

Student 1 Roll No. _____

Evaluator 1 Roll No. _____

Student 2 Roll No. _____

Evaluator 2 Roll No. _____

Problem 1 (40 Marks)

Convert the the following 2nd order differential equation into first order differential system then solve to find the solution.

(i) $y'' - 6y' + 9y = e^{3t}$

Problem 2 (20x2=40 Marks)

Convert the following 3rd order and 4th order differential equations into the system of first order differential equation system

$$\vec{x}' = \mathbf{A}\vec{x} + \vec{f}$$

(i) $x''' + 4x'' - 2x' - 3x = e^{-3t}$

(ii) $y^{(4)} - 3y''' + 6y'' - 2y' - 4y = 3t + e^{-6t}$