

Prabhat Kumar College, Contai

Department of Mathematics

2nd Semester Mathematics (Hons) CBCS Pattern

Paper: C-4

Time: 1 hours

Answer any one :-

1. Solve by method of undetermined coefficients :-

$$\frac{d^2y}{dx^2} - \frac{dy}{dx} - 6y = 20e^{-2x}$$

2. Solve $(D^2 - 2D) y = e^x \cos x$ by the method of variation of parameters.

3. If a vector α be resolved into components parallel and perpendicular to another vector β , Then show that the components are

$$\frac{\alpha \cdot \beta}{\beta^2} \beta \quad \text{and} \quad \frac{\beta \times (\alpha \times \beta)}{\beta^2} \quad \text{respectively.}$$

4. Find \mathbf{t} , \mathbf{b} , \mathbf{n} for the circular helix.

$r = a (\cos \theta, \sin \theta, \theta \cot \beta)$ Find also expressions for curvature and torsion at a point on the curve.