2\operatorname{Re}(z)$
	C.	$\operatorname{Im}(z)$	D.	$2\operatorname{Im}(z)$
8.	If $z_1 = 2 + 3i$ and $z_2 = 4 + 2i$ then $z_1 + z_2 = \underline{\hspace{1cm}}$.			
	A.	$6 + 6i$	B.	$6 - 5i$
	C.	$4 + 7i$	D.	$6 + 5i$
9.	If $z_1 = 4 + 2i$ and $z_2 = 2 + 3i$ then $z_1 z_2 = \underline{\hspace{1cm}}$.			
	A.	$2 + 16i$	B.	$8 + 6i$
	C.	$2 - 16i$	D.	$8 - 16i$
10.	For $z = -1 + 3i$ then $2z = \underline{\hspace{1cm}}$.			
	A.	$-1 + 3i$	B.	$2 - 6i$
	C.	$-2 + 6i$	D.	2
11.	If $f(x) = e^{\cos x}$ then $f(0) = \underline{\hspace{1cm}}$.			
	A.	1	B.	e
	C.	-1	D.	0

12.	$\lim_{x \rightarrow 0} \frac{4^x - 1}{x} = \underline{\hspace{1cm}}.$			
	A.	$\log x$	B.	1
	C.	$\log_e 4$	D.	0
13.	For $f(x) = \frac{x-1}{x+1}$ then $f\left(\frac{1}{x}\right) = \underline{\hspace{1cm}}.$			
	A.	$-f(x)$	B.	$f(x)$
	C.	1	D.	0
14.	$\lim_{n \rightarrow \infty} \left(\frac{6n^2 - 1}{2n^2 + 2} \right) = \underline{\hspace{1cm}}.$			
	A.	∞	B.	0
	C.	1	D.	3
15.	$\lim_{n \rightarrow \infty} \left(1 + \frac{1}{n} \right)^n = \underline{\hspace{1cm}}.$			
	A.	1	B.	0
	C.	e	D.	∞
16.	$\lim_{\theta \rightarrow 0} \frac{\sin 3\theta}{\theta} = \underline{\hspace{1cm}}.$			
	A.	1	B.	3
	C.	0	D.	$\frac{1}{3}$
17.	$f(x) = 6x + 3$ then $f(0) = \underline{\hspace{1cm}}.$			
	A.	6	B.	9
	C.	0	D.	3
18.	$\lim_{x \rightarrow 1} \frac{x^5 - 1}{x - 1} = \underline{\hspace{1cm}}.$			
	A.	1	B.	4
	C.	5	D.	0
19.	$\lim_{x \rightarrow 3} \frac{x^2 - 5x + 6}{x - 3} = \underline{\hspace{1cm}}.$			
	A.	1	B.	0
	C.	3	D.	2
20.	$\lim_{x \rightarrow 2} \frac{x^2 + 2}{2} = \underline{\hspace{1cm}}.$			
	A.	2	B.	1
	C.	3	D.	0
21.	$\lim_{x \rightarrow 0} \frac{\sqrt{9+x} - 3}{x} = \underline{\hspace{1cm}}.$			
	A.	$\frac{1}{6}$	B.	$\frac{1}{3}$
	C.	6	D.	3
22.	$\lim_{x \rightarrow 0} \frac{3^x - 2^x}{x} = \underline{\hspace{1cm}}.$			
	A.	$\log_e \left(\frac{2}{3} \right)$	B.	1
	C.	0	D.	$\log_e \left(\frac{3}{2} \right)$
23.	$\frac{d}{dx}(\tan x) = \underline{\hspace{1cm}}.$			

	A.	$\tan x \cdot \sec x$	B.	$\sec^2 x$
	C.	$\cot x$	D.	$\sec x$
24.	For $y = \log 2$ then $\frac{dy}{dx} = \underline{\hspace{1cm}}$.			
	A.	2	B.	$\frac{1}{2}$
	C.	0	D.	1
25.	$y = \frac{1}{x}$ then $\frac{dy}{dx} = \underline{\hspace{1cm}}$.			
	A.	$\frac{1}{x}$	B.	$-\frac{1}{x^2}$
	C.	$\frac{1}{x^2}$	D.	$-\frac{1}{x}$
26.	$y = x^{\frac{3}{2}}$ then $\frac{dy}{dx} = \underline{\hspace{1cm}}$.			
