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ED 5092 Advanced Mechanics of materials

Important 2 Mark Questions

Unit I

1. Write the expression for displacement equations of equilibrium.
2. Define St. Venant's Principle.
3. What is strain energy theory?
4. Differentiate: Repeated stress and completely reverse stress
5. Give an example for plane strain problems.
6. How do you relate the popular components of stress with stress function?
7. Write the Castigliano's theorem.
8. Define the term state of strain at a point.
9. Explain the terms plain stress and plane strain.
10. Distinguish between Stress vector and stress tensor.

Unit II

1. State the importance of shear centre.
2. Why unsymmetrical bending is impossible for circular cross section?
3. Define shear centre.
4. Write down the advantages of compounding thick cylinder.
5. Define kern of section.
6. State the importance of shear flow in beams.
7. What are thick cylinders?

Unit III

1. Give some examples of statically indeterminate curved beams.
2. How are flat plates classified as per the thickness and deflection?
3. What is neutral axis in bending?
4. What is notch sensitivity
5. State Maxwell reciprocal theorem.
6. How do you relate the polar components of stress with stress function?
7. List out the assumptions made in Winkler-Bach Theory (Stresses in Curved Bars)

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Unit IV

1. List the difference the torsion circular and non-circular cross sections.
2. What is Prandtl's torsional stress function?
3. What is notch sensitivity.
4. Why the trapezoidal cross-section of a crane hook is preferred over a rectangular cross-section?
5. What is the significance of membrane analogy?
6. Write the equation of Bredt-Batho and express the individual terms in it.
7. What is called as Prandtl's Stress function?

Unit V

1. Sketch the distribution of stresses induced in a shrink fitted thick wall cylinder subjected to internal pressure.
2. What is the meaning of transverse fissure failure?
3. What is stress concentration?
4. What is endurance limit?
5. Mention some line contact applications.
6. Why do you compute contact stress?
7. Why do you analyze the stresses in rotating members?
8. Give some examples of point and line contact stress situations.