	MCQ 19MA201 UNIT II
	Prepared by Vinaya Acharya
1)	$xy \frac{dy}{dx} + 2x^3 y \frac{d^2y}{dx^2} = 0$ is a differential equation of order ___________ . (a) 1 (b) 2 (c) 3 (d) 4
2)	$\frac{dy}{dx} + \sin(x + 2y) = 0$ is a differential equation of order ___________ . (a) 1 (b) 2 (c) 3 (d) 4
3)	$xy \left(\frac{dy}{dx} \right)^3 + 2x^3 y \frac{d^2y}{dx^2} = 0$ is a differential equation of order ___________ . (a) 2 (b) 1 (c) 3 (d) 4
4)	The differential equation $\frac{dy}{dx} + y\left(\frac{d^3y}{dx^3} \right) = 7xy$ is _______________ (a) linear (b) non linear (c) of order 1 (d) of order 2
5)	The differential equation $\frac{dy}{dx} + (4x)^2 = 9xy$ is _______________ (a) linear (b) non linear (c) exact (d) of order 2
6)	The differential equation $\frac{dy}{dx} + \left(\frac{dy}{dx} \right)^4 = y$ is _______________ (a) linear (b) of degree 2 (c) of order 1 (d) of order 4

7)	The differential equation $p^3 + 2xp^2 - y^2 p^2 - 2xy^2 p = 0$ is ________________ (a) linear (b) non-linear ,solvable for $p = \frac{dy}{dx}$ (c) non-linear , solvable for x (d) of order 3
8)	The differential equation $\frac{dy}{dx} - \frac{dx}{dy} = \frac{x}{y} - \frac{y}{x}$ is ________________ (a) linear (b) exact (c) Bernoulli's equation (d) non -linear
9)	The differential equation $\frac{dy}{dx} + (5y) = x^4 y^7$ is ________________ (a) linear (b) exact (c) Bernoulli's equation (d) of order 2
10)	The differential equation $2x^3 y \frac{dx}{dy} + \left(\frac{x^4}{1-y}\right) = x^6 y^7$ is ________________ (a) linear (b) exact (c) Bernoulli's equation (d) of order 2
11)	The differential equation $5xy \frac{dy}{dx} + \left(\frac{y^2}{x}\right) = x^4 y^3$ is ________________ (a) linear (b) exact (c) Bernoulli's equation (d) of degree 2
12)	The differential equation $6\frac{dy}{dx} + (y) = 8$ is ________________ (a) linear (b) exact (c) Bernoulli's equation (d) of order 2

13)	The differential equation $y - 2px = \tan^{-1}(xp^2)$ is ________________ (a) linear (b) solvable for $p = \frac{dy}{dx}$ (c) solvable for x (d) solvable for y
14)	The differential equation $y = 2px + y^2 p^3$ is ________________ (a) linear (b) solvable for $p = \frac{dy}{dx}$ (c) solvable for x (d)solvable for y
15)	The differential equation $p = \log(px - y)$ is ________________ (a) Clairaut's equation (b) Bernoulli's equation (c) exact (d)solvable for y
16)	The singular solution of $y - p^2 = px$ is ____________________ (a) $y = \frac{x^2}{8}$ (b) $y = -\frac{x^2}{4}$ (c) $y = \frac{x^2}{4}$ (d) $y = -\frac{x^2}{8}$
17)	The general solution of $p = \log(px - y)$ is ____________________ (a) $y = cx + e^x$ (b) $y = cx + e^c$ (c) $y = cx - e^c$ (d) $y = cx - e^x$
18)	The singular solution of $p = \log(px - y)$ is ____________________ (a) $y = x + \log x$ (b) $y = x \log x$

	(c) $y = x\log x + x$ (d) $y = x\log x - x$
19)	The differential equation $Pdx + Qdy = 0$ is exact if ______________ (a) $\frac{\partial P}{\partial x} = \frac{\partial Q}{\partial y}$ (b) $\frac{\partial P}{\partial x} = \frac{\partial Q}{\partial x}$ (c) $\frac{\partial P}{\partial x} = \frac{-\partial Q}{\partial y}$ (d) $\frac{\partial P}{\partial y} = \frac{\partial Q}{\partial x}$
20)	The solution of exact differential equation $N(x,y)dx + M(x,y)dy = 0$ is __________ (a) $\int M(x,y)dx + \int N(y)dy = c$ (b) $\int N(x,y)dx + \int M(y)dy = c$ (c) $\int M(x)dx + \int N(y)dy = c$ (d) $\int M(x,y)dx + \int N(x,y)dy = c$
21)	When a resistance R ohms is connected in series with an inductance L henries with an e.m.f E volts, the current i amperes at time t is given by ________________ (a) $L\frac{di}{dt} + iE = R$ (b) $L\frac{di}{dt} + iR = E$ (c) $\frac{di}{dt} + iE = L$ (d) $\frac{di}{dt} + iE = R$
22)	Solution of $5\frac{di}{dt} + i = t$ is ______________________ (a) $ie^{\left(\frac{t}{5}\right)} = 5te^{\left(\frac{t}{5}\right)} - 25e^{\left(\frac{t}{5}\right)} + c$ (b) $ie^{\left(-\frac{t}{5}\right)} = 5te^{-\left(\frac{t}{5}\right)} - 25e^{-\left(\frac{t}{5}\right)} + c$ (c) $ie^{\left(\frac{t}{5}\right)} = te^{\left(\frac{t}{5}\right)} - 5e^{\left(\frac{t}{5}\right)} + c$ (d) $ie^{\left(\frac{t}{5}\right)} = 5te^{\left(\frac{t}{5}\right)} - 5e^{\left(\frac{t}{5}\right)} + c$

