	The Bodwad Sarvajanik Co-Op. Education Society Ltd., Bodwad **Arts, Commerce and Science College Bodwad** **Question Bank** **Class:- FYBSc** **Sem:- II** **Subject:** Ordinary Differential Equations **Paper Name:-** MTH 201	
Sr.No.	Questions	Ans
1	The Differential Equation $2ydx-(3y-2x)dy=0$ is A) Exact, Linear and Homogeneous B) Exact, Non-Linear, and Homogeneous C) Not Exact, Homogeneous D) None of These	A
2	An Integration Factor of $x\frac{dy}{dx}+(3x+1)y=xe^{-2x}$ is xe^{3x} B) $3xe^{x}$ C) xe^{x} D) $2xe^{3x}$	A
3	For exact differential Equation of the form $Mdx+Ndy=0$ A) $\frac{\partial M}{\partial x}=\frac{\partial N}{\partial y}$ B) $\frac{\partial M}{\partial y}=\frac{\partial N}{\partial Y}$ C) $\frac{\partial M}{\partial y}=\frac{\partial N}{\partial x}$ D) None of these	C
4	A Differential equation of the form $\frac{dy}{dx}+Py=Qy^{n}$ where $n\neq 1$ is a A) Gaussian Equation B) Bernoulli's Equation C) Basseles Equation D)None of These	B
5	If $Mdx+Ndy=0$ has the form $f(xy)ydx+g(xy)xdy=0$ then the Integrating Factor will be (here $Mx-Ny\neq 0$) A) $\frac{M}{Mx-Ny}$ B) $\frac{N}{Mx-Ny}$ C) $\frac{1}{Mx-Ny}$ D)$\frac{M+N}{Mx-Ny}$	**C**
6	Which of the following is true for the given equation $(2x^3+3y)dx+(3x+y-1)dy=0$ A) Equation is Exact B) Equation is not Exact C) Can's say D)None of these	**A**
7	If $Mdx+Ndy=0$; The Integrating Factor = $\frac{1}{Mx+Ny}$ where $Mx+Ny\neq 0$ Implies	**B**

	A) The Equation is Non Homogeneous B) The Equation is Homogeneous C) The Equation is Bernoulli's Equation D)None of the above	
8	The Integrating factor for $(1 + xy)ydx + (1 - xy)xdy = 0$ is A) $\frac{1}{xy}$ B) $\frac{1}{2x^2y^2}$ C) $\frac{1}{x^2y^2}$ D)$\frac{1}{4x^2y^2}$	**B**
9	In Linear Differential Equation, the dependent variable and it's differential coefficients occur in A) First degree only B) Second degree only C) Any degree D)Third degree only	**A**
10	Integrating Factor converts an equation from A) Exact to not Exact B) Not Exact To Exact C) Homogeneous to non Homogeneous D)None of these	**B**
11	One can reduce an equation to linear by substitution method A) True B) False C) Can't say D)None	**A**
12	The order of Differential equation $\frac{dy}{dx} + 4y = sinx$ 0.5 B) 1 C) 0 D) 2	**B**
13	The Integrating Factor for the Equation $x^2ydx - (x^3 + y^3)dy = 0$ A) $\frac{-1}{y^4}$ B) $\frac{1}{y^4}$ C) $\frac{-1}{x^4}$ D)$\frac{1}{x^4}$	**A**
14	The Integrating Factor for the Equation $(x^2 + y^2 + 2x)dx + 2ydy = 0$ A) e^{2x} B) e^{x} C) e^{-x} D)x	**B**
15	The general solution of Exact Differential Equation $Mdx + Ndy = 0$ is	**B**

