

Dronacharya Group of Institutions, Greater Noida

Department of APS

Subject Name: Mathematics-II (KAS 203)

Lecture wise Question Bank

Unit No.: 1	Unit Name: Differential Equation		
Lecture No.	Questions	Weightage of Question as per University Exam (In terms of Marks)	Reference
L1	Solve $(D^2 - 2D + 4)y = e^x \cos x + \sin x \cos 3x$.	7	AKTU 2017-2018
	Solve the simultaneous differential equations: $\frac{d^2x}{dt^2} - 4\frac{dx}{dt} + 4x = y$ and $\frac{d^2y}{dt^2} + 4\frac{dy}{dt} + 4y = 25x + 16e^t$.	7	AKTU 2017-2018
L2	Use variation of parameter method to solve the differential equation $x^2y'' + xy' - y = x^2e^x$.	2	AKTU 2017-2018
	Solve the differential equation $(D^2 + 2D + 2)y = e^{-x} \sec^3 x$, where $D = \frac{d}{dx}$.	7	AKTU 2016-2017
L3	Solve the differential equation $(D^2 - 2D + 1)y = e^x \sin x$	10	AKTU 2016-2017
	Find the complete solution of $\frac{d^2y}{dx^2} - 3\frac{dy}{dx} + 2y = xe^{3x} + \sin 2x$	7	AKTU Dec 2017
L4	Solve the differential equation	10	
	Solve by changing the independent variable $x \frac{d^2y}{dx^2} + (4x^2 - 1) \frac{dy}{dx} + 4x^3y = 2x^3$	7	

L5	$\frac{dx}{dt} + \frac{dy}{dt} - 2y = 2\cos t - 7\sin t$ $\frac{dx}{dt} - \frac{dy}{dt} + 2x = 4\cos t - 3\sin t$	10	
	$\frac{d^2y}{dt^2} + \sqrt{1 + \left(\frac{dy}{dt}\right)^3}$	2	UPTU 2014-2015
L6	Solve the differential equation $\frac{d^2y}{dt^2} + y = \operatorname{cosec} x$		NPTEL
	Solve the following differential equation by reducing it to Normal form $\frac{d^2y}{dx^2} + 2\frac{dy}{dx} + y = x^2 e^{-x^2/2}$		NPTEL