23)	Solution of $ye^{xy}dx + xe^{xy}dy = 0$ is ____________________ a) $e^{xy} = c$ (b) $e^{xy} + y = c$ (c) $e^{xy} + x = c$ (d) $e^{xy} + xy = c$
24)	Solution of $y\ \sin(2x)\ \ dx - (1 + y^2 + \cos^2 x)dy = 0$ is ____________________ (a) $y\cos(2x) - \frac{y^3}{3} = c_1$ (b) $y\cos(2x) + 2y + \frac{y^3}{3} = c_1$ (c) $y\cos(2x) + 2y + \frac{2y^3}{3} = c_1$ (d) $y\cos(2x) + 2y = c_1$
25)	Solution of $\frac{dx}{dy} + x = e^{-y}$ is ____________________ (a) $xe^{x} + y = c$ (b) $xe^{y} - y = c$ (c) $xe^{x} - y = c$ (d) $xe^{y} + y = c$
26)	Solution of $xdy - ydx = 5x^2dx$ is ____________________ (a) $x + y = 2.5$ (b) $x - y - 2.5\ x^3 = c$ (c) $yx + 5x = c$ (d) $\frac{y}{x} - 5x = c$
27)	$d\left(\tan^{-1}(\frac{y}{x})\right) =$ ____________

	(a) $\frac{xdy - ydx}{x^2 y}$ (b) $\frac{xdy + ydx}{x^2 y}$ (c) $\frac{xdy - ydx}{x^2 + y}$ (d) $\frac{xdy - ydx}{x^2 + y^2}$
28)	Integrating factor for $f_1(xy)xdy + f_2(xy)ydx = 0$ is _______________ (a) $\frac{1}{xyf_1(xy) + xyf_2(x,y)}$ (b) $\frac{1}{xyf_1(xy) - xyf_2(x,y)}$ (c) $\frac{1}{xyf_2(xy) - xyf_1(x,y)}$ (d) $\frac{1}{yf_1(xy) - xf_2(x,y)}$
29)	The integrating factor for $(2 - xy)xdy + (2 + xy)ydx = 0$ is _______________ (a) $\frac{1}{x^2 y^2}$ (b) $\frac{-1}{x^2 y^2}$ (c) $\frac{1}{2x^2 y^2}$ (d) $\frac{-1}{2x^2 y^2}$
30)	The integrating factor for $[xy^2 - e^{\left(\frac{1}{x^3}\right)}]dx - x^2 ydy = 0$ is _______________

	(a) x^{-1} (b) x^{-2} (c) x^{-3} (d) x^{-4}
31)	The integrating factor for $[xy^3 + y]dx + 2[x^2y^2 + x + y^4]dy = 0$ is ______________ (a) y (b) x (c) x^{-1} (d) y^{-1}
32)	The integrating factor for $[xy\sin(xy) + \cos(xy)]ydx + [xy\sin(xy) - \cos(xy)]xdy = 0$ is ______________ (a) $\dfrac{1}{2x\ \cos(xy)}$ (b) $\dfrac{-1}{2x^2y^2 \sin xy}$ (c) $\dfrac{1}{2x^2y^2}$ (d) $\dfrac{1}{2xy \cos xy}$
33)	The integrating factor for $y(x+y+1)dx + x(x+3y+2)dy = 0$ is ______________ (a) y (b) x (c) x^{-1} (d) y^{-1}
34)	The integrating factor for $(x^2 + y^2 + x)dx + xydy = 0$ is ______________

