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Total number of pages: [2]

Total number of questions: [6]

B.ARCH. -2nd Sem.

Structure Design-I

Subject Code : AR-205

Paper ID : [] []

Batch: 2015 onwards

(Reg) RP

18/05/18
(6)

Time allowed: 3 Hrs

Max Marks: [60]

Important Instructions:

- The paper consists three parts A, B and C. A total of Three questions are to be attempted from all the parts and one question from each part is compulsory.
- Each question carries 20 marks.

PART-A

Q1. a) Explain the method of moments to determine the centroid of the lamina .

b) Find the centroid and the Moment of inertia of the lamina about the XX and the YY axis shown in the Fig 1.

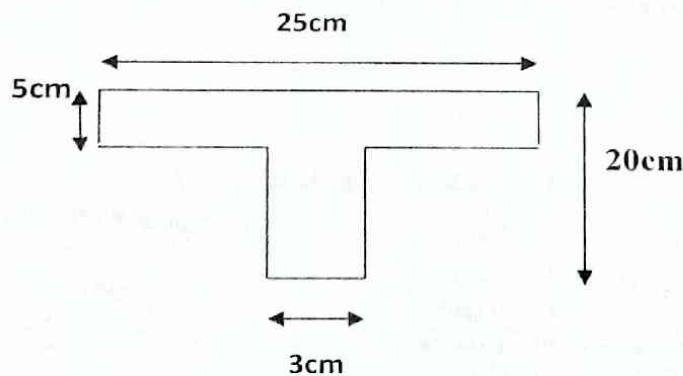


Fig.1

Q2. a) Explain in detail the Theorem of Parallel and Perpendicular axis by giving a suitable example.

b) Find the centroid and also calculate the I_{XX} and I_{YY} for I section shown in the Fig 2.

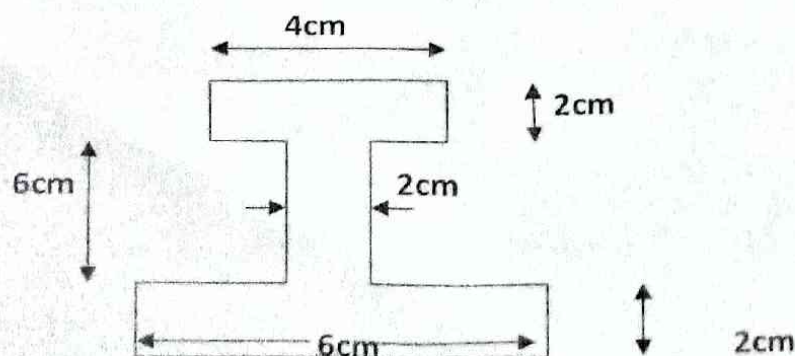
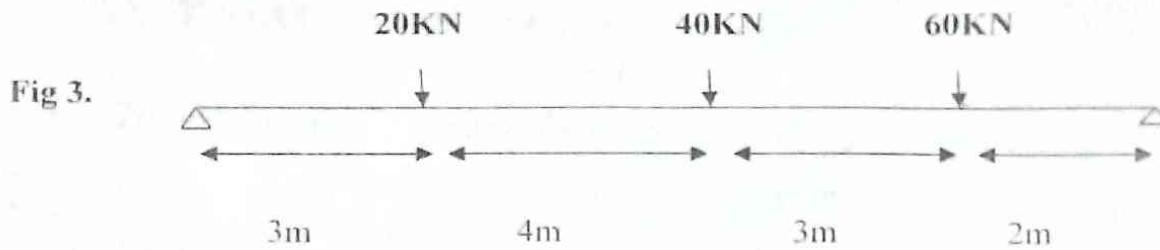


Fig 2.

PART-B

Q3. a) Explain in detail the Theorem of Parallel and Perpendicular axis by giving a suitable example.

b) Draw the S.F.D and the B.M.D for the simply supported beam shown in the fig 3 given below :-



Q4. a) A Simply supported beam 10m span is 350 mm deep. The section of the Beam is symmetrical. and the MOI of the section is $9.5 \times 10^7 \text{ mm}^4$. If the permissible bending stress is 120 N/mm^2 the find the safe point load that can be applied on the centre of the span and also the U.D.L that can be applied on the span.

b). A Cantilever of length 'L' is carrying a U.D.L of 'w' per unit run over the whole length and a point load of 'W' at the free end. Draw the S.F.D and the B.M.D.

PART-C

Q5. Analyse the parallel Chord truss shown in the fig 4 below by the Method of Joint. Assume the forces and the sign conventions in each member.

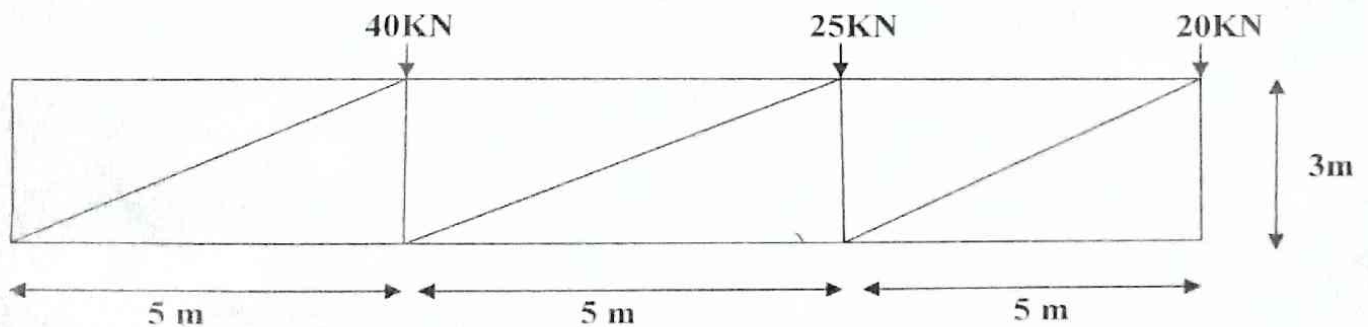


Fig 4.

Q6. Explain the step wise procedure to analyse the Pin jointed Frame by the method of Sections. Also find the forces in the members of the truss shown in the fig 5 below by the method of sections.

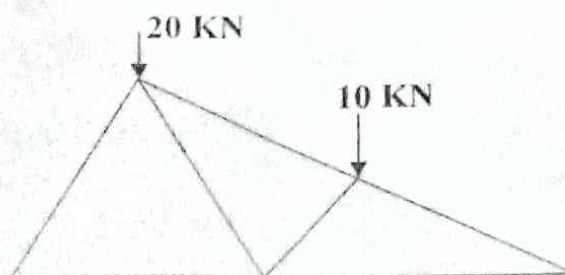


Fig 5.