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) $\frac{dy}{dx}=\sqrt{\frac{1-x}{1-y}}$ (ii) $\left(\frac{d^2y}{dx^2}\right)^2-y=e^x.$ (iii) $\frac{d^2y}{dx^2}-\left(\frac{dy}{dx}\right)^3-9y=x.$	
2.		Form the D.E. of the family of circles touch the y-axis at origin.	
3.		Solve following differential equations: 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) $(1+x^2)\frac{dy}{dx}+y=\tan^{-1}x.$	