	A.	$\frac{3\sqrt{x}}{2}$	B.	$\frac{-3\sqrt{x}}{2}$
	C.	$\frac{3}{2\sqrt{x}}$	D.	$\frac{-3}{2\sqrt{x}}$
27.	$\frac{d^2}{dx^2}(\cos x + 2) = \underline{\hspace{1cm}}$.			
	A.	$-\cos x + 2$	B.	$\cos x$
	C.	$\cos x + 2$	D.	$-\cos x$
28.	$y = \sin \theta, x = \cos \theta$ then $\frac{dy}{dx} = \underline{\hspace{1cm}}$.			
	A.	$-\cot x$	B.	$\cot x$
	C.	$\tan x$	D.	$-\tan x$
29.	$y = \log(2x - 3)$ then $\frac{dy}{dx} = \underline{\hspace{1cm}}$.			
	A.	2	B.	$\frac{1}{x}$
	C.	$\frac{2}{2x - 3}$	D.	$\frac{1}{2x - 3}$
30.	$\frac{d}{dx}(x^2 - 2x + 2) = \underline{\hspace{1cm}}$.			
	A.	$2x$	B.	$2x - 2$
	C.	$x^2 - 2$	D.	0
31.	$x = t^2 - 1, y = t^2 + 1$ then $\frac{dy}{dx} = \underline{\hspace{1cm}}$.			
	A.	$2t$	B.	t^2
	C.	2	D.	1
32.	$y = e^{\sin x}$ then $\frac{dy}{dx} = \underline{\hspace{1cm}}$.			
	A.	$e^{\sin x}$	B.	$e^{\sin x} \cos x$
	C.	$e^{\cos x} \cos x$	D.	$e^{\cos x}$
33.	If $xy = 3x^2$ then $\frac{dy}{dx} = \underline{\hspace{1cm}}$.			
	A.	3	B.	$3x$
	C.	0	D.	1
34.	$y = x \sin x$ then $\frac{dy}{dx} = \underline{\hspace{1cm}}$.			

	A.	$\cos x$	B.	$x \cos x - \sin x$
	C.	$x \cos x + \sin x$	D.	$x \sin x - \cos x$
35.	$y = \frac{x+1}{x-1}$ then $\frac{dy}{dx} = \underline{\hspace{2cm}}$.			
	A.	$\frac{2}{(x-1)^2}$	B.	$\frac{-2}{(x-1)^2}$
	C.	$\frac{1}{(x-1)^2}$	D.	$\frac{-1}{(x-1)^2}$
36.	Equation of the motion of moving particle is given by $s = t^3 - 2t + 3$, then find the velocity at $t = 2$ seconds.			
	A.	8 units	B.	10 units
	C.	6 units	D.	7 units
37.	For function $f(x)$, at $x = 3$ $f(x)$ has minima if $\underline{\hspace{2cm}}$.			
	A.	$f'(3) = 0, f''(3) > 0$	B.	$f'(3) = 0, f''(3) < 0$
	C.	$f'(3) < 0, f''(3) > 0$	D.	$f'(3) < 0, f''(3) < 0$
38.	$\frac{d}{dx}(\sin^{-1} x) = \underline{\hspace{2cm}}$.			
	A.	$\frac{-1}{\sqrt{1-x^2}}$	B.	$\frac{1}{\sqrt{x^2-1}}$
	C.	$\frac{1}{\sqrt{1-x^2}}$	D.	$\frac{-1}{\sqrt{x^2-1}}$
39.	$y = 4^x$ then $\frac{dy}{dx} = \underline{\hspace{2cm}}$.			
	A.	$\log_e 4$	B.	$4^x + \log_e 4$
	C.	4^x	D.	$4^x \log_e 4$
40.	$\frac{d}{dx}(x) = \underline{\hspace{2cm}}$.			
	A.	x	B.	0
	C.	1	D.	$2x$
41.	$\int e^x dx = \underline{\hspace{2cm}}$.			
	A.	e^x	B.	$2e^x$
	C.	$e^x + c$	D.	x
42.	$\int 3dx = \underline{\hspace{2cm}}$.			