	A) $\int_{x-const} Mdx + \int (Terms\ in\ N\ not\ containing\ x)dx$ = constant B) $\int_{y-const} Mdx + \int (Terms\ in\ N\ not\ containing\ x)dx$ = constant C) $\int_{y-const} Mdx + \int (Terms\ in\ N\ not\ containing\ y)dx$ = constant D)None of these	
16	Which of the following is known as Clairaut's Equation A) y = px + f(p) B) y = pf(p) + f(x) C) y = f(p) + x D)None of these	**A**
17	The p in Clairaut's Equation symbolises dy/dx B) dx/dy C) x D)dx	**A**
18	The General solution for y = px + a$\sqrt{1+p^2}$ A) y = cx + a$\sqrt{1+c^2}$ B) y = pc + a$\sqrt{1+p^2}$ C) y = pc + a$\sqrt{1+c^2}$ D)None of these	**A**
19	To apply Clairaut's Equation $xp^2 - yp + a = 0$ can be written in the form of A) $y = xp^2 + a$ B) y = xp + x C) y = px + a/p D)y = px + p/a	**C**
20	Solution of a differential equation is any function which satisfies the equation. A) False B) True C) None of these D)Can't Say	**B**
21	Find the general solution for the equation (px-py)(py+x)=2p by reducing into Clairaut's form by using the substitution $X=x^2$, $Y=y^2$ where p=*dydx*. A) $y^2=x+\frac{c}{c+1}$ B) $y^2=cx^2-\frac{2c}{c+1}$ C) $x^2=cy^2-\frac{1}{2c+1}$ D) $x^2=y^2+\frac{2c}{c+1}$	**B**
22	Which of the following is true about Clairaut's Equation A) It is a first order Differential Equation B) It is a second order Differential Equation C) General form is y = pf(p) + f(x) D)None of these	**A**
23	The solution for $p^2 - 7p + 10 = 0$ where p = dy/dx A) y + 2x – c = 0 B) y + 2x + c = 0 C) (y – 2x – c)(y – 5x – c) = 0	**C**

	D)(y + 2x – c)(y + 3x – c) = 0	
24	The solution for p(p – y) = x(x + y) where p = dy/dx A) y + x +1 = 0 B) $(y+x+1 – ce^x)(x^2+2y – c) = 0$ C) $(x^2+3y – c) = 0$ D)None of these	**B**
25	The method of eliminating the dependent variable is same as A) Equation solvable for x B) Equation solvable for y C) Equation solvable for x and y D)None of these	**B**
26	The solution for $y + px = x^4p^2$ A) $xy + c – c^2x = 0$ B) $x + y + c – c^2x = 0$ C) $xy + c – c^2x^2 = 0$ D)$xy + c – cx^3 = 0$	**A**
27	The method of eliminating the independent variable is same as A) Equation solvable for x B) Equation solvable for y C) Equation solvable for x and y D)None of these	**A**
28	An equation can be reduced by Clairaut's form by A) Ellimination B) Substitution C) Cannot be done D)None of these	**B**
29	Clairaut's Equation is a A) First degree equation B) Second degree equation C) Third degree equation D)None of these	**A**
30	In general term if we substitute ……….in Clairaut's equation we get the solution A) y = x B) p = x C) p = c D)y = c	**C**
31	If the roots $m_1, m_2, m_3, ...m_n$ of auxiliary equation $\phi(D) = 0$ are real & distinct, then solution of $\phi(D)y = 0$ is A) $c_1e^{m_1x} + c_2e^{m_2x} + ... + c_ne^{m_nx}$ B) $c_1 \cos m_1x + c_2 \cos m_2x + ... + c_n \cos m_nx$ C) $m_1e^{c_1x} + m_2e^{c_2x} + ... + m_ne^{c_nx}$	A

