

B.Tech III Year I Semester (R15) Supplementary Examinations June 2018

STRUCTURAL ANALYSIS - II

(Civil Engineering)

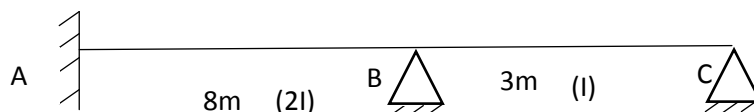
Time: 3 hours

Max. Marks: 70

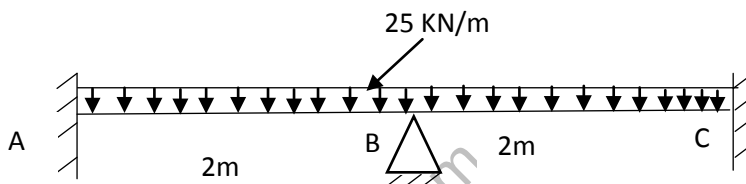
PART - A (Compulsory Question)

1 Answer the following: (10 X 02 = 20 Marks)

- Write the formulae for the horizontal thrust for two hinge arch carrying udl throughout the span and Point load at crown.
- Find the horizontal thrust for a three hinged parabolic arch carrying a point load of W at its crown.
- Explain Rib Shortening effect in the arches.
- Compare the moment distribution method and Kani's method.
- Determine the Rotation factor of all the members for the continuous beam shown in figure below.



- Explain the difference between local stiffness and global stiffness matrix.
- Distinguish between static indeterminacy and kinematic indeterminacy?
- Determine the slope at the joint B for the Continuous beam shown in figure below.



- Write the values of shape factor for (i) Circle and (ii) Diamond
- Define Plastic Modulus.

PART - B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT - I

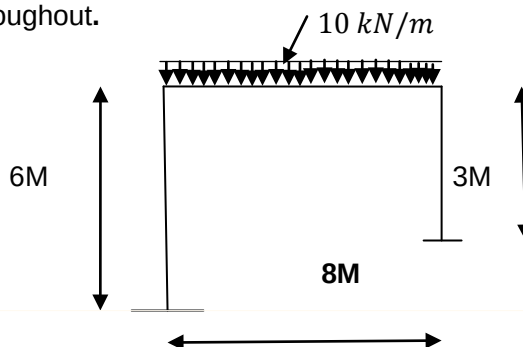
- A two hinged parabolic arch has a span of 50 m and rise 12 m. A concentrated load of 8kN acts at 15m from the left support .Calculate the horizontal thrust, maximum bending moment at 15m from left support

OR

- A three-hinge circular arch of span 12M and rise of 5M having supports at same levels, carries a UDL of intensity 36kN/m over the left half span and a concentrated load of 64 kN at a section 5 m from the right support. Determine the horizontal thrust developed. Find the Normal thrust and Radial Shear for the arch.

UNIT - II

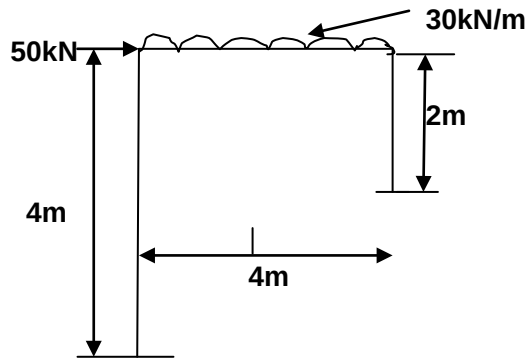
- Analyse the frame shown in fig below using Moment Distribution Method and draw the bending moment diagram. EI is constant throughout.



OR

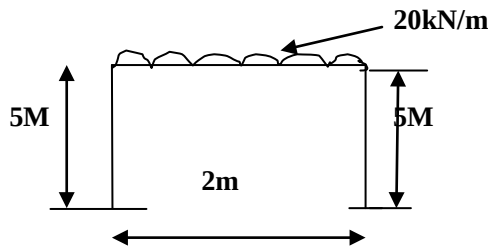
Code: 15A01505

- 5 Analyse the frame as shown in fig below using slope deflection method and sketch the bending moment diagram. $2I_{AB}=I_{BC}=2I_{CD}=I$.