	A.	$2x + c$	B.	$3x + c$
	C.	$2x$	D.	$3x$
43.	$\int [f(x)]^n f'(x) dx = \underline{\hspace{2cm}}$.			
	A.	$\frac{[f(x)]^{n+1}}{n+1} + c$	B.	$\frac{[f(x)]^{n+1}}{n-1} + c$
	C.	$n[f(x)]^{n-1} + c$	D.	$\frac{[f(x)]^{n-1}}{n-1} + c$
44.	$\int \cos(2x-3) dx = \underline{\hspace{2cm}}$.			
	A.	$-\sin(2x-3) + c$	B.	$-\sin(2x) + c$
	C.	$\frac{-\sin(2x-3)}{2} + c$	D.	$\frac{\sin(2x-3)}{2} + c$
45.	$\int \cot x dx = \underline{\hspace{2cm}}$.			

	A.	$\log \cos x + c$	B.	$\log \cot x + c$
	C.	$\log \sin x + c$	D.	$\log \tan x + c$
	$\int 2^x dx = \underline{\hspace{2cm}}.$			
46.	A.	$\frac{-2^x}{\log_e 2} + c$	B.	$\frac{2^x}{\log_e 2} + c$
	C.	$\frac{2}{\log_e 2} + c$	D.	$\frac{2^{x-1}}{\log_e 2} + c$
	$\int \frac{1}{2x-3} dx = \underline{\hspace{2cm}}.$			
47.	A.	$\frac{1}{2} \log 2x-3 + c$	B.	$2 \log 2x-3 + c$
	C.	$\frac{1}{2} \log 2x + c$	D.	$\log 2x-3 + c$
	$\int (\sin^2 x + \cos^2 x) dx = \underline{\hspace{2cm}}.$			
48.	A.	0	B.	1
	C.	$\sin 2x + c$	D.	$x + c$
	$\int \sec^2 x dx = \underline{\hspace{2cm}}.$			
49.	A.	$\sec x \tan x + c$	B.	$\tan^2 x + c$
	C.	$\tan x + c$	D.	$\sec x + c$
	$\int_{-\pi}^{\pi} \sin x dx = \underline{\hspace{2cm}}.$			
50.	A.	0	B.	π
	C.	$-\cos x + c$	D.	2π
	$\int_0^2 x^2 dx = \underline{\hspace{2cm}}.$			
51.	A.	$\frac{3}{8}$	B.	$\frac{8}{3}$
	C.	8	D.	0
	$\int \frac{1}{x^2+1} dx = \underline{\hspace{2cm}}.$			
52.	A.	$\tan x + c$	B.	$-\tan^{-1} x + c$
	C.	$\tan^{-1} x + c$	D.	$2x$
	Area of region bounded by curve $y = x$, x -axis and $x = 1, x = 2$ is $\underline{\hspace{2cm}}$ units			
53.	A.	$\frac{3}{4}$	B.	$\frac{3}{2}$
	C.	3	D.	1
	$\int \frac{2x}{x^2+1} dx = \underline{\hspace{2cm}}.$			
54.	A.	$\log_e(x^2+1) + c$	B.	$\log_e(2x) + c$
	C.	x^2+1+c	D.	$2x+c$
	To evaluate $\int f(x)dx$, for which $f(x)$ we have to use the rule of integration by parts?			
55.	A.	$f(x) = x + \cos x$	B.	$f(x) = x - \cos x$
	C.	$f(x) = x \cos x$	D.	$f(x) = \cos 2x$
	$\int 2x-1 dx = \underline{\hspace{2cm}}.$			
56.	A.	$x^2 - 2x + c$	B.	$x^2 + x + c$
	C.	$2x^2 - x + c$	D.	$x^2 - x + c$

57.	Which is not a differential equation from given equations?			
	A.	$x + y = 0$	B.	$x + \frac{dy}{dx} = 0$
	C.	$x^2 + \frac{dy}{dx} = 0$	D.	$2x + \frac{dy}{dx} = \sin x$
58.	Order of the differential equation $\frac{d^2y}{dx^2} - \frac{dy}{dx} + 2y = 0$ is ____.			
	A.	1	B.	2
	C.	0	D.	Not defined.
59.	Degree of the differential equation $\left(\frac{d^2y}{dx^2}\right)^3 + \left(\frac{dy}{dx}\right)^4 + y = 0$ is ____.			