	D) $c_1 \sin m_1 x + c_2 \sin m_2 x + ... + c_n \sin m_n x$	
32	If the roots $m_1, m_2, m_3, ...m_n$ of auxiliary equation $\phi(D) = 0$ are real, if two of these roots are repeated say $m_1 = m_2$ & the remaining roots $m_3, m_4, m_5, ...m_n$ are distinct, then solution of $\phi(D)y = 0$ is A) $c_1 e^{m_1 x} + c_2 e^{m_2 x} + ... + c_n e^{m_n x}$ B) $c_1 \cos m_1 x + c_2 \cos m_2 x + ... + c_n \cos m_n x$ C) $(c_1 + c_2 x) e^{m_1 x} + c_3 e^{m_3 x} .... + c_n e^{m_n x}$ D) $c_1 \sin m_1 x + c_2 \sin m_2 x + ... + c_n \sin m_n x$	C
33	If the roots $m_1 = \alpha + i\beta, m_2 = \alpha - i\beta$ are two complex roots of auxiliary equation of second order D.E $\phi(D)y = 0$ is then its solution is A) $e^{\alpha x}(C_1 \cos \beta x + C_2 \cos \beta x)$ B) $e^{\alpha x}(C_1 \cos \beta x + C_2 \sin \beta x)$ C) $C_1 e^{\alpha x} + C_2 e^{\beta x}$ D) $e^{\beta x}(C_1 \cos \alpha x + C_2 \cos \alpha x)$	B
34	If the complex roots $m_1 = \alpha + i\beta, m_2 = \alpha - i\beta_n$ are repeated roots of auxiliary equation of fourth order D.E $\phi(D)y = 0$ is then its solution is A) $e^{\alpha x}[(C_1 + C_2 x) \cos \beta x + (C_3 + C_4 x) \sin \beta x)]$ B) $e^{\alpha x}[(C_1 + C_2) \cos \beta x + (C_3 + C_4) \sin \beta x)]$ C) $(C_1 + C_2 x) e^{\alpha x} + (C_3 + C_4 x) e^{\beta x}$ D) $(C_1 + C_2 x) e^{-\alpha x} + (C_3 + C_4 x) e^{-\beta x}$	A
35	The solution of differential equation $\frac{d^2 y}{dx^2} - 5\frac{dy}{dx} + 6y = 0$ is A) $C_1 e^{2x} + C_2 e^{-3x}$ B) $C_1 e^{-2x} + C_2 e^{-3x}$ C) $C_1 e^{-2x} + C_2 e^{3x}$ D) $C_1 e^{2x} + C_2 e^{3x}$	D
36	The solution of differential equation $\frac{d^2 y}{dx^2} + 2\frac{dy}{dx} + 2y = 0$ is	B

	A) $e^{-x}[C_1\cos 2x + C_2\sin 2x]$ B) $e^{-2x}[C_1\cos x + C_2\sin x]$ C) $e^{x}[C_1\cos 2x + C_2\sin 2x]$ D) $C_1e^{2x} + C_2e^{3x}$	
37	The solution of differential equation $\frac{d^2y}{dx^2} - 4y = 0$ is A) $C_1e^{2x} + C_2e^{-4x}$ B) $C_1e^{2x} + C_2e^{-2x}$ C) $(C_1 + C_2x)e^{2x}$ D) $C_1\cos 2x + C_2\sin 2x$	B
38	The solution of differential equation $\frac{d^2y}{dx^2} + 2\frac{dy}{dx} + y = 0$ is A) $(C_1 + C_2x)e^{x}$ B) $(C_1 + C_2x)e^{-x}$ C) $(C_1\cos x + C_2\sin x)$ D) $C_1e^{2x} + C_2e^{x}$	B
39	The solution of differential equation $\frac{d^3y}{dx^3} + 3\frac{dy}{dx} = 0$ is A) $C_1 + xC_2\cos x + x^2C_3\sin x$ B) $C_1 + C_2\cos x + C_3\sin x$ C) $C_1 + C_2\cos\sqrt{3}x + C_3\sin\sqrt{3}x$ D) $C_1\cos\sqrt{3}x + C_2\sin\sqrt{3}x$	c
40	The solution of differential equation $\frac{d^3y}{dx^3} + \frac{d^2y}{dx^2} - 2\frac{dy}{dx} + 12y = 0$ is A) $C_1e^{-3x} + e^{x}(C_2\cos\sqrt{3}x + C_3\sin\sqrt{3}x)$ B) $C_1e^{-3x} + (C_2\cos\sqrt{3}x + C_3\sin\sqrt{3}x)$ C) $C_1e^{-3x} + e^{x}(C_2\cos 3x + C_3\sin 3x)$ D) $C_1e^{x} + C_2e^{-\sqrt{3}x} + C_2e^{\sqrt{3}x}$	A

