

MA 8353 Transforms and Partial Differential Equations

Important 2mark questions

Unit I

1. Form the partial differential equation from the equation $2z = \frac{x^2}{a^2} - \frac{y^2}{b^2}$.
2. Find the complete integral of the PDE: $z = px + qy + \sqrt{pq}$.
3. Find the partial differential equation by eliminating the arbitrary function 'f' from the relation $z = f(x^2 - y^2)$.

Unit II

1. Sketch the graph of one even and one odd extension of $f(x) = x^3$ in $[0, 1]$.
2. State the sufficient condition for the function $f(x)$ to be expressed as a Fourier series.
3. Define Root mean square value of a function.

Unit III

1. Write all three possible solutions of one dimensional heat equations.
2. Classify the partial differential equation $u_{xy} = u_x u_y + xy$.
3. Write all possible solutions of one dimensional heat equation $\frac{\partial u}{\partial t} = a^2 \frac{\partial^2 u}{\partial x^2}$.

Unit IV

1. State convolution theorem for Fourier transform.
2. State the condition for the existence of Fourier cosine and sine transforms of derivatives.
3. Find Fourier Sine transform of $\frac{1}{x}$.

Unit V

1. The integers 0, 1, 1, 2, 3, 5, 8, ... are said to form a Fibonacci sequence. Model the Fibonacci difference equation.
2. State initial and final value theorems on Z-transforms.
3. Find the Z-transform of $\{n\}$.