	A.	4	B.	2
	C.	3	D.	Not defined.
60.	Degree of the differential equation $y = \sin\left(\frac{dy}{dx}\right)$ is ____.			
	A.	1	B.	2
	C.	0	D.	Not defined.
61.	Differential equation of all straight lines $y = mx + c$ is ____.			
	A.	$\frac{dy}{dx} = 0$	B.	$\frac{dy}{dx} = mx$
	C.	$\frac{d^2y}{dx^2} = 0$	D.	$\frac{d^2y}{dx^2} = m$
62.	Which is not a solution of the differential equation $\frac{dy}{dx} = 0$?			
	A.	$y = 2x$	B.	$y = 2$
	C.	$y = 1$	D.	$y = 3$
63.	$y = e^x$ is a solution of ____ differential equation.			
	A.	$\frac{dy}{dx} = 0$	B.	$\frac{dy}{dx} = y$
	C.	$\frac{dy}{dx} = 1$	D.	$\frac{dy}{dx} = -y$
64.	Which is not a solution of a differential equation $\frac{d^2y}{dx^2} + y = 0$?			
	A.	$y = \sin x$	B.	$y = \cos x$
	C.	$y = 2 \sin x$	D.	$y = x$
65.	____ is a homogeneous function.			
	A.	$f(x, y) = x^3 + xy$	B.	$f(x, y) = x + y^2$
	C.	$f(x, y) = x^2 + xy$	D.	$f(x, y) = x + xy$
66.	Solution of the differential equation $x^2 dx + y^2 dy = 0$ is ____.			
	A.	$x + y = c$	B.	$x^3 + y^3 = c$
	C.	$x^2 + y^2 = c$	D.	None of these.
67.	Solution of the differential equation $y dx + x dy = 0$ is ____.			
	A.	$x \cdot y = c$	B.	$x + y = c$
	C.	$x - y = c$	D.	None of these.
68.	$\frac{dy}{dx} + Py = Q$ is said to be linear differential equation if ____.			
	A.	P is a function of x and Q is function of y	B.	P is a function of y and Q is function of x

	C.	P and Q are functions of x or constant.	D.	P and Q are functions of y only.
69.	I.F of the linear differential equation $\frac{dy}{dx} + y \cot x = \cos x$ is ____.			
	A.	$\sin x$	B.	$\cos x$
	C.	$\cot x$	D.	$\tan x$
70.	I.F of the linear differential equation $\frac{dy}{dx} + 3y = e^{2x}$ is ____.			
	A.	e^{2x}	B.	e^{3x}
	C.	3	D.	$\frac{3}{x}$

ગુજરાતી

નં.	પ્રશ્ન તેમજ વિકલ્પ			
1.	સંકર સંખ્યા $z = 3 + 2i$ માટે અનુબદ્ધ સંકર સંખ્યા $\bar{z} = \underline{\hspace{1cm}}$.			
	A.	$3 + 2i$	B.	$-3 - 2i$
	C.	$3 - 2i$	D.	$-3 + 2i$
2.	સંકર સંખ્યા $z = 4 + 3i$ માટે $ z = \underline{\hspace{1cm}}$.			
	A.	16	B.	5
	C.	25	D.	9
3.	$i^3 = \underline{\hspace{1cm}}$.			
	A.	i	B.	1
	C.	-1	D.	$-i$
4.	$(\cos \theta + i \sin \theta)^4 = \underline{\hspace{1cm}}$.			
	A.	$(\cos 4\theta + i \sin 4\theta)$	B.	$(\cos 4\theta - i \sin 4\theta)$
	C.	$(-\cos 4\theta + i \sin 4\theta)$	D.	$\left(\cos \frac{\theta}{4} + i \sin \frac{\theta}{4}\right)$
5.	સંકર સંખ્યા માટે $z = 4i$, $\arg(z) = \underline{\hspace{1cm}}$.			
	A.	0	B.	$\frac{\pi}{2}$
	C.	$\frac{\pi}{4}$	D.	$\frac{3\pi}{2}$
6.	$\sqrt{-3} = \underline{\hspace{1cm}}$			
	A.	$\pm 3i$	B.	3
	C.	-3	D.	i
7.	સંકર સંખ્યા $z \in \square$ માટે $z + \bar{z} = \underline{\hspace{1cm}}$.			