41	The solution of differential equation $\frac{d^4y}{dx^4} - y = 0$ is A) $(C_1 + C_2x)e^{-x} + (C_3 \cos x + C_4 \sin x)$ B) $C_1e^x + C_2e^{-x} + (C_3 \cos 2x + C_4 \sin 2x)$ C) $C_1e^x + C_2e^{-x} + (C_3 \cos x + C_4 \sin x)$ D) $(C_1 + C_2x + C_3x^2 + C_4x^3)e^x$	C
42	The solution of differential $(D^2+9)^2\ y=0\ (D^2+9)^2\ y=0\ (D^2+9)^2\ y=0$ equation $(D^2+9)^2\ y=0\ (D^2+9)^2\ y=0$ where $D=\frac{d}{dx}$ is $(D^2+9)^2\ y=0$ A) $(C_1 + C_2x)\cos 3x + (C_3 + C_4x)\sin 3x$ B) $C_1e^{3x} + C_2e^{-3x} + (C_3 \cos 3x + C_4 \sin 3x)$ C) $(C_1 + C_2x + C_3x^2 + C_4x^3)e^{3x}$ D) $(C_1 + C_2x)e^{3x} + (C_3 + C_4x)e^{-3x}$	A
43	The solution of differential equation $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + y = 0$ is A) $(C_1 + C_2x)e^x$ B) $(C_1 + C_2x)e^{-x}$ C) $(C_1 \cos x + C_2 \sin x)$ D) $C_1e^{2x} + C_2e^x$	A
44	If $\phi(D)y = 0$ be a L.D.E. of order n then the number of arbitrary constants in C.F. is A) n-1 B) n+1 C) 0 D) n	D
45	The solution of differential equation $(D^3 - D^2 - D + 1)y = 0$ is A) $(C_1 + C_2x)e^x + C_3e^{-x}$ B) $C_1e^{-x} + (C_2 \cos x + C_3 \sin x)$ C) $C_1e^{-x} + e^x(C_2 \cos x + C_3 \sin x)$ D) $C_1e^x + (C_2 + C_3x)e^{-x}$	A

46	The solution of differential equation $2\frac{d^2y}{dx^2}-\frac{dy}{dx}-10y=0$ is A) $C_1e^{5x}+C_2e^{-4x}$ B) $C_1e^{\frac{5}{2}x}+C_2e^{-2x}$ C) $C_1e^{-5x}+C_2e^{4x}$ D) $C_1e^{2x}+C_2e^{5x}$	B
47	. The particular integral Of L.D.E. with constant coefficient $\phi(D)y=f(x)$ is A) $\frac{1}{\phi(D)}f(x)$ B) $\frac{1}{\phi(D)f(x)}$ C) $\phi(D)\frac{1}{f(x)}$ D) $\frac{1}{\phi(D^2)}f(x)$	A
48	$\frac{1}{D-m}f(x)$, where $D=\frac{d}{dx}$ and m is constant, is equal to A) $e^{-mx}\int e^{mx}f(x)dx$ B) $\int e^{-mx}f(x)dx$ C) $e^{mx}\int e^{-mx}f(x)dx$ D) $e^{mx}\int e^{-mx}dx$	C
49	$\frac{1}{D+m}f(x)$, where $D=\frac{d}{dx}$ and m is constant, is equal to A) $e^{mx}\int e^{-mx}f(x)dx$ B) $e^{-mx}\int e^{mx}f(x)dx$ C) $e^{-mx}\int e^{mx}dx$ D) $e^{mx}\int e^{-mx}dx$	B

50	Particular Integral $\frac{1}{\phi(D)}e^{ax}, where\ D=\frac{d}{dx}\ and\ \phi(a)\neq 0$ is A) $\frac{1}{\phi(-a)}e^{ax}$ B) $\frac{1}{\phi(a)}e^{ax}$ C) $\frac{1}{\phi(-a^2)}e^{ax}$ D) $\frac{x}{\phi(a)}e^{ax}$	B
51	Particular Integral $\frac{1}{\phi(D)}e^{ax}, where\ D=\frac{d}{dx}\ and\ \phi(a)=0, \phi^{'}(a)\neq 0$ is A) $\frac{1}{\phi(-a)}e^{ax}$ B) $\frac{1}{\phi(a)}e^{ax}$ C) $\frac{1}{\phi(-a^2)}e^{ax}$ D) $\frac{x}{\phi^{'}(a)}e^{ax}$	D
52	Particular Integral $\frac{1}{(D-a)^r}e^{ax}$ is A) $\frac{1}{r!}e^{ax}$ B) $\frac{x^r}{r!}e^{ax}$ C) $x^r e^{ax}$ D) $\frac{x}{r}e^{ax}$	B
53	Particular Integral $\frac{1}{\phi(D^2)}\sin(ax+b), where, D=\frac{d}{dx}\ and\ \phi(-a^2)\neq 0$ is A) $\frac{1}{\phi(-a^2)}\cos(ax+b)$ B) $\frac{1}{\phi(-a^2)}\sin(ax+b)$ C) $\frac{x}{\phi(-a^2)}\cos(ax+b)$ D) $\frac{x}{\phi(-a^2)}\sin(ax+b)$	B
54	Particular Integral $\frac{1}{\phi(D^2)}\cos(ax+b),$ where $\phi(-a^2)=0.\phi^{'}(-a^2)\neq 0$ is A) $\frac{1}{\phi(-a^2)}\cos(ax+b)$ B) $\frac{1}{\phi(-a^2)}\sin(ax+b)$ C) $\frac{x}{\phi^{'}(-a^2)}\cos(ax+b)$	C

