

Total No. of Questions : 5

Total No. of Printed Pages : 4

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EI-194

B.E. (Vth Sem.) (CGPA) Civil Engg. Exam.-2015

## THEORY OF STRUCTURE-I

Paper : CE-502

*Time Allowed : Three Hours*

*Maximum Marks : 60*

**Note :** Attempt all the questions.

All questions carry equal marks.

### Unit-I

- Q.I (a) Explain the castiglano's first theorem. 4  
(b) The bend ABC shown in fig. 1 carries a concentrated load W at A. Find the vertical deflection of A. Assume uniform flexmal rigidity. 8

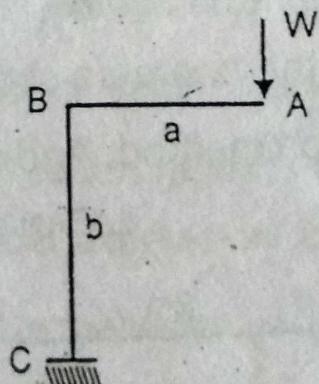


Fig. 1

(2)

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or

Find the vertical deflection of the joint D of the frame shown in Fig. 2. All member have the same cross-sectional area A. The diagonal members are at  $45^\circ$  with the horizontal.

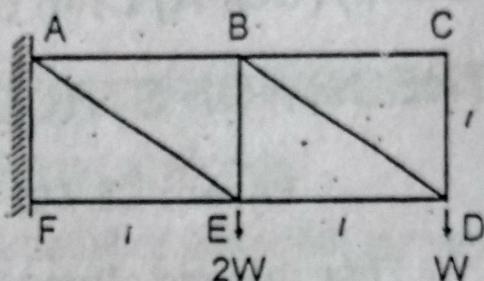
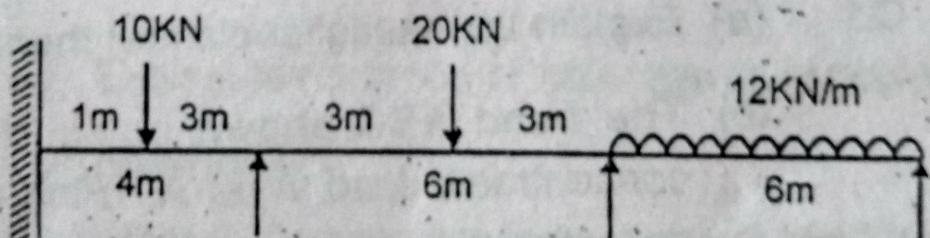


Fig.-2

### Unit-II

Q.II Analyse the beam by theorem of three moments  
as shown in Fig. 3— 12



or

Analyse the beam as shown in Fig. 4 by moment distribution method. And draw B.M. diagram.