	A.	$\operatorname{Re}(z)$	B.	$2\operatorname{Re}(z)$
	C.	$\operatorname{Im}(z)$	D.	$2\operatorname{Im}(z)$
8.	જો $z_1 = 2 + 3i$ અને $z_2 = 4 + 2i$ હોય તો $z_1 + z_2 = \underline{\hspace{1cm}}$.			
	A.	$6 + 6i$	B.	$6 - 5i$
	C.	$4 + 7i$	D.	$6 + 5i$
9.	જો $z_1 = 4 + 2i$ અને $z_2 = 2 + 3i$ માટે $z_1 z_2 = \underline{\hspace{1cm}}$.			
	A.	$2 + 16i$	B.	$8 + 6i$
	C.	$2 - 16i$	D.	$8 - 16i$
10.	જો $z = -1 + 3i$ તો $2z = \underline{\hspace{1cm}}$.			

	A.	$-1+3i$	B.	$2-6i$
	C.	$-2+6i$	D.	2
11.	$f(x) = e^{\cos x}$ և $f(0) = \underline{\hspace{1cm}}$.			
	A.	1	B.	e
	C.	-1	D.	0
12.	$\lim_{x \rightarrow 0} \frac{4^x - 1}{x} = \underline{\hspace{1cm}}$.			
	A.	$\log x$	B.	1
	C.	$\log_e 4$	D.	0
13.	$f(x) = \frac{x-1}{x+1}$ և $f\left(\frac{1}{x}\right) = \underline{\hspace{1cm}}$.			
	A.	$-f(x)$	B.	$f(x)$
	C.	1	D.	0
14.	$\lim_{n \rightarrow \infty} \left(\frac{6n^2 - 1}{2n^2 + 2} \right) = \underline{\hspace{1cm}}$.			
	A.	∞	B.	0
	C.	1	D.	3
15.	$\lim_{n \rightarrow \infty} \left(1 + \frac{1}{n} \right)^n = \underline{\hspace{1cm}}$.			
	A.	1	B.	0
	C.	e	D.	∞
16.	$\lim_{\theta \rightarrow 0} \frac{\sin 3\theta}{\theta} = \underline{\hspace{1cm}}$.			
	A.	1	B.	3
	C.	0	D.	$\frac{1}{3}$
17.	$f(x) = 6x + 3$ և $f(0) = \underline{\hspace{1cm}}$.			
	A.	6	B.	9
	C.	0	D.	3
18.	$\lim_{x \rightarrow 1} \frac{x^5 - 1}{x - 1} = \underline{\hspace{1cm}}$.			
	A.	1	B.	4
	C.	5	D.	0
19.	$\lim_{x \rightarrow 3} \frac{x^2 - 5x + 6}{x - 3} = \underline{\hspace{1cm}}$.			
	A.	1	B.	0
	C.	3	D.	2
20.	$\lim_{x \rightarrow 2} \frac{x^2 + 2}{2} = \underline{\hspace{1cm}}$.			
	A.	2	B.	1
	C.	3	D.	0
21.	$\lim_{x \rightarrow 0} \frac{\sqrt{9+x} - 3}{x} = \underline{\hspace{1cm}}$.			
	A.	$\frac{1}{6}$	B.	$\frac{1}{3}$
	C.	6	D.	3
22.	$\lim_{x \rightarrow 0} \frac{3^x - 2^x}{x} = \underline{\hspace{1cm}}$.			

	A.	$\log_e \left(\frac{2}{3} \right)$	B.	1
	C.	0	D.	$\log_e \left(\frac{3}{2} \right)$
23.	$\frac{d}{dx}(\tan x) = \underline{\hspace{2cm}}$.			
	A.	$\tan x \cdot \sec x$	B.	$\sec^2 x$
	C.	$\cot x$	D.	$\sec x$
24.	જો $y = \log 2$ તો $\frac{dy}{dx} = \underline{\hspace{2cm}}$.			
	A.	2	B.	$\frac{1}{2}$
	C.	0	D.	1
25.	જો $y = \frac{1}{x}$ તો $\frac{dy}{dx} = \underline{\hspace{2cm}}$.			
