Total No. of printed pages = 3

CT-401/SA/4th Sem/2013/N

STRUCTURAL ANALYSIS

Full Marks – 70

Pass Marks – 28

Time – Three hours

The figures in the margin indicate full marks for the questions.

1. The simply supported beam shown in fig. 1 is subjected to a set of four concentrated loads which move from left to right. Determine

   (i) Absolute maximum shear

   (ii) Absolute maximum moment in the beam. 14

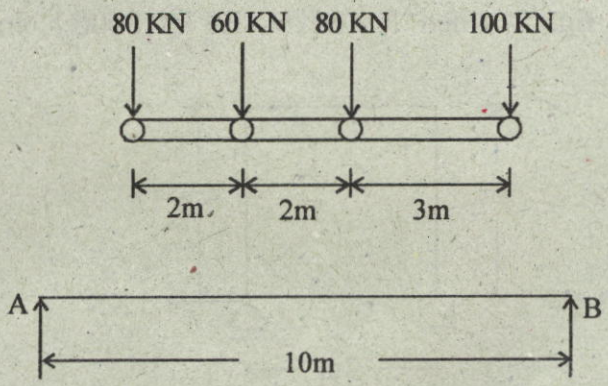

Fig. 1

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2. (a) What is the necessity of FBD in structural analysis ? Explain. 4

(b) Find the rotation and deflection at the free end in the given cantilever beam shown in fig. 2. 10

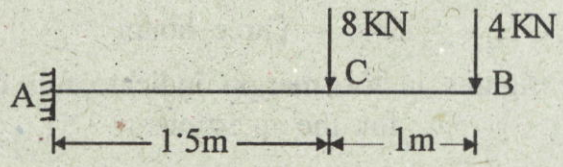

Fig. 2

3. (a) Explain strain energy. 4

(b) Determine the horizontal displacement of the roller end at P of the portal frame shown in fig. 3 when P = 5 KN, EF is 8000 KNm^2. 10

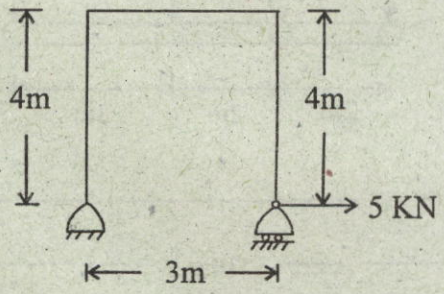

Fig. 3

4. Determine the rotations of A, B, C, E and deflections of C, D and E in the beam shown in fig. 4. Use conjugate beam method. 14

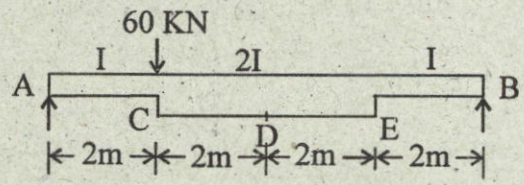

Fig. 4

5. Determine rotations at A, B and C and deflection of C in the beam shown in fig. 5. 14

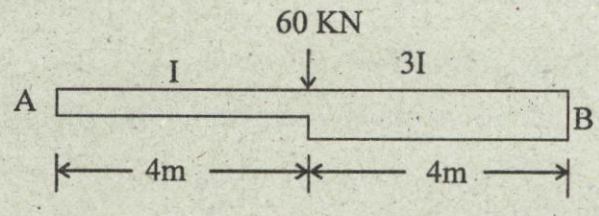

Fig. 5