

Total No. of Questions : 8]

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Roll No

CE-4005 (CBGS)**B.E. IV Semester**

Examination, May 2018

Choice Based Grading System (CBGS)**Structure Analysis - I****Time : Three Hours****Maximum Marks : 70****Note:** i) Attempt any five questions.

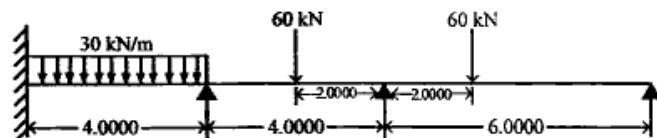
ii) All questions carries equal marks.

iii) Draw neat diagram whenever necessary.

1. A fixed beam AB of span 6m is carrying a UDL of 4 kN/m over the left half of the span. Calculate the Fixed End moments and support reaction and plot the bending moment diagram. 14

2. A continuous beam ABCD of 10m span simple supported at A, B, C and D. The beam consists of AB, BC and CD of length 3m, 4m and 3m respectively. It carries a point of 12 kN on span AB at a distance of 1.5m from A and a load of UDL 4 kN/m over a span of CD. And the moment of inertia I on the span BC and 2I over the other span AB and CD. Find the reaction and moment also draw the S.F and B.M.D diagram. Using theorem of three moments. 14

3. Using slope deflection method calculate all the moment at the supports and draw the SFD and BMD of the fig shown below: 14



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4. A 3 hinged arch is a circular 25m span with a central rise of 5m. It is loaded with a concentrated load of 10kN at a 7.5m from the left hand side. Find the 14

- a) Horizontal thrust
b) Reaction and its angle (θ) with the horizontal thrust at Each end
c) Bending moment under the load
d) Bending moment at a distance of 7.5m from the right side and sketch the both moment

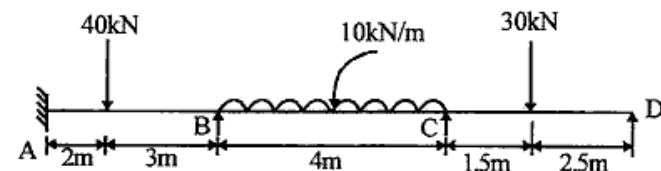
5. Four Equal loads of 150kN each equally spaced at 2m apart followed by a Udl of 60kN/m at a distance of 1.5m from the last 150kN load cross a girder 20m span from right to left. Using influence line, calculate the shear force and bending moment at a section 8m from the left hand support when the loading 150kN is at a 5m from the left hand support. 14

6. Write a notes on: 14

- a) Influence line, Muller-Breslau principle
b) Maxwell's Reciprocal Theorem Derivation
c) Castigliano's first and second theorem

7. State the principle of Virtual work. Explain its application to flexural member. Find the vertical deflection and rotation at the end of simple supported beam of span L subjected to a concentrated load at the mid of span. 14

8. Analyses the beam loaded as shown in fig. by the moment distribution method. Sketch the bending moment and shear force. 14



EI = Constant

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