	A.	$\frac{1}{x}$	B.	$-\frac{1}{x^2}$
	C.	$\frac{1}{x^2}$	D.	$-\frac{1}{x}$
26.	જો $y = x^{\frac{3}{2}}$ તો $\frac{dy}{dx} = \underline{\hspace{2cm}}$.			
	A.	$\frac{3\sqrt{x}}{2}$	B.	$\frac{-3\sqrt{x}}{2}$
	C.	$\frac{3}{2\sqrt{x}}$	D.	$\frac{-3}{2\sqrt{x}}$
27.	$\frac{d^2}{dx^2}(\cos x + 2) = \underline{\hspace{2cm}}$.			
	A.	$-\cos x + 2$	B.	$\cos x$
	C.	$\cos x + 2$	D.	$-\cos x$
28.	$y = \sin \theta, x = \cos \theta$ માટે $\frac{dy}{dx} = \underline{\hspace{2cm}}$.			
	A.	$-\cot x$	B.	$\cot x$
	C.	$\tan x$	D.	$-\tan x$
29.	$y = \log(2x - 3)$ માટે $\frac{dy}{dx} = \underline{\hspace{2cm}}$.			
	A.	2	B.	$\frac{1}{x}$
	C.	$\frac{2}{2x - 3}$	D.	$\frac{1}{2x - 3}$
30.	$\frac{d}{dx}(x^2 - 2x + 2) = \underline{\hspace{2cm}}$.			
	A.	$2x$	B.	$2x - 2$
	C.	$x^2 - 2$	D.	0
31.	જો $x = t^2 - 1, y = t^2 + 1$ હોય તો $\frac{dy}{dx} = \underline{\hspace{2cm}}$.			
	A.	$2t$	B.	t^2
	C.	2	D.	1
32.	જો $y = e^{\sin x}$ તો $\frac{dy}{dx} = \underline{\hspace{2cm}}$.			
	A.	$e^{\sin x}$	B.	$e^{\sin x} \cos x$

	C.	$e^{\cos x} \cos x$	D.	$e^{\cos x}$
33.	જો $xy = 3x^2$ તો $\frac{dy}{dx} = \underline{\hspace{2cm}}$.			
	A.	3	B.	3x
	C.	0	D.	1
34.	જો $y = x \sin x$ તો $\frac{dy}{dx} = \underline{\hspace{2cm}}$.			
	A.	$\cos x$	B.	$x \cos x - \sin x$
	C.	$x \cos x + \sin x$	D.	$x \sin x - \cos x$
35.	$y = \frac{x+1}{x-1}$ માટે $\frac{dy}{dx} = \underline{\hspace{2cm}}$.			
	A.	$\frac{2}{(x-1)^2}$	B.	$\frac{-2}{(x-1)^2}$
	C.	$\frac{1}{(x-1)^2}$	D.	$\frac{-1}{(x-1)^2}$
36.	ગતિ કરતા પદાર્થની ગતી નું સમીકરણ $s = t^3 - 2t + 3$ હોય તો, $t = 2$ સેકન્ડે પદાર્થ નો વેગ $\underline{\hspace{2cm}}$ થશે.			
	A.	8 એકમ	B.	10 એકમ
	C.	6 એકમ	D.	7 એકમ
37.	વિધેય $f(x)$ ની $x = 3$ આગળ ન્યુનતમ કીમત માટે $\underline{\hspace{2cm}}$ થવું જોઈએ.			
	A.	$f'(3) = 0, f''(3) > 0$	B.	$f'(3) = 0, f''(3) < 0$
	C.	$f'(3) < 0, f''(3) > 0$	D.	$f'(3) < 0, f''(3) < 0$
38.	$\frac{d}{dx}(\sin^{-1} x) = \underline{\hspace{2cm}}$.			
	A.	$\frac{-1}{\sqrt{1-x^2}}$	B.	$\frac{1}{\sqrt{x^2-1}}$
	C.	$\frac{1}{\sqrt{1-x^2}}$	D.	$\frac{-1}{\sqrt{x^2-1}}$
39.	જો $y = 4^x$ તો $\frac{dy}{dx} = \underline{\hspace{2cm}}$.			
