ST. JOSEPH'S COLLEGE (AUTONOMOUS), BANGALORE-27
MID SEMESTER TEST- AUGUST 2016
M.Sc. MATHEMATICS- III SEMESTER
MT DE 9416 : MATHEMATICAL METHODS

TIME: 1 HOUR

MAX. MARKS: 20

Answer any FOUR questions.(5 marks) $5 \times 4 = 20$

1. Solve the Fredholm integral equation $\Psi(x) = x + 2\int_{0}^{1}(xy^2 + x^2 y)\Psi(y)dy$

2. Solve the Volterra integral equation $\Psi(x) = \sqrt{x} + \lambda\int_{0}^{x}\sqrt{xy}\,\Psi(y)dy$

3. Derive the expression for Neumann series for kernel of Fredholm integral equations.

4. Derive the expression for the resolvent kernel of Volterra integral equation.

5. $y'' - 5y' + 6y = 0, y(0) = 0, y'(0) = -1$ Obtain the integral equation corresponding to the differential equation.

6. Find the eigen values of the integral equation $\Psi(s) = g(s) + \lambda\int_{0}^{1}(s + t)\Psi(t)dt$