14.	Verify Gauss Divergence theorem for the vector function $\vec{F} = (x^3 - yz)\vec{i} - 2x^2y\vec{j} + 2\vec{k}$ over the cube bounded by $x = 0, y = 0, z = 0$ and $x = a, y = a, z = a$.	16	K3	CO1
15.	Verify Stoke's theorem for $\vec{F} = (x^2 + y^2)\,\vec{i} - 2xy\,\vec{j}$ taken round the rectangle bounded by the lines $x = \pm a, y = 0, y = b$	16	K3	CO1
16.	Verify Stoke's theorem for $\vec{F} = (y - z + 2)\,\vec{i} + (yz + 4)\,\vec{j} - xz\,\vec{k}$ over the cube bounded by $x = 0, y = 0, z = 0$ and $x = 1, y = 1, z = 1$.	16	K3	CO1
17.	Verify Stoke's theorem for $\vec{F} = (x^2 - y^2)\,\vec{i} + 2xy\,\vec{j}$ taken round the rectangle bounded by the lines $x = 0, x = a, y = 0, y = b$.	16	K3	CO1

UNIT - II

Unit - II / Part - A / 2 Marks				
S.No	Questions	Mark Splitup	K – Level	CO
1.	Solve $(D^2 + 5D + 4) = 0$.	2	K2	CO2
2.	Solve $\frac{d^2y}{dx^2} + 2\frac{dy}{dx} - 2y = 0$.	2	K2	CO2
3.	Solve $\frac{d^4y}{dx^4} = 16y$.	2	K2	CO2
4.	Solve $(D^4 - 2D^3 + D^2)y = 0$.	2	K2	CO2
5.	Solve $(D^4 - 2D^2 + 1)y = 0$.	2	K2	CO2
6.	Solve $y''' + 2y'' + y' = 0$.	2	K2	CO2
7.	Solve $(D^3 + 1)y = 0$	2	K2	CO2
8.	Solve $(D^2 + 1)y = e^{-x}$.	2	K2	CO2
9.	Find the particular integral of $(D^2 - 4)y = e^{2x}$.	2	K2	CO2
10.	Find the particular integral of $(D^2 + 8)y = e^{-2x}$	2	K2	CO2
11.	Find the particular integral of $(D^2 - a^2)y = e^{ax}$.	2	K2	CO2
12.	Find the particular integral of $(D - m)^2 y = e^{mx}$	2	K2	CO2
13.	Find the complementary function of $(D^2 + 4)^2 = \cos x$	2	K2	CO2
14.	Find the particular integral of $(D^4 + D^2)y = \sin x$	2	K2	CO2
15.	Find the particular integral of $(D - 1)^2 = \sinh 2x$	2	K2	CO2
16.	Find the particular integral of $(D - 1)^2 y = \cosh 2x$	2	K2	CO2
17.	Find the particular integral of $\frac{d^2y}{dx^2} + 4y = \sin 2x$.	2	K2	CO2

18.	Find the particular integral of $(D^4+D^2)y=\sin x$	2	K2	CO2
19	Find the particular integral of $(D^2+2)y=x^2$.	2	K2	CO2
20.	Find the particular integral of $(D+1)^2 y=e^{-x}\cos x$.	2	K2	CO2
21.	Find the particular integral of $(D^2-2D+5)y=e^x\sin 2x$	2	K2	CO2
22.	Find the particular integral of $(D^2-2D+5)y=e^x\sin 2x$	2	K2	CO2
23.	Reduce the equation $x^2\frac{d^2y}{dx^2}-x\frac{dy}{dx}+y=0$ to homogeneous differential equation with constant coefficients.	2	K2	CO2
24.	Solve $(x^2D^2+xD)y=0$.	2	K2	CO2
25.	Solve $x^2y''-2xy'+2y=0$.	2	K2	CO2
26.	Transform $(x+2)^2\frac{d^2y}{dx^2}-(x+2)\frac{dy}{dx}+y=3x+y$ in to differential equation with constant coefficients.	2	K2	CO2
27.	Eliminate x and find the equation in y from $\frac{dx}{dt}+5x-2y=t$; $\frac{dy}{dt}+2x+y+=0$.	2	K2	CO2