	A.	$\log_e 4$	B.	$4^x + \log_e 4$
	C.	4^x	D.	$4^x \log_e 4$
40.	$\frac{d}{dx}(x) = \underline{\hspace{2cm}}$.			
	A.	x	B.	0
	C.	1	D.	2x
41.	$\int e^x dx = \underline{\hspace{2cm}}$.			
	A.	e^x	B.	$2e^x$
	C.	$e^x + c$	D.	x
42.	$\int 3dx = \underline{\hspace{2cm}}$.			
	A.	$2x + c$	B.	$3x + c$
	C.	2x	D.	3x
43.	$\int [f(x)]^n f'(x) dx = \underline{\hspace{2cm}}$.			
	A.	$\frac{[f(x)]^{n+1}}{n+1} + c$	B.	$\frac{[f(x)]^{n+1}}{n-1} + c$

	C.	$n[f(x)]^{n-1} + c$	D.	$\frac{[f(x)]^{n-1}}{n-1} + c$
44.	$\int \cos(2x-3)dx = \underline{\hspace{2cm}} .$			
	A.	$-\sin(2x-3) + c$	B.	$-\sin(2x) + c$
	C.	$\frac{-\sin(2x-3)}{2} + c$	D.	$\frac{\sin(2x-3)}{2} + c$
45.	$\int \cot x \, dx = \underline{\hspace{2cm}} .$			
	A.	$\log \cos x + c$	B.	$\log \cot x + c$
	C.	$\log \sin x + c$	D.	$\log \tan x + c$
46.	$\int 2^x \, dx = \underline{\hspace{2cm}} .$			
	A.	$\frac{-2^x}{\log_e 2} + c$	B.	$\frac{2^x}{\log_e 2} + c$
	C.	$\frac{2}{\log_e 2} + c$	D.	$\frac{2^{x-1}}{\log_e 2} + c$
47.	$\int \frac{1}{2x-3} dx = \underline{\hspace{2cm}} .$			
	A.	$\frac{1}{2} \log 2x-3 + c$	B.	$2 \log 2x-3 + c$
	C.	$\frac{1}{2} \log 2x + c$	D.	$\log 2x-3 + c$
48.	$\int (\sin^2 x + \cos^2 x) \, dx = \underline{\hspace{2cm}} .$			
	A.	0	B.	1
	C.	$\sin 2x + c$	D.	$x + c$
49.	$\int \sec^2 x \, dx = \underline{\hspace{2cm}} .$			
	A.	$\sec x \tan x + c$	B.	$\tan^2 x + c$
	C.	$\tan x + c$	D.	$\sec x + c$
50.	$\int_{-\pi}^{\pi} \sin x \, dx = \underline{\hspace{2cm}} .$			
	A.	0	B.	π
	C.	$-\cos x + c$	D.	2π
51.	$\int_0^2 x^2 \, dx = \underline{\hspace{2cm}} .$			
	A.	$\frac{3}{8}$	B.	$\frac{8}{3}$
	C.	8	D.	0
52.	$\int \frac{1}{x^2+1} dx = \underline{\hspace{2cm}} .$			
	A.	$\tan x + c$	B.	$-\tan^{-1} x + c$
	C.	$\tan^{-1} x + c$	D.	$2x$
53.	વક્ર $y = x$, $x -$ અક્ષ અને $x = 1$, $x = 2$ થી ઘેરાયેલ પ્રદેશનું ક્ષેત્રફળ $\underline{\hspace{2cm}}$ એકમ થશે.			
	A.	$\frac{3}{4}$	B.	$\frac{3}{2}$
	C.	3	D.	1
54.	$\int \frac{2x}{x^2+1} dx = \underline{\hspace{2cm}} .$			

	A.	$\log_e(x^2 + 1) + c$	B.	$\log_e(2x) + c$
	C.	$x^2 + 1 + c$	D.	$2x + c$
55.	નીચેનામાં થી કયા વિધેય ના સંકલન માટે ખંડશઃ સંકલન નાં નિયમ નો ઉપયોગ કરવો પડે?			
	A.	$f(x) = x + \cos x$	B.	$f(x) = x - \cos x$
	C.	$f(x) = x \cos x$	D.	$f(x) = \cos 2x$
56.	$\int 2x - 1 dx = \underline{\hspace{2cm}}$.			
