Subject : Mathematics

Teacher name: Rashminder Kaur Semester 4th

Name of the Paper : Paper 3

Class: MSc (Mathematics)

April 2021

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| Two dimensional problems : Plane stress. Generalized plane stress. Airy stress function. General solution of biharmonic equation, Stresses and displacements in terms of complex potentials. The structure of functions of φ(z) and ψ(z). First and second boundary-value problems in plane elasticity. Existence and uniqueness of the solutions. |

May 2021

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| Waves : Propagation of waves in an isotropic elastic solid medium. Waves of dilatation and distortion. Plane waves. Elastic surface waves : Rayleigh waves and Love waves. Extension : Extension of beams, bending of beams by own weight and terminal couples,; bending of rectangular beams |

June 2021

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| Torsion : Torsion of cylindrical bars; Torsional rigidity. Torsion and stress functions. Lines of shearing stress. Torsion of anisotropic beams; Simple problems related to circle, ellipse and equilateral triangle. |

July 2021

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| Variational methods : Theorems of minimum potential energy. Theorems of minimum complementary energy. Reciprocal theorem of Betti and Rayleigh. Deflection of elastic string cental line of a beam and elastic membrane. Solution of Euler's equation by Ritz, Galerkin and Kantorovich methods |