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Reg. No. : | | | | | | | | | | |

Question Paper Code: 56101

B.E./B.Tech. DEGREE EXAMINATION, MAY 2018

Sixth Semester

Civil Engineering

15UCE601- STRUCTURAL ANALYSIS – II

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

PART A - (5x 1 = 5 Marks)

Answer All Questions

1. The expression for plastic modulus of section(Z_p) CO1- R

   a) $Z_p=I/y$ b) $Z_p=y/I$ c) $Z_p=A/2(y_1+y_2)$ d) $Z_p=I/z$

2. [P]=[k][Δ] where k is CO2- R

   (a) Flexibility (b) stiffness (c) Load (d) Displacement

3. The relation between flexibility and stiffness is CO3- R

   (a) directly proportional (b) inversely proportional

   (c) both are same (d) None of the above

4. Most of the FEM software use CO4- R

   (a) displacement method (b) force method (c) stress method (d) hybrid method

5. A suspension cable, supporting loads, will be under CO5- R

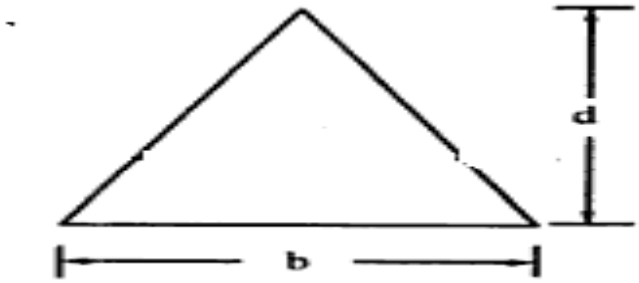
   (a)tension (b)compression (c)bending (d) shear

PART – B (5 x 3= 15Marks)

6.	Define shape factor.	CO1- R
7.	Write the element stiffness for a truss element.	CO2- R
8.	What is the compatibility condition used in the flexibility method?	CO3- R
9.	Define Shape function.	CO4- R
10.	What are the main functions of stiffening girders in suspension bridges?	CO5- R

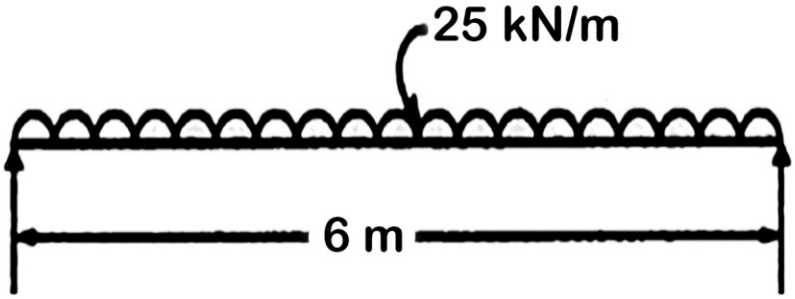
PART – C (5 x 16= 80Marks)

11. (a) Find the shape factor for the triangular section shown in fig. CO1-App (16)

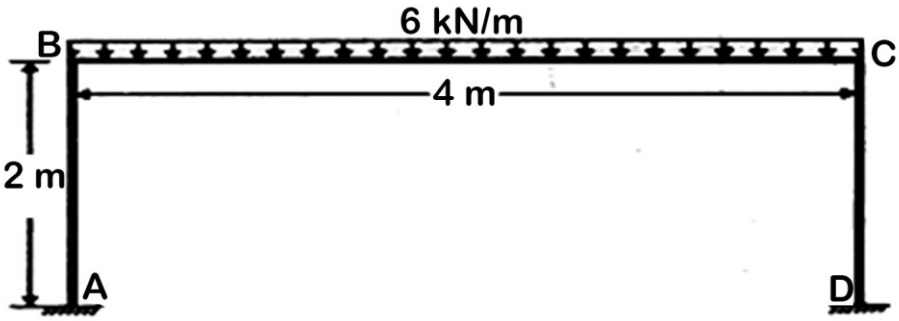


Or

(b) A beam of span 6 m is to be designed for an ultimate UDL of 25 kN/m. The beam is simply supported at the ends. Design a suitable I section using plastic theory, assuming σ_y=250 N/mm^2. CO1- App (16)