	D) $\dfrac{x}{\phi\ (-a^2)}\sin(ax+b)$	
55	Particular Integral $\dfrac{1}{(D^2+a^2)}\sin(ax+b)$ is A) $\dfrac{x}{2a}\cos(ax+b)$ B) $\dfrac{-x}{2a}\sin(ax+b)$ C) $-\dfrac{x}{2a}\cos(ax+b)$ D) $\dfrac{x}{2a^2}\cos(ax+b)$	C
56	Particular Integral $\dfrac{1}{(D^2+a^2)}\cos(ax+b)$ is A) $\dfrac{x}{2a}\cos(ax+b)$ B) $\dfrac{x}{2a}\sin(ax+b)$ C) $\dfrac{x}{a}\sin(ax+b)$ D) $\dfrac{x}{2a^2}\cos(ax+b)$	B
57	Particular Integral $\dfrac{1}{(D^2+a^2)^r}\sin(ax+b)$ is A) $\left(-\dfrac{x}{2a}\right)^r\dfrac{1}{r!}\sin\left(ax+b+r\dfrac{\pi}{2}\right)$ B) $\left(-\dfrac{x}{2a}\right)^r\dfrac{1}{r!}\sin(ax+b+)$ C) $\left(\dfrac{x}{2a}\right)^r\dfrac{1}{r!}\sin\left(ax+b+r\dfrac{\pi}{2}\right)$ D) $\left(-\dfrac{x}{2a}\right)^r\sin\left(ax+b+r\dfrac{\pi}{2}\right)$	A
58	Particular Integral of $\dfrac{1}{\phi(D)}e^{ax}V,$ where V is any function of x , is	C

	A) $e^{ax}\frac{1}{\phi(D-a)}V$ B) $e^{ax}\frac{1}{\phi(a)}V$ C) $e^{ax}\frac{1}{\phi(D+a)}V$ D) $\frac{1}{\phi(D-a)}V$	
59	Particular Integral of $\frac{1}{\phi(D)}xV,$ where V is any function of x , is A) $\left[x-\frac{1}{\phi(D)}\right]\frac{1}{\phi(D)}V$ B) $\left[x-\frac{\phi'(D)}{\phi(D)}\right]\frac{1}{\phi(D)}V$ C) $\left[x+\frac{\phi'(D)}{\phi(D)}\right]\frac{1}{\phi(D)}V$ D) $\left[x-\frac{\phi'(D)}{\phi(D)}\right]V$	B
60	Particular Integral of $\frac{1}{D+1}e^{e^x},$ is A) $e^{-x}e^{e^x}$ B) e^{e^x} C) $e^{x}e^{e^x}$ D) $e^{-2x}e^{e^x}$	A
61	Particular Integral of $\frac{1}{D^2+3D+2}e^{e^x},$ is A) $e^{-2x}e^{e^x}$ B) $e^{2x}e^{e^x}$ C) $e^{x}e^{e^x}$ D) $e^{-2x}e^{e^x}$	A
62	Particular Integral of $\frac{1}{D+1}\sin e^x,$ is A) $e^{-x}\sin e^x$ B) $e^{x}\cos e^x$ C) $e^{-x}\cos e^x$ D) $-e^{-x}\sin e^x$	C
63	Particular integral of $\frac{1}{D+2}e^{-x}\cos e^x$ is A) $e^{-2x}\sin e^x$ B) $e^{x}\cos e^x$ C) $e^{-2x}\cos e^x$ D) $-e^{-x}\sin e^x$	A