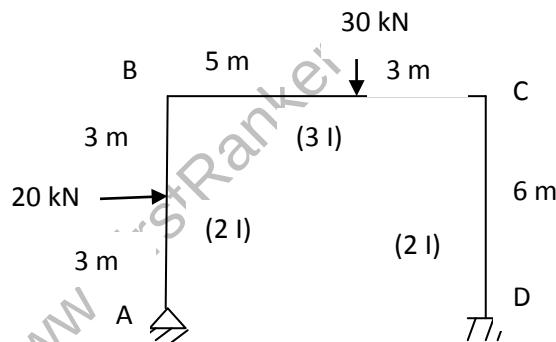
UNIT – III

- 6 Analyse the frame as shown in fig below using Kani's method and sketch the bending moment diagram?



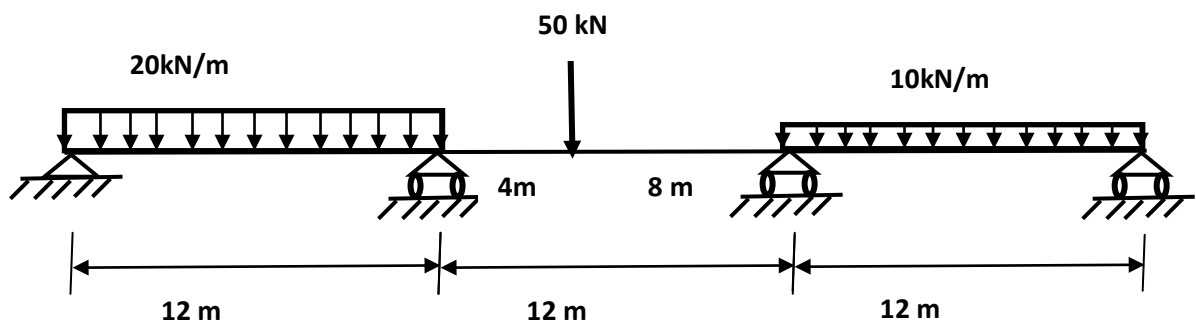
OR

- 7 Analyse the frame as shown in fig below using Kani's method and sketch the bending moment diagram?



UNIT – IV

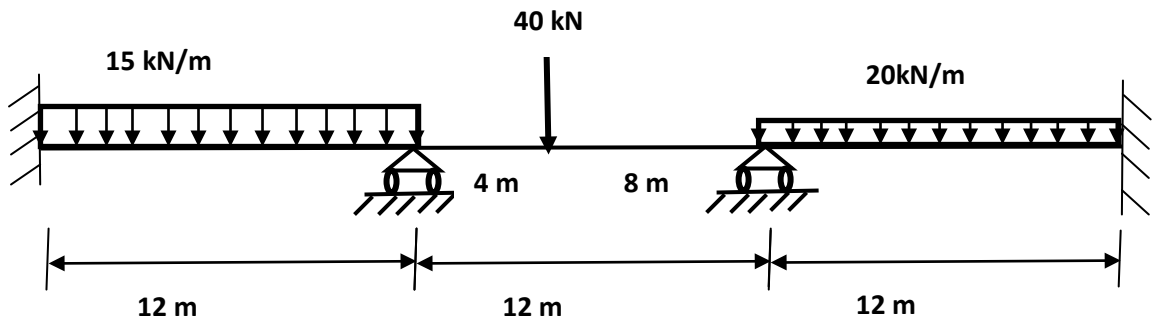
- 8 Analyse the beam shown in fig below using Flexibility matrix method. Take EI constant throughout.



OR

Code: 15A01505

- 9 Analyse the beam shown in fig below using Stiffness matrix method. Take EI constant throughout.



UNIT – V

- 10 A fixed beam of span 8m carries a udl load w on the left half portion. If the fully plastic moment of the beam is 150 kN-m. Find the value of the collapse load.
- OR**
- 11 A propped cantilever of span L is subjected to uniformly distributed load w per unit length. Determine the collapse load, if the plastic moment capacity of the beam is M_p .

