



Mahakal Institute of Technology, Ujjain

Department of Mathematics

PYQ's Unit -I

Q.N.	Question	Marks	RBT Level	CO
Q1	Solve $(1+y^2) dx = (\tan^{-1} y - x) dy$ using Leibnitz linear method. Dec2023, june2023			
Q2	Solve $(e^y + 1) \cos x dx + e^y \sin x dy = 0$. Dec203			
Q3	Solve $(D^2 - 4D + 3) y = \cos 2x$. Dec2023			
Q4	Solve: $dx - y = e^x$, $dy + x = \sin t$; $x(0) = 1$, $y(0) = 0$ June 2023			
Q5	Solve $\frac{dy}{dx} = \cos(x+y) + \sin(x+y)$. june 2023			
Q6	Solve $\frac{d^2y}{dx^2} + \frac{dy}{dx} = (1+e^x)^{-1}$ june 2023			
Q7	Solve $\cos x dy = y(\sin x - y) dx$ using Bernoulli's. Nov2022			
Q8	Solve the Linear differential equation $\sin 2x \frac{dy}{dx} - y = \tan x$. Nov 2022			
Q.9	Solve $(r + \sin\theta - \cos\theta) dr + r(\sin\theta + \cos\theta) d\theta = 0$. Nov 2022			
Q.10	Solve the differential equation. $(D^3 - 7D^2 + 14D - 8) y = e^x \cos 2x$. Nov 2022			
Q.11	Solve $(1+e^{x/y}) dx + e^{x/y}(1-x/y) dy = 0$. June 2022			
Q.12	Solve the Linear differential equation $(1+y^2) + (x-e^{\tan^{-1} y}) \frac{dy}{dx} = 0$. June2022			
Q.13	Solve $\frac{dy}{dx} + y \tan x = y^2 \sec(x)$ using Bernoulli's			

Q.14	Solve the differential equation $(D^2 - 2D - 3)y = x^3 e^{-3x}$		
Q15	Solve $\frac{dy}{dx} + y = \sin t$, $\frac{dy}{dx} + x = \cos t$		
Q16	Solve : $y dx + (1 + x^2) \tan^{-1}(x) dy = 0$.		
Q17 7	Solve the differential equation $x dy - y \sqrt{x^2 + y^2} dx$		
Q18	Solve the differential equation $\frac{d^2y}{dx^2} - 4 \frac{dy}{dx} + 3y = 0$.		
Q19	Solve the differential equation $(D + 2)(D - 1)^3 y = e^x$.		
Q20	Solve the differential equation $\frac{d^2y}{dx^2} + \frac{dy}{dx} + y = \cos 2x$.		
Q21	Show that the following equations are exact and solve if $ye^x dx + (2y + e^x) dy = 0$.		
Q22	Solve the following linear differential equation. $\frac{dy}{dx} + 2 \frac{y}{x} = \sin x$		
Q23	Solve $x dy - y dx = (x^2 + y^2) dx$		
Q24	Solve the differential equation $\frac{d^2y}{dx^2} - 5 \frac{dy}{dx} + 6y = e^{4x}$		
Q25	Solve $\frac{dy}{dx} + 2y = e^t$, $\frac{dy}{dx} - 2x = e^{-t}$		
Q26	Solve $x^2 \frac{d^2y}{dx^2} - x \frac{dy}{dx} + y = 2\log x$.		
Q27	Solve $x^2 \frac{d^2y}{dx^2} - 2x \frac{dy}{dx} - 4y = x^2 + 2\log x$	may 2019	

Q28	Solve $(1+x^2) \frac{dy}{dx} + 2xy = 2 \cos x$	may 2019		
Q29	Solve $\frac{d^3y}{dx^3} - 3 \frac{d^2y}{dx^2} + 3 \frac{dy}{dx} - y = e^x + 2$	may 2019		
Q30	Solve $x^2 p^3 + y(1+x^2 y)p^2 + y^3 p = 0$ where $p = \frac{dy}{dx}$	may 2019		