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) $x\frac{dy}{dx} - 5y = \sqrt{x^2 + y^2}$.	
2.		Find the D.E. whose solution is $y^2 = 4a(x+a)$.,	
3.		Solve following differential equations: i) $xdx + ydy = \frac{xdy - ydx}{x^2 + y^2}$. ii) $(xy\sin xy + \cos xy)ydx + (xy\sin xy - \cos xy)xdy = 0.$	
4.		Find the orthogonal trajectories of the cardioide $r = a(1-\cos\theta)$ where a is the parameter.	