	A.	$x^2 - 2x + c$	B.	$x^2 + x + c$
	C.	$2x^2 - x + c$	D.	$x^2 - x + c$
57.	નીચેના માંથી કયું સમીકરણ વિકલ્ સમીકરણ નથી?			
	A.	$x + y = 0$	B.	$x + \frac{dy}{dx} = 0$
	C.	$x^2 + \frac{dy}{dx} = 0$	D.	$2x + \frac{dy}{dx} = \sin x$
58.	વિકલ્ સમીકરણ $\frac{d^2y}{dx^2} - \frac{dy}{dx} + 2y = 0$ નો ક્રમ _____ છે.			
	A.	1	B.	2
	C.	0	D.	વ્યાખ્યાયિત નથી.
59.	વિકલ્ સમીકરણ $\left(\frac{d^2y}{dx^2}\right)^3 + \left(\frac{dy}{dx}\right)^4 + y = 0$ નું પરિમાણ _____ છે.			
	A.	4	B.	2
	C.	3	D.	વ્યાખ્યાયિત નથી.
60.	વિકલ્ સમીકરણ $y = \sin\left(\frac{dy}{dx}\right)$ નું પરિમાણ _____ છે.			
	A.	1	B.	2
	C.	0	D.	વ્યાખ્યાયિત નથી.
61.	રેખાઓ ની સંહિતિ $y = mx + c$ નું વિકલ્ સમીકરણ _____ છે.			
	A.	$\frac{dy}{dx} = 0$	B.	$\frac{dy}{dx} = mx$
	C.	$\frac{d^2y}{dx^2} = 0$	D.	$\frac{d^2y}{dx^2} = m$
62.	નીચેના માંથી કયું વિકલ્ સમીકરણ $\frac{dy}{dx} = 0$ નું ઉકેલ નથી?			
	A.	$y = 2x$	B.	$y = 2$
	C.	$y = 1$	D.	$y = 3$
63.	$y = e^x$ એ _____ વિકલ્ સમીકરણનો ઉકેલ છે.			
	A.	$\frac{dy}{dx} = 0$	B.	$\frac{dy}{dx} = y$
	C.	$\frac{dy}{dx} = 1$	D.	$\frac{dy}{dx} = -y$
64.	નીચેના માંથી કયું વિકલ્ સમીકરણ $\frac{d^2y}{dx^2} + y = 0$ નું ઉકેલ નથી?			
	A.	$y = \sin x$	B.	$y = \cos x$
	C.	$y = 2 \sin x$	D.	$y = x$

65.	નીચેના માંથી _____ એ સમપરિમાણ વિધેય છે.			
	A.	$f(x, y) = x^3 + xy$	B.	$f(x, y) = x + y^2$
	C.	$f(x, y) = x^2 + xy$	D.	$f(x, y) = x + xy$
66.	વિકલ્ સમીકરણ $x^2 dx + y^2 dy = 0$ નો ઉકેલ _____ છે.			
	A.	$x + y = c$	B.	$x^3 + y^3 = c$
	C.	$x^2 + y^2 = c$	D.	None of these.
67.	વિકલ્ સમીકરણ $y dx + x dy = 0$ નો ઉકેલ _____ છે.			
	A.	$x \cdot y = c$	B.	$x + y = c$
	C.	$x - y = c$	D.	None of these.
68.	વિકલ્ સમીકરણ $\frac{dy}{dx} + Py = Q$ માટે જો _____ હોય તો તે ને સુરેખ વિકલ્ સમીકરણ કહેવાય.			
	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 એ x નાં વિધેયો અથવા અચલ છે.	D.	P અને Q માત્ર y નાં વિધેયો છે
69.	વિકલ્ સમીકરણ $\frac{dy}{dx} + y \cot x = \cos x$ નો સંકલ્પ કારક અવયવ _____ છે.			
	A.	$\sin x$	B.	$\cos x$
	C.	$\cot x$	D.	$\tan x$
70.	વિકલ્ સમીકરણ $\frac{dy}{dx} + 3y = e^{2x}$ નો સંકલ્પ કારક અવયવ _____ છે.			
	A.	e^{2x}	B.	e^{3x}
	C.	3	D.	$\frac{3}{x}$