Unit - II / Part - B / 16, 8 Marks				
S.No	Questions	Marks Splitup	K – Level	CO
1.	Solve $(D^2+4D+3)y=e^{-x}\sin x+xe^{3x}$.	8	K2	CO2
2.	Solve $(4D^2-4D+1)y=4$.	8	K2	CO2
3.	Solve $(D^2-4D+13)y=e^{2x}\sin 3x$.	8	K2	CO2
4.	Solve $(D^2+5D+4)y=4e^{-x}+x$.	8	K2	CO2
5.	Solve $(D^2+4)y=x^2\cos 2x$.	8	K2	CO2
6.	Solve $(D^2+16)y=\cos^2 x$.	8	K2	CO2
7.	Solve $y''-2y'+y=xe^x\sin x$.	8	K2	CO2
8.	Solve $(D^2+4D+5)y=e^x+x^3+\cos 2x+1$	8	K2	CO2
9.	Solve $(D^2+a^2)y=\tan ax$ by the method of variation of parameters.	8	K2	CO2
10.	Solve $(D^2+4)y=\sec 2x$ by the method of variation of parameters.	8	K2	CO2
11.	Solve $(D^2-4D+4)y=e^{2x}$ by the method of variation of parameters.	8	K2	CO2
12.	Solve $y''+9y=\cot 3x$. by the method of variation of parameters.	8	K2	CO2

13.	Solve $(D^2+1)y = x\sin x$ by the method of variation of parameters.	8	K2	CO2
14.	Solve $(D^2+1)y = cosecx$ by the method of variation of parameters.	8	K2	CO2
15.	Solve $x^2\frac{d^2y}{dx^2} - 3x\frac{dy}{dx} + 4y = x^2 + \cos(\log x)$.	8	K3	CO2
16.	Solve $(x^2D^2 - xD + 1)y = \left(\frac{\log x}{x}\right)^2$.	8	K3	CO2
17.	Solve $(x^2D^2 - 3xD + 5)y = x^2\sin(\log x)$.	8	K3	CO2
18.	Solve $x^2\frac{d^2y}{dx^2} + x\frac{dy}{dx} + y = \log x \sin(\log x)$	8	K3	CO2
19.	Solve $(3x+2)^2\frac{d^2y}{dx^2} + 3(3x+2)\frac{dy}{dx} - 36y = 3x^2 + 4x + 1$.	8	K3	CO2
20.	Solve $((1+x)^2D^2 + (1+x)D + 1)y = 4\cos[\log(1+x)]$	8	K3	CO2
21.	Solve $\left((1+x)^2D^2 + (1+x)D + 1\right)y = 2\sin\log(1+x)$.	8	K3	CO2
22.	Solve $(x+2)^2\frac{d^2y}{dx^2} - (x+2)\frac{dy}{dx} + y = 3x + 4$.	8	K3	CO2
23.	Solve the simultaneous equations $\frac{dx}{dt} + 2x - 3y = 5t$; $\frac{dy}{dt} - 3x + 2y = 0$ given that $x(0) = 0$ & $y(0) = -1$.	8	K3	CO2
24.	Solve the simultaneous equations $\frac{dx}{dt} + 2y + sint = 0$; $\frac{dy}{dt} - 2x - cost = 0$ given that $x = 0$ and $y = 1$ at $t = 0$.	8	K3	CO2
25.	Solve the simultaneous equations $\frac{dx}{dt} + 2y = 5e^t$; $\frac{dy}{dt} - 2x = 5e^t$ given that $x = -1$ and $y = 3$ at $t = 0$.	8	K3	CO2
26.	Solve the following simultaneous differential equations $\frac{dx}{dt} + 2y = \sin 2t$; $\frac{dy}{dt} - 2x = \cos 2t$.	8	K3	CO2
27.	Solve the following simultaneous differential equations $Dx + y = \sin 2t$; $-x + Dy = \cos 2t$.	8	K3	CO2
28.	Solve the following simultaneous differential equations $\frac{dx}{dt} - \frac{dy}{dt} + 2y = cos2t$, $\frac{dx}{dt} + \frac{dy}{dt} - 2x = sin2t$	8	K3	CO2