

FACULTY OF ENGINEERING

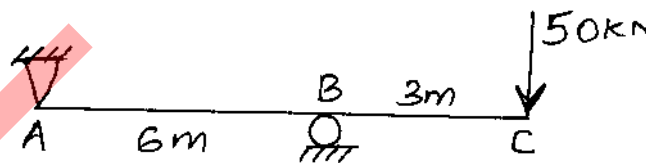
B.E. 2/4 (Civil) II – Semester (Main) Examination, June 2014

Subject : Strength of Materials – II**Time : 3 hours****Max. Marks : 75****Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.****PART – A (25 Marks)**

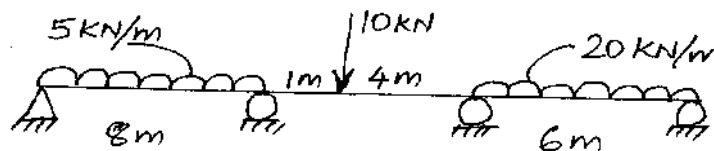
1. Define Torsional stiffness and Modulus of Rupture. 3
2. A cantilever beam of 6m is subjected to a UDL of 10 kN/m throughout the span. Find max slope and deflection. 3
3. Explain Clayperon's theorem of three moments. 3
4. What are the merits of tension co-efficient method? 3
5. What are the adverse effect's of sinking of support of a continuous beam? 3
6. Difference between Laminated and Helical springs. 2
7. Define Modulus of Resilience. 2
8. What are the limitations of Euler's Column theory? 2
9. Write any two reason's for getting approximate values of Crippling load from Euler's and Rankines formula. 2
10. Explain principle stress and strain. 2

PART – B (50 Marks)

11. Determine the deflection under the load, Take $I = 42 \times 10^{-5} \text{ m}^4$, $E = 200 \times 10^6 \text{ kN/m}^2$.



12. Draw SFD and BMD. Show the position of contraflexure of the given continuous beam.

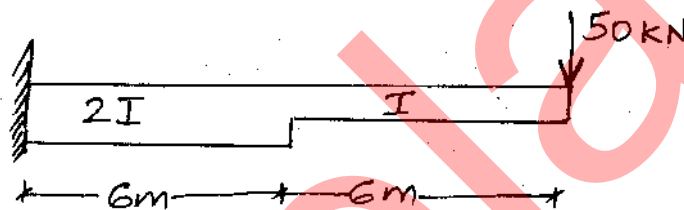


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- 13 A point is subjected to a tensile stress of 60 MPa and a compressive stress of 50MPa acting on two mutually perpendicular planes and shear stress of 10MPa on these planes. Determine the principle stresses as well as maximum shear stress. Also find the values of Max shear stress.

- 14 Derive the Pure Torsion equation. $\frac{T}{J} = \frac{C\theta}{l} = \frac{f_s}{R}$

- 15 Determine the deflection at the free end of a cantilever beam by using Castigliano's theorem, $E = 200 \text{ GPa}$, $I = 2 \times 10^8 \text{ mm}^4$.



- 16 A hollow alloy tube 6m long with dia 50mm and 25mm respectively was found to extend 6.4 mm under a tensile load 80 kN. Find the buckling load for the tube when used as a column with both end's pinned. Also find the safe load on the tube taking factor of safety as 4.

- 17 Find member forces of the given truss by Tension Coefficient method.

