

**B.Tech Sem – IV (2007 Course) (Civil Engg.) : SUMMER - 2019**  
**SUBJECT: STRUCTURAL MECHANICS – I**

Day: Thursday  
Date: 30/05/2019

**S-2019-3011**

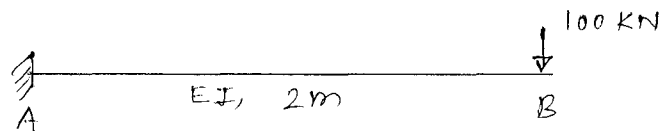
Time: 10.00 AM TO 01.00 PM  
Max. Marks: 80

**N.B.:**

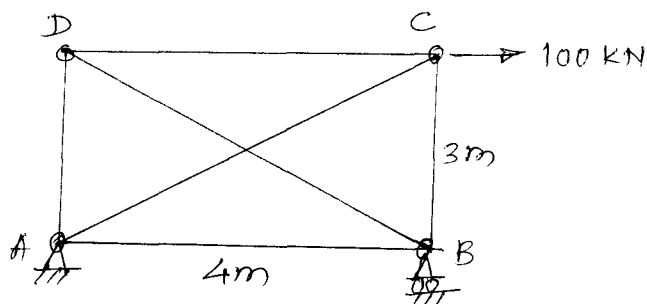
- 1) **Q. No.1** and **Q. No.5** are **COMPULSORY**. Out of remaining attempt **ANY TWO** questions from each section.
- 2) Answer to both the sections should be written in **SAME** Answer book.
- 3) Use non- programmable **CALCULATOR** is allowed.
- 4) Figures to indicate **FULL** marks.
- 5) Assume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

**SECTION – I**

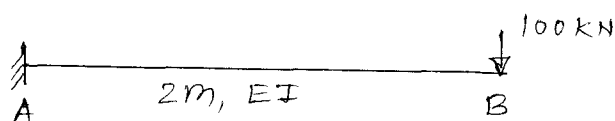
- Q.1** a) What is strain energy? **(04)**
- b) What is lack of fit? **(04)**
- c) What is Maxwell reciprocal theorem? **(04)**
- Q.2** Calculate deflection at 'B' using conjugate beam method. **(14)**



- Q.3** Analyse truss shown in figure. Take  $E = 200 \text{ GPa}$ ,  $A = 300 \text{ mm}^2$ . **(14)**



- Q.4** Calculate deflection at 'B' using strain energy method. **(14)**



P.T.O.

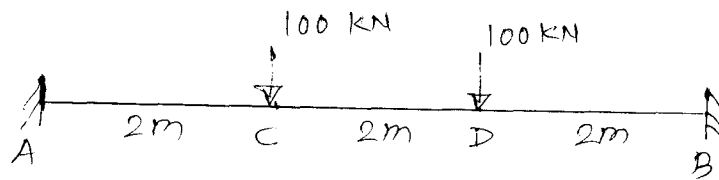
SECTION – II

Q.5 a) What is sinking of support? (04)

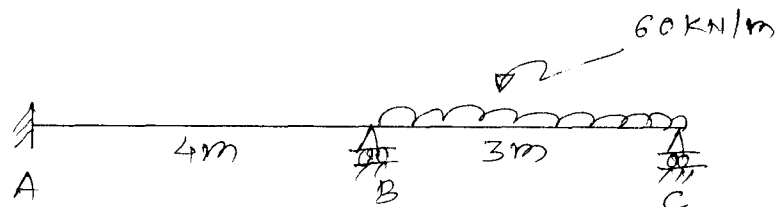
b) What are sway and non-sway frames? (04)

c) What is distribution factor? (04)

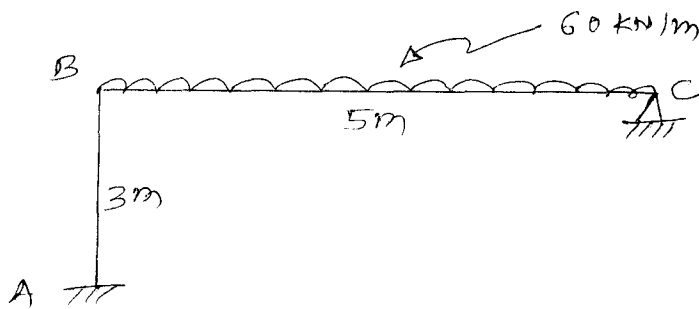
Q.6 Analyse the beam shown in figure. (14)



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



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



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