

**B.TECH. SEM -IV (CIVIL) 2014 COURSE (CBCS) : SUMMER -
2018**

SUBJECT STRUCTURAL ANALYSIS – I

Day: **Tuesday**
Date: **12/06/2018**

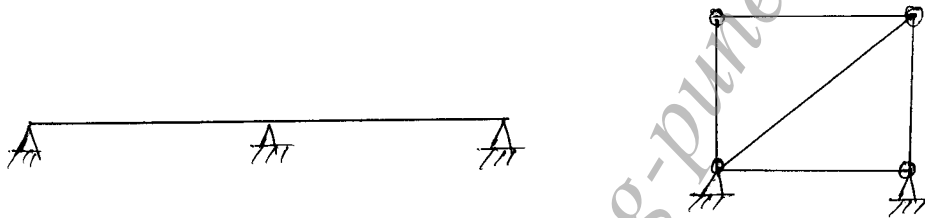
S-2018-2280

Time: **10.00 AM TO 01.00 PM**
Max. Marks: 60

N.B.:

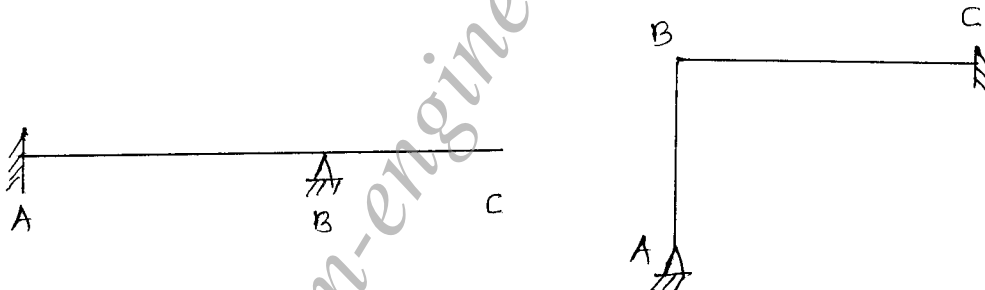
- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat labeled diagrams **WHEREVER** necessary.
- 4) Assume suitable data if necessary.

- Q.1 a)** Derive an expression for strain energy stored in the member due to bending moment. **(05)**
b) Calculate degree of kinematic indeterminacy for following structures. **(05)**

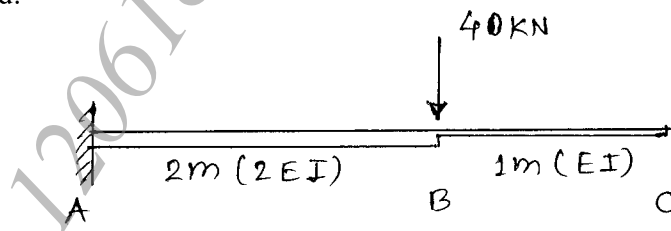


OR

- Q.1 a)** Explain different types of forces developed in the member with suitable example. **(05)**
b) Draw deflected shape of following structures. **(05)**

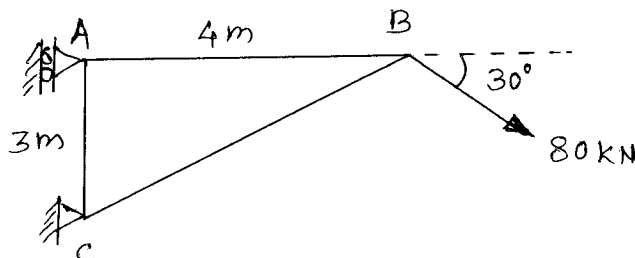


- Q.2** Calculate deflection at 'C' for the beam shown in figure using conjugate beam method. **(10)**



