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B. Tech. 4th Semester (Civil Engg.) F. Scheme

Examination, May-2014

STRUCTURAL ANALYSIS-II

Paper-CE-202-F

Time allowed : 3 hours]

[Maximum marks : 100

Note : (i) Question No. 1 is compulsory. Attempt one question from each section.

(ii) All questions carry equal marks.

(iii) Assume missing data, if any, suitably.

1. Explain the following :

(a) Eddy's theorem of bending moment

(b) Perfect frame and deficient frame

(c) Shear centre for channel

(d) ILD for shear force

(e) Castigliano's 1st shear force. 5×4=20

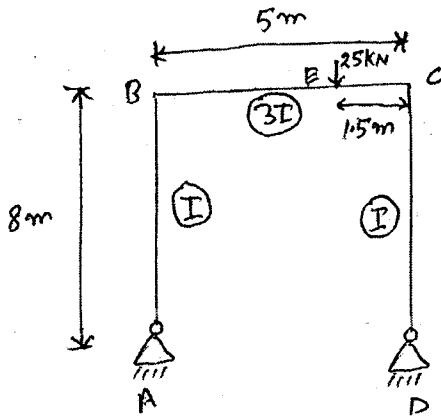
Section-A

2. (a) Describe how Castigliano theorem is helpful in analyzing the redundant frames. 10

(2)

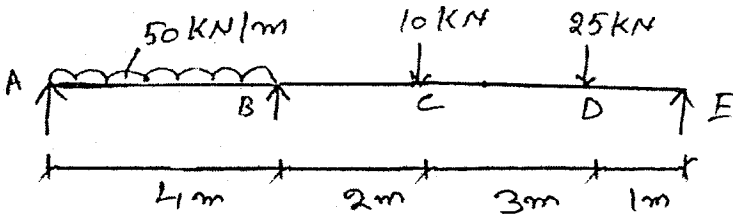
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- (b) Using Castigliano's theorem, determine the reactions for the portal frame as shown in figure.



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3. Analyze the continuous beam given below by slope deflection method. Assume EI constant.



20

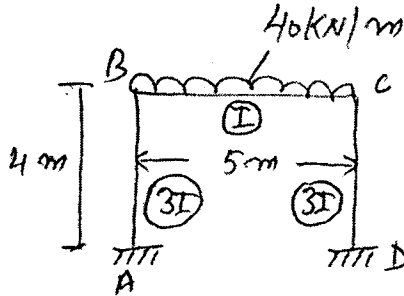
Section-B

4. (a) A three hinged parabolic arch of span 30 m and rise 6 m carries a udl of 30 kN/m for a length 12 m from left hinge towards centre. Find the horizontal thrust and reactions at the springs. 15
- (b) What do you mean by theoretical hinge? 5

(3)

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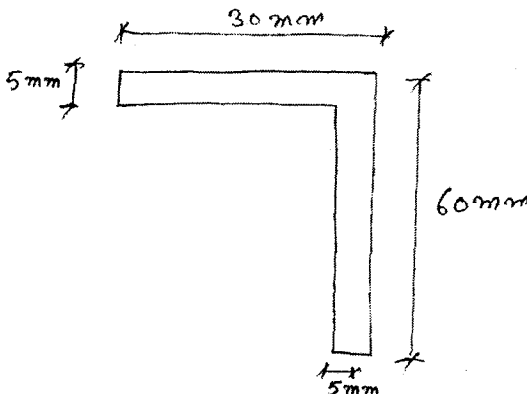
5. Draw SF and BM diagrams of a frame as shown in figure.



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Section-C

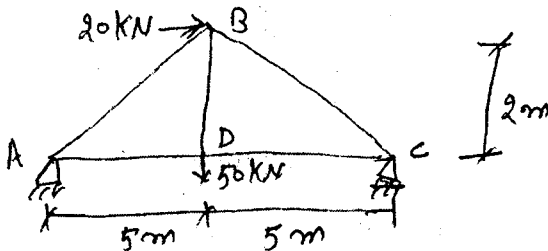
6. A suspension cable of span length 25 m has maximum dip of 2 m and having supports at same load. Find the maximum tension in the cable if it is loaded with udl of 20 kN/m through its length. 20
7. (a) Write a short note on unsymmetrical bending ? 5
(b) Determine the principal moments of inertia for an unequal angle section $60 \times 30 \times 5$ mm as shown in figure.



15

Section-D

8. (a) Define statically determinate and indeterminate truss. 5
- (b) Analyze the truss as shown in figure by method of joints. 15



9. Analyze the truss as shown in figure by method of tension coefficients and determine the forces in the members AB, AE, BE and BC. 20