64	Particular integral of $\frac{1}{D+1}\left(\frac{1}{1+e^x}\right)$ is A) $e^x \log(1-e^x)$ B) $e^{-x}\log(1+e^x)$ C) $e^x \log(1+e^x)$ D) $\log(1-e^x)$	B
65	Particular integral of $(4D^2-4D+1)y = e^{\frac{1}{2}x}$ is A) $\frac{1}{8}e^{\frac{1}{2}x}$ B) $\frac{x}{8}e^{\frac{1}{2}x}$ C) $\frac{x^2}{8}e^{\frac{1}{2}x}$ D) $e^{\frac{1}{2}x}$	C
66	Particular integral of $(D^2+9)y = \sin 4x$ is A) $\frac{1}{9}\sin 4x$ B) $\frac{x}{8}\cos 4x$ C) $\frac{1}{7}\sin 4x$ D) $\frac{-1}{7}\sin 4x$	D
67	Particular integral of $(D^2+2D+1)y = x$ is A) x B) $x-2$ C) $x+2$ D) $(x-2)e^{2x}$	B
68	Particular integral of $(D^2-5D+6)y = 3e^{5x}$ is A) $\frac{1}{2}e^{5x}$ B) $\frac{x}{2}e^{5x}$ C) $\frac{e^{5x}}{6}$ D) $\frac{e^{5x}}{-14}$	A
69	Particular integral of $(D^2+4D+3)y = e^{-3x}$ is A) xe^{-3x} B) $\frac{x}{2}e^{-3x}$ C) $\frac{x}{2}e^{-3x}$ D) $\frac{-x}{2}e^{-3x}$	D
70	Particular integral of $\frac{d^2y}{dx^2} + y = \sin x.\sin 2x$ is A) $\frac{x}{2}\sin x - \frac{1}{8}\cos 3x$ B) $\frac{x}{4}\sin x + \frac{1}{16}\cos 3x$ C) $\frac{x}{2}\sin x + \frac{1}{8}\cos 3x$ D) $\frac{1}{4}\sin x - \frac{x}{16}\cos 3x$	B
71	Particular integral of $\frac{d^3y}{dx^3} + 3\frac{dy}{dx} = \cosh 2x$ is	C

	A) $\frac{1}{2}\sinh 2x$ B) $\frac{1}{7}\sinh 2x$ C) $\frac{1}{14}\sinh 2x$ D) $\frac{1}{14}\cosh 2x$	
72	Particular integral of $\frac{d^2y}{dx^2} - 9y = e^{3x} + 1$ is A) $\frac{3x}{2}e^{3x} - \frac{1}{9}$ B) $\frac{x}{6}e^{3x} + \frac{3}{8}$ C) $\frac{x}{6}e^{3x} - \frac{1}{9}$ D) $\frac{x}{2}e^{3x} + \frac{1}{8}$	C
73	Particular integral of $\frac{d^3y}{dx^3} + 8y = x^4 + 2x + 1$ is A) $\frac{1}{8}(x^4 - x + 1)$ B) $\frac{1}{8}(x^3 - 3x^2 + 1)$ C) $\frac{1}{8}(x^4 + 5x + 1)$ D) $(x^4 - x + 1)$	A
74	Particular integral of $(D^2 - D + 1)y = 3x^2 - 1$ is A) $3x^2 - 6x + 5$ B) $3x^2 + 6x - 1$ C) $x^2 - 6x + 1$ D) $(x^3 - x^2 + 3x)$	B
75	Particular integral of $(D^4 + 25)y = x^4 + x^2 + 1$ is A) $\left(x^4 + x^2 - \frac{1}{25}\right)$ B) $\left(x^4 + x^2 + \frac{49}{25}\right)$ C) $\frac{1}{25}(x^4 + x^2 + 24x + 1)$ D) $\frac{1}{25}\left(x^4 + x^2 + \frac{1}{25}\right)$	D
76	Particular integral of $\frac{d^2y}{dx^2} + 2\frac{dy}{dx} + y = e^{-x}\cos x$ is A) $e^{x}\cos x$ B) $-e^{-x}\sin x$ C) $-e^{-x}\cos x$ D) $(C_1x + C_2)e^{-x}$	C