	(a) y (b) x (c) x^{-1} (d) y^{-1}
35)	The solution of $dy + [y \tan x - \sin x]dx = 0$ is ____________________ (a) $y \sec x + 2\log(\sec x) = c$ (b) $y \sec x + \log(\sec x) = c$ (c) $y \sec x - 2\log(\sec x) = c$ (d) $y \sec x - \log(\sec x) = c$
36)	The solution of $\left(x^3 + 2y\right)dx + (2x + y^4)dy = 0$ is ____________________ (a) $\frac{x^4}{4} - 3xy + \frac{y^5}{5} - c = 0$ (b) $\frac{x^4}{4} + 3xy + \frac{y^5}{5} - c = 0$ (c) $\frac{x^4}{4} - 2xy + \frac{y^5}{5} - c = 0$ (d) $\frac{x^4}{4} + 2xy + \frac{y^5}{5} - c = 0$
37)	The solution of $\left(x - 10y\right)dy + dx = 0$ is ____________________ (a) $xe^y - 10ye^y + 10e^y = c$ (b) $xe^y - ye^y + 10e^y = c$ (c) $xe^y - 10ye^y + e^y = c$ (d) $xe^y - ye^y + e^y = c$
38)	The solution of $\frac{dx}{dy} + x = e^{-y}$ is ____________________ (a) $xe^y - 10e^y = c$ (b) $ye^y + e^y = c$ (c) $xe^y = y + c$

	(d) $xe^{y} - ye^{y} + e^{y} = c$
39)	If a thermometer is taken outdoors where the temperature is $0^0 C$ from a room having temperature $21^0 C$ and the reading drops to $10^0 C$ in one minute then its reading will be $5^0 C$ after _________ (a) 2.21 minutes (b) 3.21 minutes (c) 4.21 minutes (d) 5.21 minutes
40)	$xy\left(\frac{dy}{dx}\right)^3 + y\frac{d^2y}{dx^2} = 5x + 9$ is a differential equation of degree ___________ . (a) 1 (b) 2 (c) 3 (d) 4
41)	$L\frac{d^2i}{dt^2} + R\frac{di}{dt} + \frac{1}{C}i = E\cos\omega t$ is a differential equation of degree ___________ . (a) 1 (b) 2 (c) 3 (d) 4
42)	$\frac{\left[1+\left(\frac{dy}{dx}\right)^2\right]^{3/2}}{\frac{d^2y}{dx^2}} = c$ is a differential equation of degree ___________ . (a) 1 (b) 2 (c) 3 (d) 4
43)	$\left[\frac{d^2w}{dx^2}\right]^3 - xy\frac{dw}{dx} + w = 0$ is a differential equation of degree ___________ . (a) 1 (b) 2 (c) 3 (d) 4

44)	The differential equation $f'(y)\left(\frac{dy}{dx}\right) + f(y)P(x) = Q(x)$ can be reduced to Leibnitz linear equation by substituting (a) $f'(y) = z$ (b) $f(y) = z$ (c) $Q(x) = z$ (d) $P(x) = z$
45)	The differential equation $(\sec y \tan y)\left(\frac{dy}{dx}\right) + (\sec y)(x) = (x^3)$ can be reduced to Leibnitz linear equation by substituting (a) $\sec y = z$ (b) $\sec y \tan y = z$ (c) $\tan y = z$ (d) $x \sec y = z$
46)	The differential equation $2\theta \frac{dr}{d\theta} + r + 10 = 0$ is ________________ (a) linear (b) exact (c) Bernoulli's equation (d) of order 2
47)	The differential equation $[2r\sin\theta + \cos^2\theta - 7]dr + [r^2\cos\theta - r\sin 2\theta]d\theta = 0$ is ________________ (a) linear (b) exact (c) Bernoulli's equation (d) of order 2
48)	The differential equation $\frac{dx}{dy} + x = \sin y$ is ________________ (a) linear (b) exact (c) Bernoulli's equation (d) of order 2
49)	The differential equation $y\frac{dx}{dy} + \left(\frac{x}{y}\right) = x^3 y$ is ________________

	(a) linear (b) exact (c) Bernoulli's equation (d) of order 2
50)	The differential equation $[\sin 2y + 2xy - 5]dx + [2x\cos 2y + x^2 + y^5]dy = 0$ is __________________ (a) linear (b) exact (c) Bernoulli's equation (d) of degree 2
	ANSWERS 1.b 2.a 3.a 4.b 5.a 6.c 7.b 8.d 9.c 10.c 11.c 12.a 13.d 14.c 15.a 16.b 17.c 18.d 19.d 20.b 21.b 22.c 23.a 24.c 25.b 26.d 27.d 28.c 29.d 30.d 31.a 32.d 33.a 34.b 35.d 36.c 37.a 38.c

	39.a 40.a 41.a 42.b 43.c 44.b 45.a 46.a 47.b 48.a 49.a 50.b