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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]*

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*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

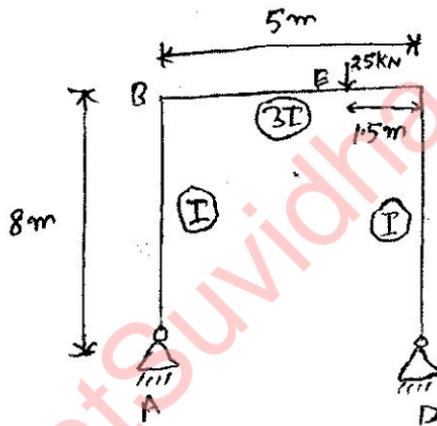
(e) Castigliano's 1<sup>st</sup> shear force.

5×4=20

(2)

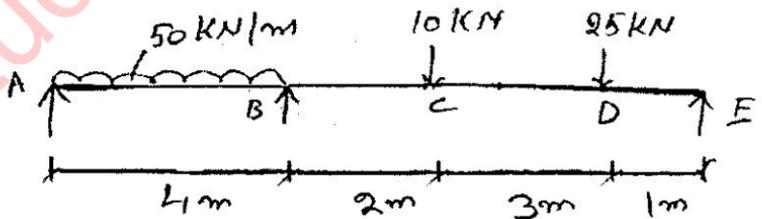
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- (b) Using Castigliano's theorem, determine the reactions for the portal frame as shown in figure.



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



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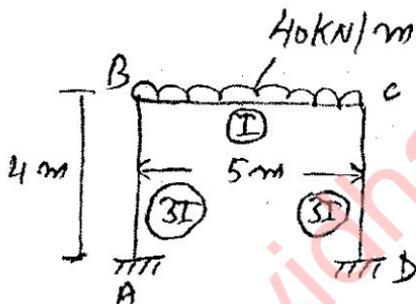
## Section-B

4. (a) A three hinged parabolic arch of span 30 m

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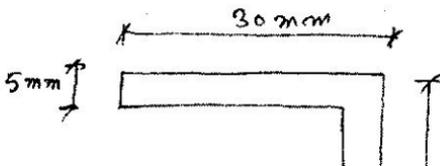
5. Draw SF and BM diagrams of a frame as shown in figure.



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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.

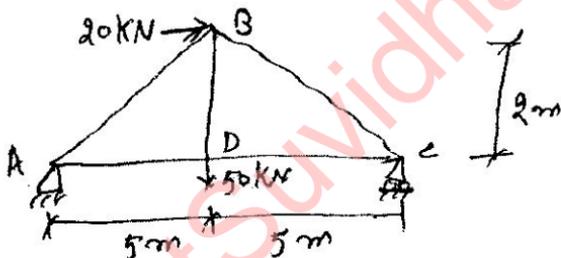


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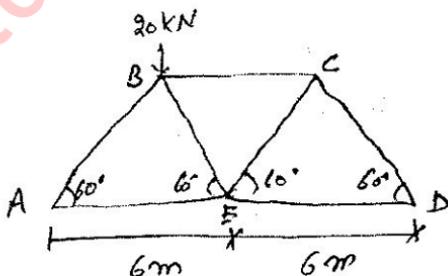
Section-D

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



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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.



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