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# SATHYABAMA UNIVERSITY

(Established under section 3 of UGC Act, 1956)

Course & Branch: B.Arch

Title of the Paper: Applied Mechanics

Sub. Code: 621204 (2006/07/08/09)

Date: 11/12/2010

Max. Marks: 80

Time: 3 Hours

Session: FN

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PART - A

(8 X 4 = 32)

Answer ALL the Questions

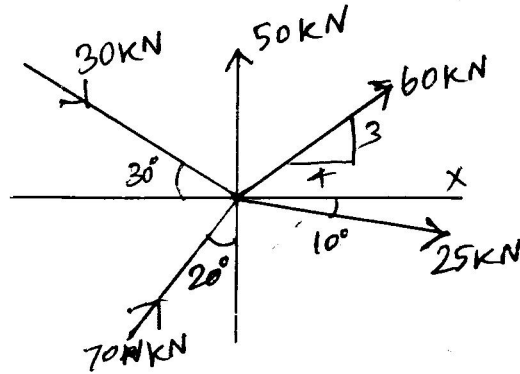
1. State and prove parallelogram law of forces.
2. What are the assumptions made in analysis of trusses?
3. Explain stress and strain with examples.
4. Explain elastic constants.
5. Define centroid. What are the methods to find the c.g of a section?
6. Define and explain section modulus.
7. Define shear force and bending moment in beam.
8. What is a beam? What are the types?

PART – B

(4 x 12 = 48)

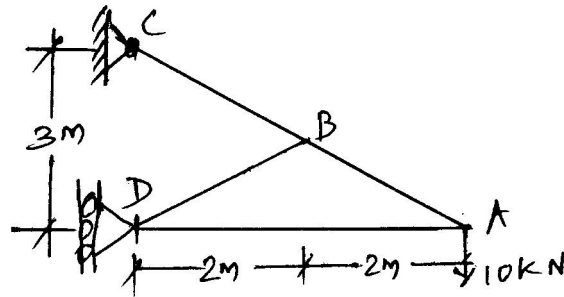
Answer ALL the Questions

9. Determine the resultant both magnitude and direction for the above system of forces.



(or)

10. Analyse the truss by method of joints.



11. The following observation were made during a tensile test on a mild steel specimen 35mm in diameter and 200mm long. Elongation with 40 KN load (within limit of proportionality)  $\delta l = 0.0304$  mm.

Yield load = 160 KN

Maximum load = 240 KN

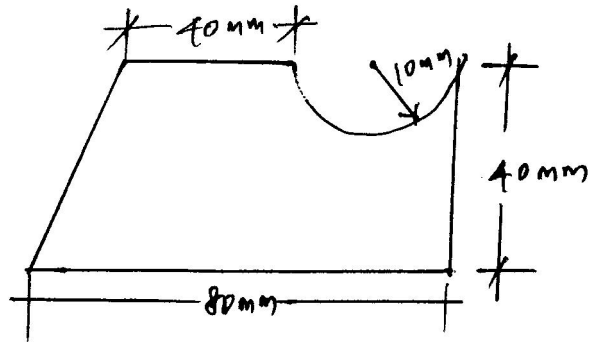
Length of specimen at fracture = 250 mm.

- Determine (a) Young's modulus (b) Yield stress  
(c) Ultimate stress (d) Percentage elongation

(or)

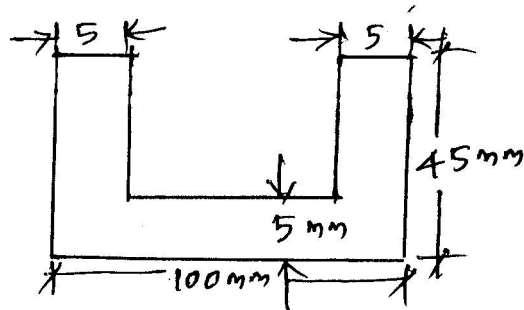
12. A concrete cylinder of diameter 150 mm and length 300 mm when subjected to an axial compressive load of 245 KN resulted in an increase of diameter by 0.130 mm and a decrease in length of 0.28 mm. Compute the value of Poissons ratio and modulus of elasticity.

13. Determine the centroid of the above section.

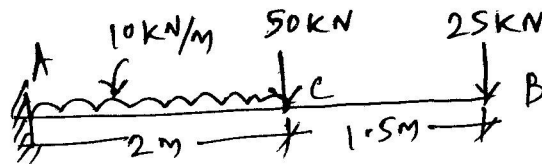


(or)

14. Determine the moment of inertia about centroidal axis of the above channel section.



15. Draw SFD and BMD for the above beam.



(or)

16. Draw SFD and BMD for the above beam.

