



Jagannath University, Dhaka

Department of CSE

Mid-Examination-2020

Course Code: CSER-2105, Math-III, Ordinary Differential Equations

Full Marks: 10

Time: 30 minutes

There are **Four** questions. Answer any **Three** of the questions.

1.	a)	What do you mean by order and degree of the differential equation (D. E.).	
	b)	Find the order and degree of the following D. E. (i) $\left(\frac{dy}{dx}\right)^2 + 2y^2 = 5\left(\frac{dy}{dx}\right) + 4y$ (ii) $\frac{d^2y}{dx^2} - \left(\frac{dy}{dx}\right)^3 - 9y = x.$ (iii) $x\frac{dy}{dx} - 5y = \sqrt{x^2 + y^2}.$	
2.		Find the D.E. whose solution is $y^2 = 4a(x + a).$.	
3.		i) $\frac{dy}{dx} + \frac{2}{x}y = \frac{y^3}{x^3}.$ ii) $x\frac{dy}{dx} + y = y^2 \log x.$	
4.		Solve following differential equations: i) $\frac{d^2y}{dx^2} - y = xe^x \sin x.$ ii) $(1 + x^2)\frac{dy}{dx} + y = \tan^{-1} x.$	