

B.Tech Sem – IV (2007 Course) (Civil Engg.) : WINTER - 2018

SUBJECT: STRUCTURAL MECHANICS – I

Day: Friday
Date: 16/11/2018

W-2018-2746

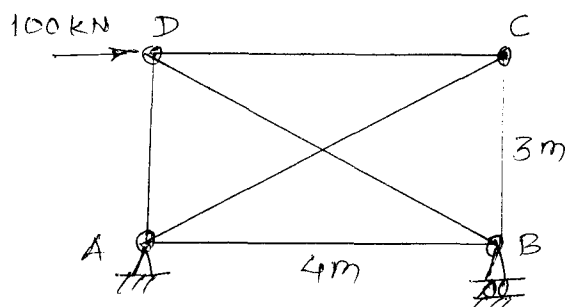
Time: 02.30 PM TO 05.30 PM
Max. Marks: 80

N.B.:

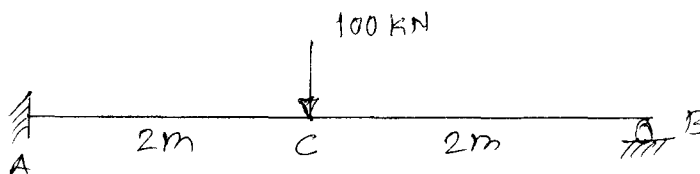
- 1) **Q. No.1** and **Q. No.5** are **COMPULSORY**. Out of remaining attempt **ANY TWO** questions from each section.
- 2) Answer to both the section should be written in **SEPARATE** answer books.
- 3) Use non- programmable **CALCULATOR** is allowed.
- 4) Figures to indicate **FULL** marks.
- 5) Assume suitable data, if necessary.

SECTION – I

- Q.1** a) What is degree of Kinematic indeterminacy? (04)
b) What is Castigliano's second theorem? (04)
c) What is Maxwell's theorem of reciprocal displacement? (04)
- Q.2** Derive equation for strain energy due to bending moment and axial force. (14)
- Q.3** Analyse truss shown in figure. Take $E = 200 \text{ GPa}$, $A = 200 \text{ mm}^2$. (14)



- Q.4** Analyse the beam using strain energy method. (14)

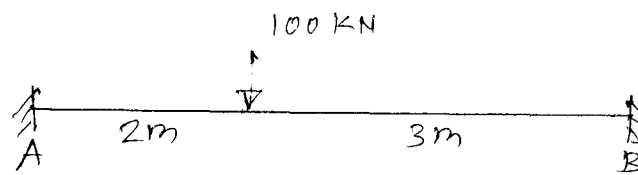


SECTION – II

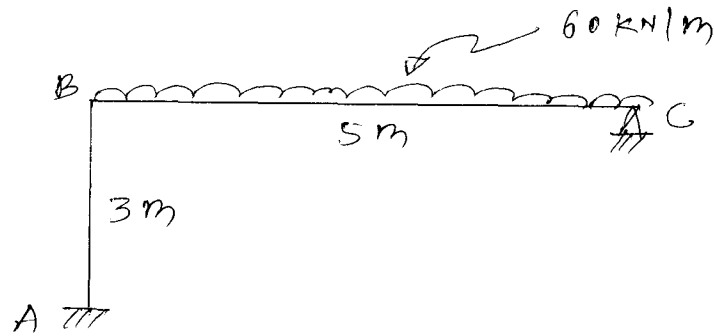
- Q.5** a) What is effect of sinking of support? (04)
b) Explain slope-deflection equation. (04)
c) What is carry over moment? (04)

P.T.O.

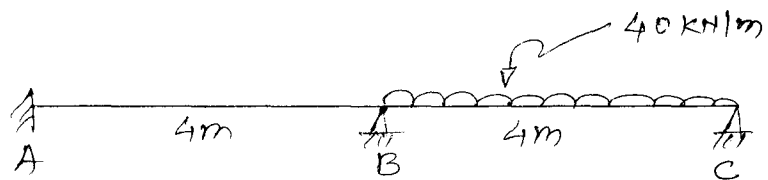
Q.6 Analyse the beam shown in figure. (14)



Q.7 Analyse the frame using slope deflection method. (14)



Q.8 Analyse the beam using moment distribution method. (14)



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