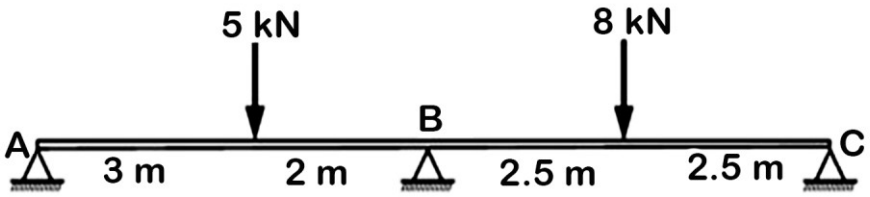
12. (a) Analyse the portal frame shown in fig. by stiffness method and draw the BMD. CO2- Ana (16)



Or

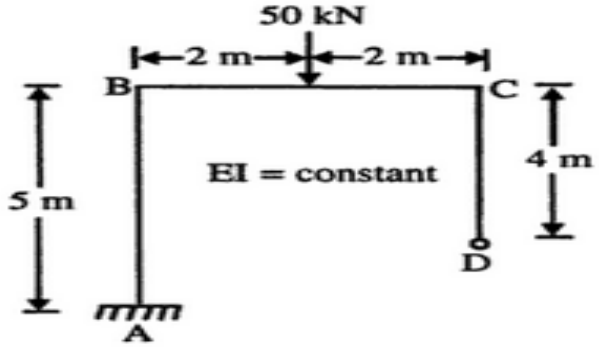
(b) Write the step by step procedure of matrix stiffness method. CO2- Ana (16)

13. (a) Analyse the beam shown in fig. by flexibility method and draw the BMD. CO3-Ana (16)



Or

(b) Analyse the frame using matrix flexibility method. CO3- Ana (16)

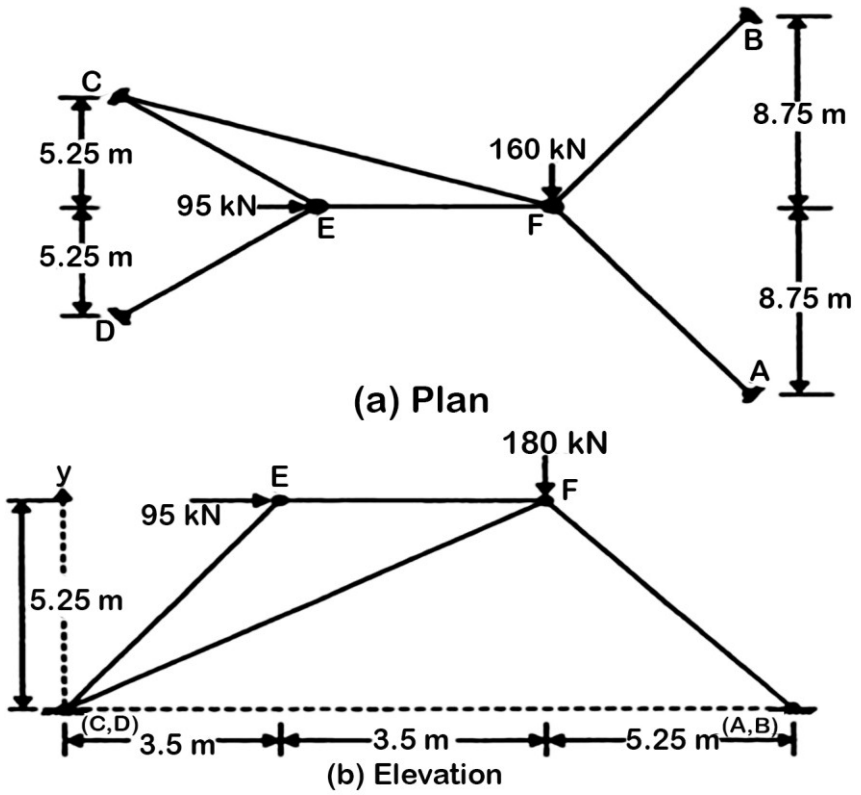


14. (a) Explain the basic steps involved in Finite element of analysis of a structure. CO4- Ana (16)

Or

(b) Determine the shape functions for the Constant Strain Triangle (CST). CO4- Ana (16)

15. (a) Analyse the space frame shown in fig using tension coefficient method CO5-Ana (16)



Or

(b) A suspension cable is supported at 2 points 25 m apart. The left support is 2.5 m above the right support. The cable is loaded with udlof 10 kN/m throughout the span. The maximum dip in the cable from the left support is 4 m. Find the maximum and minimum tension in the cable. CO5-Ana (16)