

Roll No.

2152

B. E 4th Sem. (Civil Engg.)

Examination May, – 2011

STRUCTURAL ANALYSIS-I

Paper : CE-202-E

Time : Three hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : 1. Attempt any *five* questions

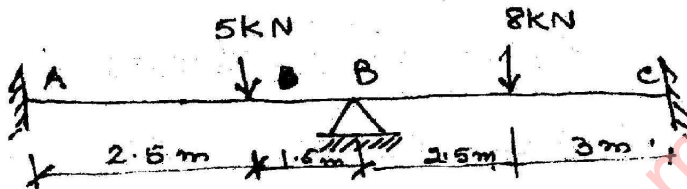
2. All question carry equal marks

3. Assume suitable data if missing or required.

1. (a) Differentiate between determinate and indeterminate structures. show with the help sketches. 10

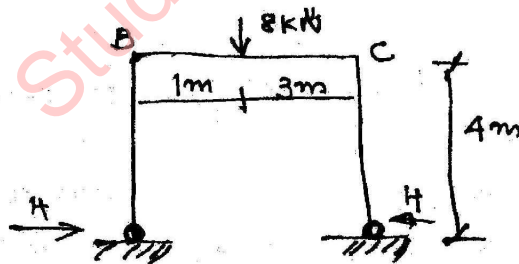
(b) A beam ABC as shown below is fixed at point A&B. using slope deflection method compute the

moments and plot the B.M diagram. The beam has constant EI for both the spans.

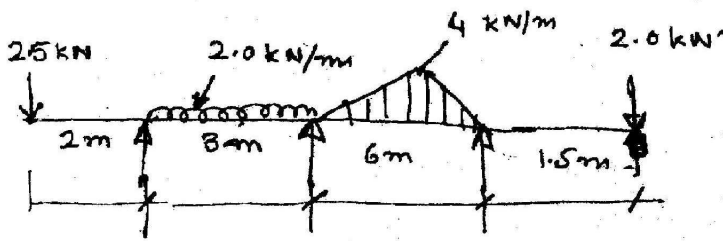


2. (a) State castigliano's first theorem

(b) A portal frame ABCD is hinged at A and D and has rigid joints B and C is loaded as shown using the method of minimum strain energy analyse the frame plot the B.M diagram

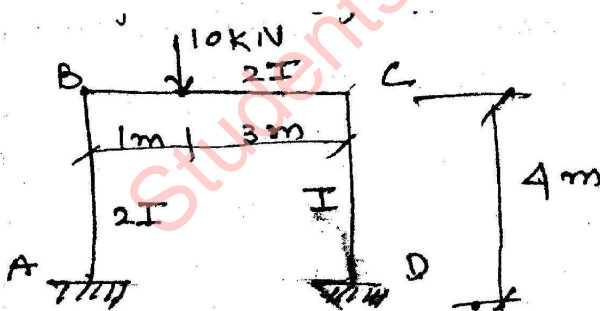


3. Analyse the continuous beam as shown in figure by moment distribution method. Draw B.M. diagram



4. (a) State the properties of an analogue column.

(b) A portal ABCD has end 'A' fixed and end D hinged, with rigid joints at B and C. Plot the B.M. for the frame by method of column analogy,



5. Determine the principal moment of inertia for an unequal angle section $200 \times 150 \times 10$ mm. 20

6. A two hinged arch parabolic has 20m span and rise 4m carries a U.D.L of 50 kN/m on the left half of the

span. Find the reactions at support and position and amount of max. B.M

20

7. Write short notes on any *five* of the following :

$5 \times 4 = 20$

- (i) General cable theorem
- (ii) Effect of temp stresses in two hinged arch.
- (iii) Kinematic and static indeterminacy
- (iv) Distribution factor for fixed end and hinge support
- (v) The effect of sway with different end conditions
- (vi) Shear centre for 'Z' sections
- (vii) Framed structures
- (viii) Properties of analogous column.
- (ix) Horizontal thrust in cables subjected to U.D.L.
- (x) Articulated indeterminate structures.