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**Fourth Semester B.Arch. Degree Examination, Jan./Feb. 2021**  
**Structures - IV**

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions.**

- 1 a. Distinguish between determinate and indeterminate structures with examples. (06 Marks)  
 b. Determine degree of redundancy for the following cases: (Ref Fig.Q.1(b) (i) (ii) (iii)). (04 Marks)

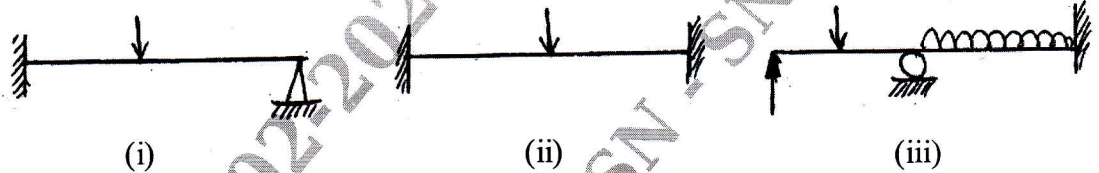


Fig.Q.1(b)

- c. Derive fixed end moments for the fixed beam with UDL throughout. (10 Marks)
- 2 a. Determine the degree of indeterminacy for propped cantilever beam and fixed beam. (04 Marks)  
 b. Analyse the fixed beam shown in Fig.Q.2(b). Draw SFD and BMD. (16 Marks)

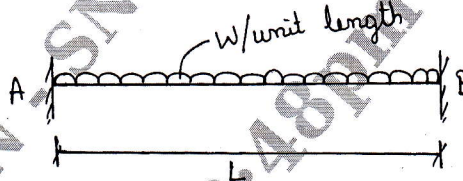


Fig.Q.2(b)

- 3 Analyse the beam shown in Fig.Q.3. Draw BMD and SFD. (20 Marks)

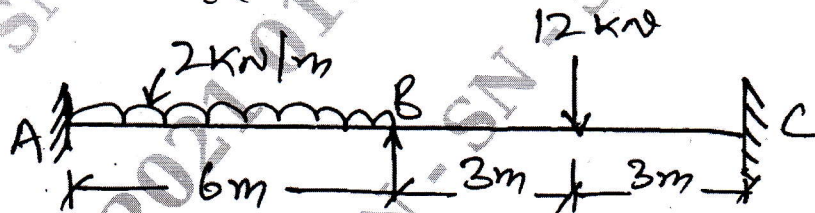


Fig.Q.3

- 4 Analyse the continuous beam shown in Fig.Q.4 by three moment theorem. Draw SFD and BMD. (20 Marks)

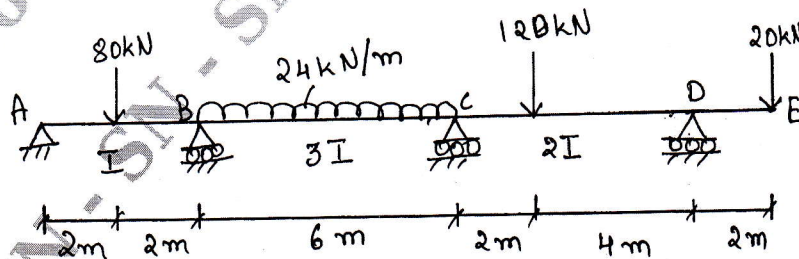


Fig.Q.4

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
 2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

- 5 Analyse the continuous beam shown in Fig.Q.5 by Clapeyron's theorem of three moments. The support B sinks by 8 mm. Draw BMD and SFD. Take  $EI = 8000 \text{ KN-m}^2$ . (20 Marks)

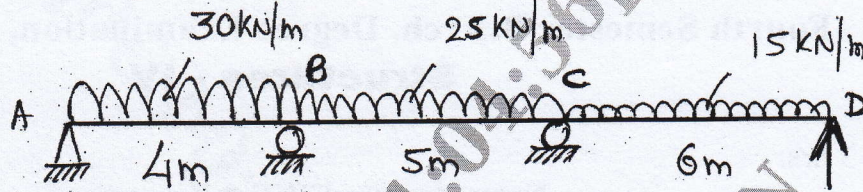


Fig.Q.5

- 6 Analyse the continuous beam shown in Fig.Q.6 by moment distribution method. Draw BMD. (20 Marks)

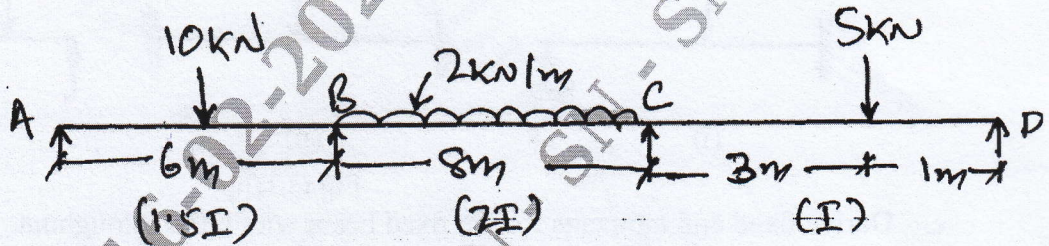


Fig.Q.6

- 7 Analyse the non sway frame shown in Fig.Q.7 by M.D. method. draw only BMD. (20 Marks)

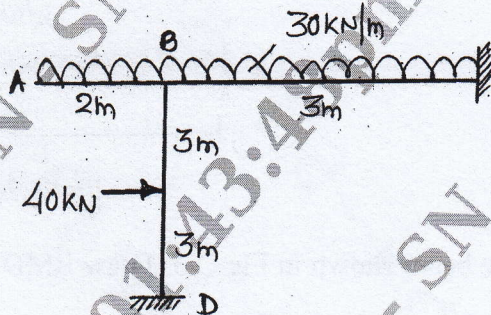


Fig.Q.7

- 8 Analyse the portal frame by moment distribution method shown in Fig.Q.8. Draw BMD. (20 Marks)

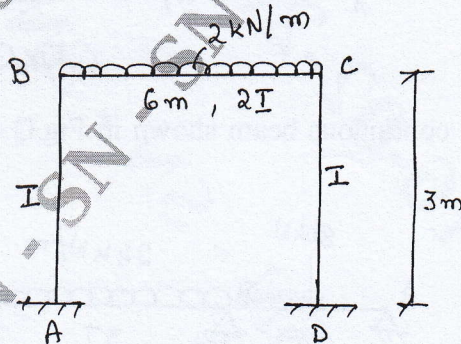


Fig.Q.8

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