77	Particular integral of $(D^2+2D+1)y=e^{-x}(x^2+1)$ is A) $e^{-x}\left(\frac{x^2}{2}-\frac{x^4}{12}\right)$ B) $e^{-x}\left(\frac{x^2}{2}+\frac{x^4}{12}\right)$ C) $e^{-x}\left(x+\frac{x^3}{3}\right)$ D) $\left(\frac{x^2}{2}+\frac{x^4}{12}\right)$	B
78	Particular integral of $\frac{d^2y}{dx^2}+4y=x\sin x$ is A) $\frac{x}{3}\sin x-\frac{2}{9}\cos x$ B) $\frac{x}{2}\sin x+\frac{1}{9}\cos 3x$ C) $\frac{x}{3}\sin x+\frac{2}{9}\cos 3x$ D) $\frac{1}{4}\sin x-\frac{x}{16}\cos 3x$	A
79	Particular integral of $\frac{d^2y}{dx^2}+4y=\sin 3x+e^x$ is A) $\frac{e^x-\sin 3x}{5}$ B) $\frac{e^x+\sin 3x}{5}$ C) $\frac{e^x-\cos 3x}{5}$ D) $\frac{e^x+\cos 3x}{5}$	A
80	Particular integral of $\frac{d^2y}{dx^2}-5\frac{dy}{dx}+4y=0$ is A) $C_1e^x+C_2e^{4x}$ B) $C_1e^{-x}+C_2e^{-4x}$ C)0 D) C_1	C
81	Particular integral of $(D^4-m^4)y=\cos mx$ is A) $\frac{-x}{4m^3}\cos mx$ B) $\frac{x}{4m^3}\sin mx$	A

	C) $\frac{1}{m^4}\sin mx$ D) $\frac{-x}{4m^3}\sin mx$	
82	Particular integral of $(D^3+D)y=\cos x$ is A) $\frac{-x}{4}\cos x$ B) $\frac{-x}{2}\sin x$ C) $\frac{-x}{2}\cos x$ D) $\frac{x}{4}\sin x$	C
83	Total solution of differential equation $(D^2+1)y=x$ is A) $C_1\cos x+C_2\sin x-x$ B) $C_1\cos x+C_2\sin x+x$ C) $C_1\cos x+C_2\sin x-2x$ D) C_1x+C_2+x	B
84	Particular integral of $(D^2+2D+1)y=xe^{-x}\cos x$ is A) $e^{-x}(x\cos x+2\sin x)$ B) $e^{-x}(2x\cos x+\sin x)$ C) $e^{-x}(-x\cos x+2\sin x)$ D) $(x\cos x+2\sin x)$	C
85	The general form of Cauchy's linear differential equation is A) $a_0\frac{d^ny}{dx^n}+a_1\frac{d^{n-1}y}{dx^{n-1}}+a_2\frac{d^{n-2}y}{dx^{n-2}}+...+a_ny=f(x)$, $a_0,a_1,a_2,...,a_n$ are constants. B) $a_0x^n\frac{d^ny}{dx^n}+a_1x^{n-1}\frac{d^{n-1}y}{dx^{n-1}}+a_2x_{n-2}\frac{d^{n-2}y}{dx^{n-2}}+...+a_ny=f(x)$, $a_0,a_1,a_2,...,a_n$ are constants. C) $a_0(ax+b)^n\frac{d^ny}{dx^n}+a_1(ax+b)^{n-1}\frac{d^{n-1}y}{dx^{n-1}}+a_2(ax+b)^{n-2}\frac{d^{n-2}y}{dx^{n-2}}+...+a_ny=f(x)$; $a_0,a_1,a_2,...,a_n$ constants. D) $\frac{dx}{P}=\frac{dy}{Q}=\frac{dz}{R}$ where P,Q,R are functions of x,y,z.	B
86	The general form of Legendres's linear differential equation is A) $a_0\frac{d^ny}{dx^n}+a_1\frac{d^{n-1}y}{dx^{n-1}}+a_2\frac{d^{n-2}y}{dx^{n-2}}+...+a_ny=f(x)$; $a_0,a_1,a_2,...,a_n$ are constants. B) $a_0x^n\frac{d^ny}{dx^n}+a_1x^{n-1}\frac{d^{n-1}y}{dx^{n-1}}+a_2x_{n-2}\frac{d^{n-2}y}{dx^{n-2}}+...+a_ny=f(x)$; $a_0,a_1,a_2,...,a_n$ are constants.	C

