

KARIMPUR PANNADEVI COLLEGE
MATHEMATICS Programme Course (Second Semester)
Assignment for 1st Internal Assessment, 2019

Full Marks: 20

Answer all Questions

Q.1) Solve the differential equation: $\frac{d^2y}{dx^2} + a^2y = \sec ax$ 5 marks

Q.2) Solve by the method of variation of parameters: $\frac{d^2y}{dx^2} + 2\frac{dy}{dx} + y = \frac{e^{-x}}{x^2}$ 5 marks

Q.3) Solve: $x^3 \frac{d^3y}{dx^3} + 3x^2 \frac{d^2y}{dx^2} + x \frac{dy}{dx} + 8y = 65 \cos(\log x)$ 5 marks

Q.4) Find the eigenvalues and the eigen functions of $\frac{d}{dx} \left(x \frac{dy}{dx} \right) + \frac{\lambda}{x} y = 0$ ($\lambda > 0$) under the boundary conditions $y(1) = 0$ and $y(e^\pi) = 0$. 5 marks