NAME: S.No.   ID:
Maximum Marks: 15   Section:10   Time Allowed: 40 minutes

(1) If $y_1 = x \cos(\ln x)$ is a solution of $x^2 y'' - xy' + 2y = 0$, then find the general solution of the differential equation.

(2) Solve the differential equation $y''' + y'' = e^x \sin x$ by Undetermined Coefficient method.

(3) Solve the differential equation $y''' + 12y'' + 36y' = 0$, $y(0) = 0, y'(0) = 1$, $y''(0) = -7$.