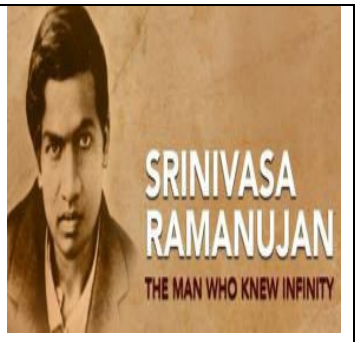
SRM Institute of Science and Technology
Kattankulathur

DEPARTMENT OF MATHEMATICS

18MAB201T- TRANSFORMS AND BOUNDARY VALUE PROBLEMS

UNIT - I Partial Differential Equations
Tutorial Sheet - 3



Sl. No.	Questions	Answer
	Part - A	
1	**Solve** $(D^2-3DD'+2D'^2)z=0.$	$z=\phi_1(y+x)+\phi_2(y+2x)$
2	**Solve** $(D^2-4DD'+4D'^2)z=e^{2x+y}.$	$z=\phi_1(y+2x)+x\phi_2(y+2x)+\frac{x^2}{2}e^{2x+y}$
3	**Solve** $(D^3-2D^2D')z=4\sin(x+y).$	$z=\phi_1(y)+x\phi_2(y)+\phi_3(y+2x)-4\cos(x+y)$
4	**Solve** $(D^2-6DD'+5D'^2)z=xy.$	$z=\phi_1(y+x)+\phi_2(y+5x)+\frac{x^3y}{6}+\frac{x^4}{4}$
5	**Solve** $(D^2-DD')z=\sin x\sin 2y.$	$z=\phi_1(y)+\phi_2(y+x)$ $-\frac{1}{3}(2\cos x\cos 2y-\sin x\sin 2y)$
	Part - B	
6	**Solve** $(D^2+2DD'+D'^2)z=2\cos y-x\sin y.$	$z=\phi_1(y-x)+x\phi_2(y-x)$ $+x\sin y+2\cos y$
7	**Solve** $(D^3+D^2D'-DD'^2-D'^3)z=e^x\cos(2y).$	$z=\phi_1(y-x)+x\phi_2(y-x)+\phi_3(y+x)$ $+\frac{e^x}{25}(\cos 2y+2\sin 2y)$
8	**Solve** $(D^3-2D^2D')z=\sin(x+2y)+3x^2y.$	$z=\phi_1(y)+x\phi_2(y)+\phi_3(y+2x)$ $-\frac{1}{3}\cos(x+2y)+\frac{x^5y}{20}+\frac{x^6}{60}$
9	**Solve** $(D^2+DD'-6D'^2)z=y\cos x.$	$z=\phi_1(y+2x)+\phi_2(y-3x)$ $+\sin x-y\cos x$
10	**Solve** $(D^2-3DD'+2D'^2)z=(2+4x)e^{x+2y}.$	$z=\phi_1(y+x)+\phi_2(y+2x)$ $+\frac{2}{9}e^{x+2y}(11+6x)$