B.Arch. Second Semester (Five Year) (CGS)

10014 : Architectural of Structure - I : 02 AR 05

P. Pages : 3 **AU - 2492**

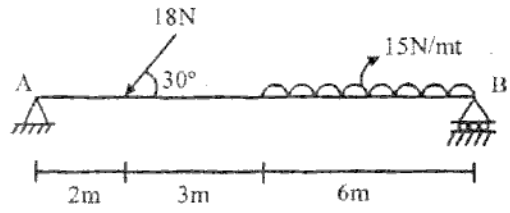
Time : Three Hours * 0 5 2 7 * Max. Marks : 80

Notes : 1. All question carry equal marks.
2. Answer **three** question from Section A and **three** question from Section B.
3. Due credit will be given to neatness and adequate dimensions.
4. Assume suitable data wherever necessary.
5. Illustrate your answer necessary with the help of neat sketches.
6. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION – A

1. a) Discuss the types of supports with neat sketches. **6**

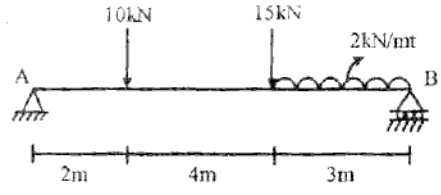
b) Determine the support reaction At A & B for the beam shown in fig. **8**



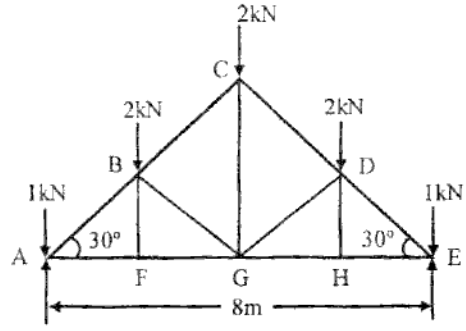
OR

2. a) Define. **5**
i) Coplanar force system.
ii) Co-Linear force system.
iii) Non-Coplanar concurrent system.

b) Determine the support Reactions at A & B for the beam shown in fig. **9**

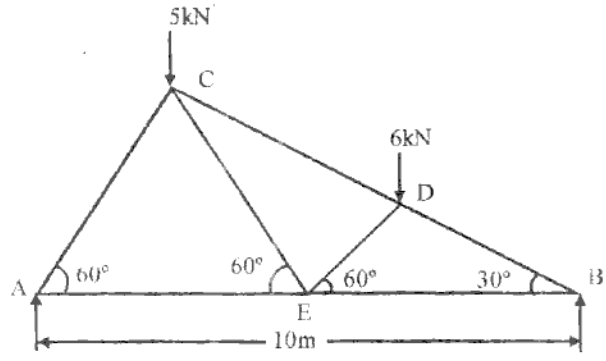


3. Determine the forces in the members of truss by graphical method. **13**



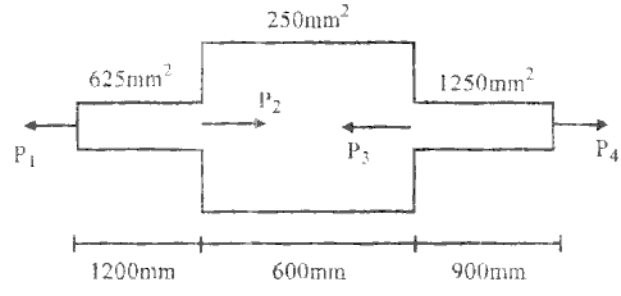
OR

4. Analyze the given truss & tabulate the results. 13



5. a) Explain in brief. 3
i) Volumetric strain. ii) Poisson's ratio.

b) A member ABCD is subjected to point loads P_1, P_2, P_3 & P_4 as shown in fig. Calculate the load P_2 necessary for equilibrium if P_1=45kN P_2=450kN P_4=130kN. Determine the total elongation of the member Take E = 2.1 x 10^5 MPa. 10



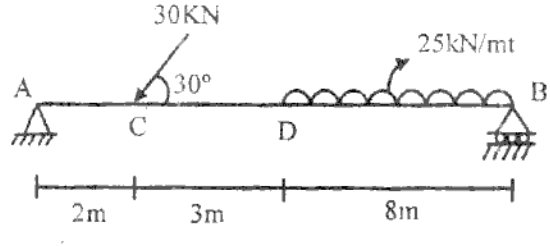
OR

6. a) Define. 4
a) Stress. b) Strain.
c) Modulus of Elasticity. d) Bulk modulus.

b) A load of 10kN is to be raised with the help of a steel wire. Find the minimum diameter of steel wire. If the stress is not exceed 100 MPa. 9

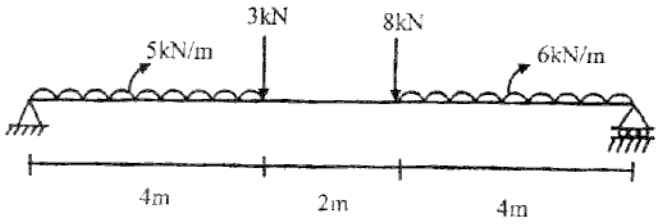
SECTION – B

7. Draw SFD & BMD for the beam shown in fig. 13

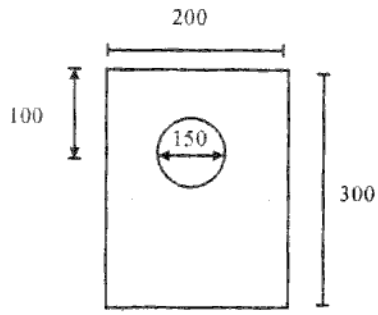


OR

8. Draw SFD & BMD for the beam shown in fig. **13**



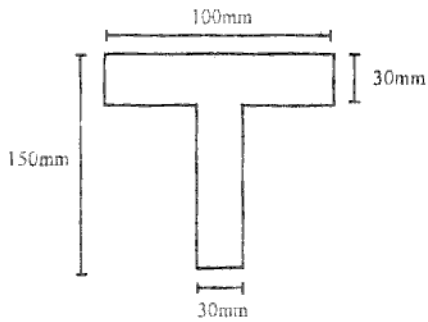
9. Find M.I. of hallow section as shown in fig. about axis of centroid. **14**



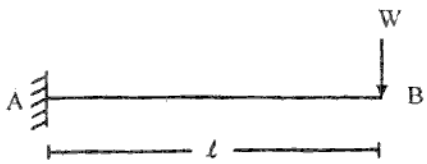
All diamensions are in mm

OR

10. Find the M.I. about centroidal xx & yy axes of the T section as shown in fig. **14**



11. Derive the expression for maximum deflection for fig shown below. **13**



OR

12. a) Write assumptions made in the theory of pure bending. **4**

b) Derive the expression for max deflection for simply, supported beam carrying, UDL of 'w/m' on entire seam of 'ℓ'm. **9**

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