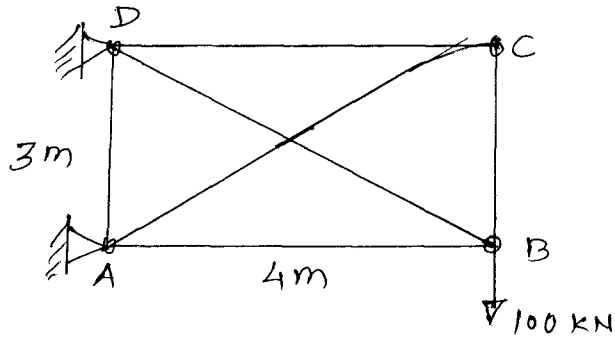
OR

- Q.2** Calculate horizontal deflection of joint 'B' of the truss shown in figure. Assume cross sectional area of members AB, AC, BC are 50, 70, 90 mm² respectively. Take E = 200 GPa. **(10)**



P. T. O.

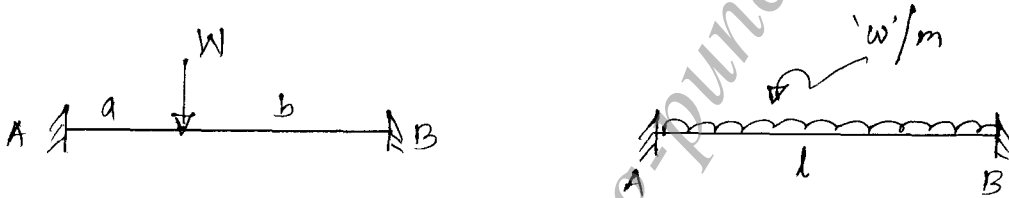
- Q.3** Analyze the truss shown in figure. The cross sectional area of all members = 90 mm^2 , $E = 200 \text{ GPa}$. (10)



OR

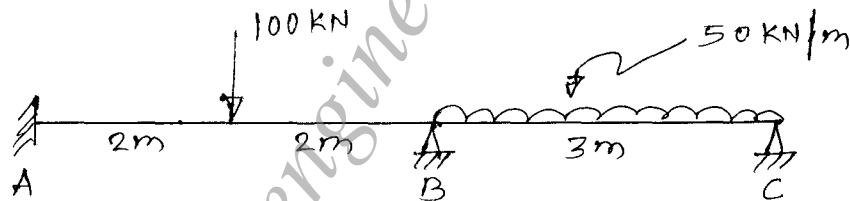
- Q.3** Explain effect of temperature change and lack of fit on the analysis of the structure with suitable examples. (10)

- Q.4** Calculate fixed end moments and draw SFD and BMD for following beams: (10)

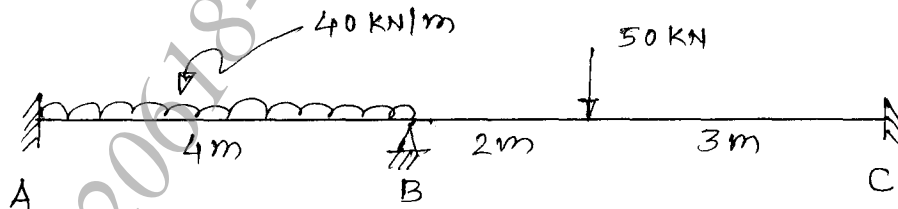


OR

- Q.4** Analyze the beam shown in figure using three moment theorem. (10)



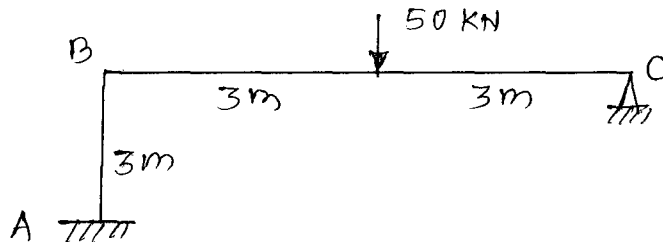
- Q.5** Analyze the beam shown in figure using slope deflection method. (10)



OR

- Q.5** Explain in details slope deflection equating. Also explain equilibrium equations used in slope deflection method with suitable example. (10)

- Q.6** Analyze the frame shown in figure using moment distribution method. (10)



OR

- Q.6** Explain with suitable example flexural stiffness, relative stiffness and moment distribution factor. (10)