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SEM-2360

M. A. / M. Sc. (Fourth Semester) Examination, June 2021

MATHEMATICS

Paper : VI (Opt.)

(Integral Transform-II)

Time Allowed : Three hours

Maximum Marks : 80

Note : *Attempt all questions. Each question carries equal marks.*

1. A beam which is clamped at its ends $x = 0,\ x = l$ carries a uniform load W_0 per unit length. Show that the deflection at any point is

$$y(x) = \frac{W_0\, x^2\, (l-x)^2}{24\, EI} .$$

2. State about complex fourier transfer.

3. An inductor of 3 henrys is in series with a resistance of 30 ohms and emf. of 150 volts. Assuming that $t = 0$ the current is zero find the current at time $t > 0$.

4. State and prove Fourier Integral theorem.

5. Find the finite cosine transform of $\left(1 - \frac{x}{\pi}\right)^2$.