Course:	Diff. Eq.(Calculus-II)	Course Code:	MT-224
Program:	BS(CS)	Semester:	Spring-19
Duration:	One hour	Total Marks:	40
Paper Date:	12-04-19	Weight	12.5%
Section:	All	Page(s):	01
Exam:	Mid Term-II	Roll No:	

Instruction/Notes: 1. Attempt all questions. Exchange of calculators or programmable calculators are not allowed.
2. If you think something wrong or need to be modified, do it with the best of your understanding.

Question No.1:[10][CLO-2]: Solve (General solution) the **Non-Exact** differential equation by finding an appropriate integrating factor.

$$(10 - 6y + e^{-3x})dx - 2dy = 0.$$

Question No.2:[10][CLO-2]: Solve the differential equation by using an appropriate substitution.

$$x\frac{dy}{dx} = y + \sqrt{x^2 - y^2}, \qquad x > 0.$$

Question No.3:[10][CLO-3]: Suppose that a body with temperature 85º F is discovered at midnight. The body is removed quickly to the morgue where the ambient temperature is maintained at 40º F. After one hour the body temperature is found to be 60º F. Estimate the time of death.

Question No.4:[10][CLO-4]: Use reduction of order to find a second solution $y_2(x)$ of the following differential equation.

$$y'' + 2y' + y = 0, \qquad y_1(x) = xe^{-x}.$$