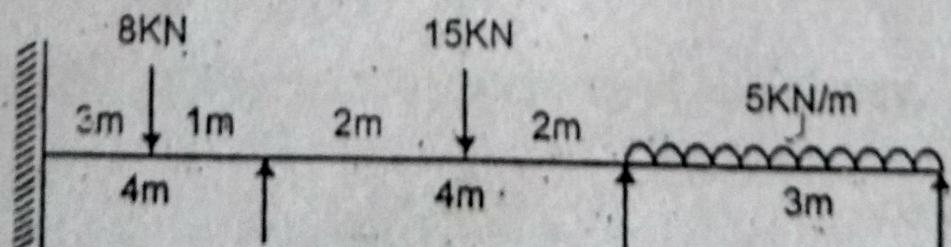


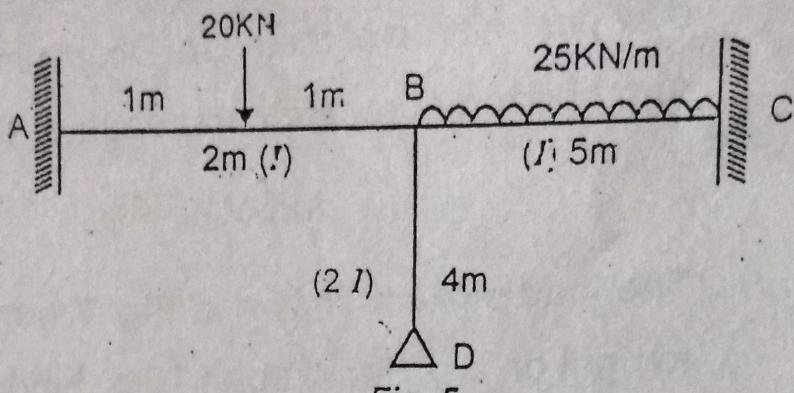
Fig. 4

(3)

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### Unit-III

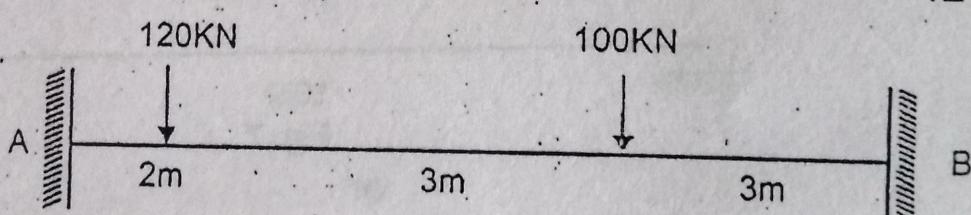
- Q.III Analyse the frame by slope deflection method  
shown in Fig. 5. 12



or

Analyse the beam AB by column analogy method.

Draw B.M. diagram. 12



### Unit-IV

- Q.IV A three-hinged arch has a span of 30 metres and a rise of 10M. The arch carries a udl of 50 KN/m on the left half of its span. It also carries two concentrated loads of 150 KN and 100 KN at 5 m and 10m from the right end. Determine the horizontal thrust at each support. 12

(4)

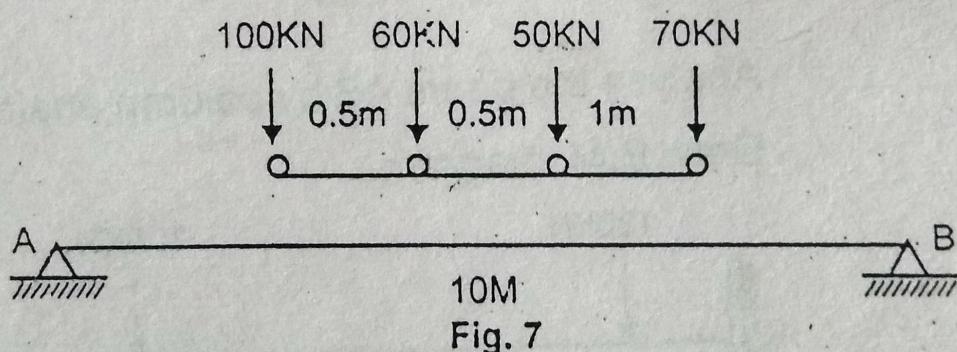
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or

A cable of span l has its end at heights  $h_1$  and  $h_2$  above the lowest point of the cable. It carries a udl of  $w$  per unit run of the span. Determine the vertical and horizontal reactions at each end. 12

### Unit-V

Q.V The load system shown in Fig. 7 moves from left to right on a girder of span 10m. Find the absolute maximum bending moment for the girder— 12



or

Draw the influence line diagram (ILD) for reaction of A and bending moment at D for the beam shown in Fig.8.

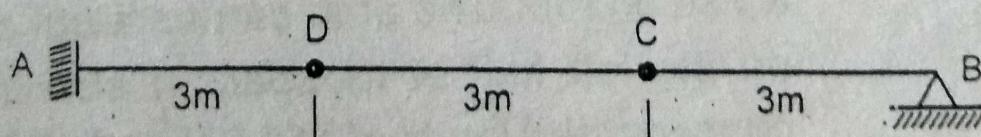


Fig. 8