	C) $a_0(ax+b)^n\frac{d^ny}{dx^n}+a_1(ax+b)^{n-1}\frac{d^{n-1}y}{dx^{n-1}}+a_2(ax+b)^{n-2}\frac{d^{n-2}y}{dx^{n-2}}+...+a_ny=f(x)$; $a_0,a_1,a_2,...,a_n$ constants. D) $\frac{dx}{P}=\frac{dy}{Q}=\frac{dz}{R}$ where P,Q,R are functions of x,y,z.	
87	Cauchy's linear differential equation $a_0x^n\frac{d^ny}{dx^n}+a_1x^{n-1}\frac{d^{n-1}y}{dx^{n-1}}+a_2x_{n-2}\frac{d^{n-2}y}{dx^{n-2}}+...+a_ny=f(x)$ can be reduced to LDE with constant coefficients by using substitution A) $x=e^z$ B) $y=e^z$ C) $x=\log z$ D) $x=e^{2z}$	A
88	Legendres's linear differential equation $a_0(ax+b)^n\frac{d^ny}{dx^n}+a_1(ax+b)^{n-1}\frac{d^{n-1}y}{dx^{n-1}}+a_2(ax+b)^{n-2}\frac{d^{n-2}y}{dx^{n-2}}+...+a_ny=f(x)$ can be reduced to LDE with constant coefficients by using substitution A) $ax=e^z$ B) $ax+b=ae^z$ C) $ax+b=e^z$ D) $x=e^{2z}$	C
89	To reduce the differential equation $(x+2)^2\frac{d^2y}{dx^2}-(x+2)\frac{dy}{dx}+y=4x+7$ to linear differential equation with constant coefficient, substitution is A) $x+2=e^{-z}$ B) $x=2e^z$ C) $x=1+e^{-z}$ D) $x+2=e^z$	D
90	If the differential equation $Mdx+Ndy=0$ is homogeneous then The Integrating Factor = $\frac{1}{Mx+Ny}$ where $Mx+Ny\neq 0$. A) True B) False C) both D) None of these	**A**
91	If the differential equation $Mdx+Ndy=0$ is of the type $f(xy)ydx+g(xy)xdy=0$ then The Integrating Factor = $\frac{1}{Mx-Ny}$ where $Mx-Ny\neq 0$. A) True B) False C) Both D) None of these	**A**
92	If $\frac{\frac{\partial M}{\partial y}-\frac{\partial N}{\partial x}}{N}$ is a function of x alone, f(x) say, Then $e^{\int f(x)dx}$ is an Integrating Factor of the equation $Mdx+Ndy=0$ A) True	**A**

	B) False C) Both D) None of these	
93	If $\frac{\frac{\partial N}{\partial x}-\frac{\partial M}{\partial y}}{M}$ is a function of y alone, f(y) say, Then $e^{\int f(y)dy}$ is an Integrating Factor of the equation $Mdx + Ndy = 0$ A) True B) False C) Both D) None of these	**A**
94	If $\frac{\frac{\partial M}{\partial y}-\frac{\partial N}{\partial x}}{N}$ is a function of x alone, f(x) say, Then Integrating Factor of the equation $Mdx + Ndy = 0$ A) $e^{\int xf(x)dx}$ B) $e^{\int 2f(x)dx}$ C) $e^{\int f(x)dx}$ D) $x^{\int f(x)dx}$ is an	**C**
95	If $\frac{\frac{\partial N}{\partial x}-\frac{\partial M}{\partial y}}{M}$ is a function of y alone, f(y) say, Then Integrating Factor of the equation $Mdx + Ndy = 0$ A) $e^{\int xf(y)dy}$ B) $e^{\int f(y)dy}$ C) $x^{\int f(y)dy}$ D) $e^{\int f(x)dy}$	**B**
96	$\frac{dy}{dx} + x^2y = x^5$; The Integrating Factor for the equation is given by A) $e^{\frac{x^3}{3}}$ B) y C) x D) $y + x$	**A**
97	Integrating Factor for $\frac{dx}{dy} + \frac{x}{y} = y^2$ is given by A) y B) x C) $x + y$ D) $x - y$	**A**
98	Integrating Factor for $\frac{dy}{dx} + \frac{y}{x} = x^2$ is given by A) y B) x C) $x + y$ D) $x - y$	**B**

99	Integrating Factor for $\frac{dy}{dx} + ycotx = sin2x$ is given by A) $Sinx$ B) $Cosx$ C) $tanx$ D) 0	**A**
100	Integrating Factor for $\frac{dx}{dy} + \frac{2x}{y} = y^2$ is given by A) y B) x C) $x + y$ D) y^2	D

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