

Subject: Applied Mathematics / F. E. sem II

Time : 1 hour

Marks : 20

* Attempt any 4 questions.

Q.1. Evaluate $\int_0^{\pi/2} \frac{\sin x}{x} dx$ by Simpson's $(3/8)^{th}$ ruleQ.2. Evaluate $\int_0^{\pi/2} \sqrt{\sin x + \cos x} dx$ by Simpson's $(3/8)^{th}$ rule by dividing the interval into six intervals.Q.3. Solve $x^2 \frac{d^2 y}{dx^2} - x \frac{dy}{dx} + 4y = \cos \log x + x \sin \log x$.Q.4. Apply the method of variation of parameters to solve $(D^2 + 3D + 2)y = e^x$.Q.5. Solve $(D-1)^2(D^2+1)y = e^x + \sin^2(x/2)$.Q.6. Solve $(D^2+2)y = e^x \cos x + x^2 e^{3x}$.