CODE NO: 07A50104 | R07 | SET - 1

III B.TECH - I SEMESTER EXAMINATIONS - MAY, 2011
STRUCTURAL ANALYSIS-II
(CIVIL ENGINEERING)

Time: 3hours **Max. Marks: 80**

Answer any FIVE questions
All Questions Carry Equal Marks

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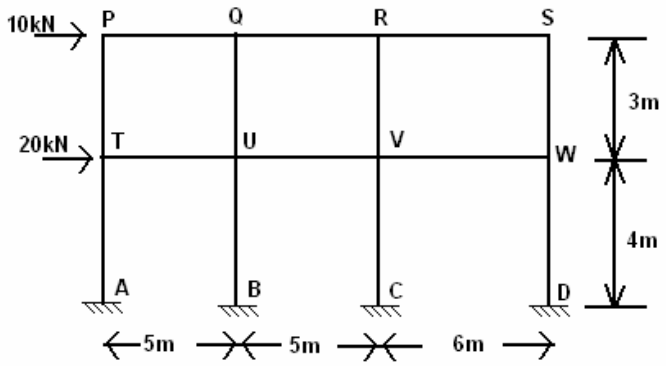
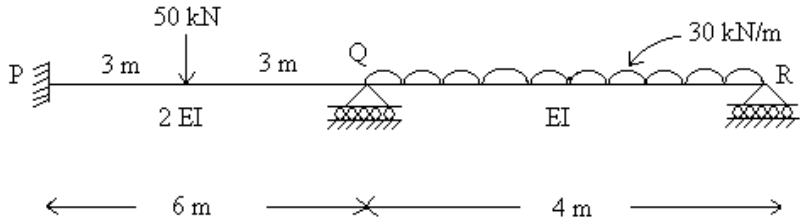
1. A three hinged semi – circular arch of radius 'R' carries a uniformly distributed load of intensity w/unit length over its entire horizontal span. Determine the reactions at supports and maximum bending moment in the arch? [16]

2. A uniformly distributed load 30kN/m covers the left half of the span of parabolic arch of 36m span and central rise of 8m. Obtain the position and magnitude of maximum bending moment? Find the shear force and normal thrust at that section? Assume the moment of inertia at a section carries as secant of slope at the section. Neglect rib shortening. [16]

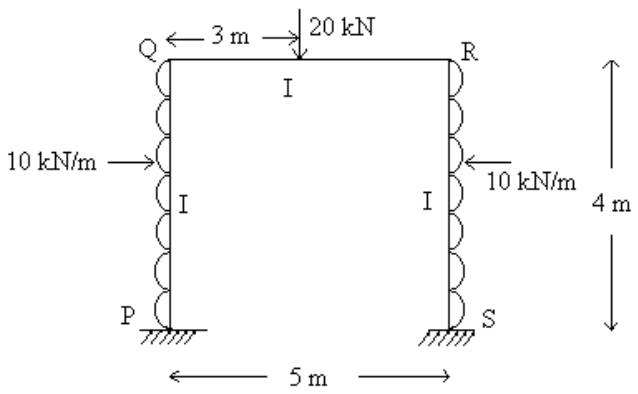
3. Analyse the frame shown in the figure by cantilever method. Cross-sectional areas of all columns is same. [16]



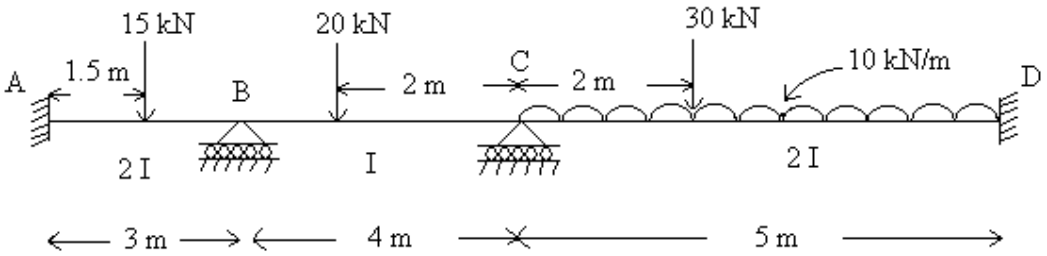
4. Analyse the beam shown below using slope-deflection method if the support Q sinks by 8 mm. EI = 4000 kNm^2; Draw SFD, BMD and Elastic curve. Find the distances of points of contraflexure from supports. [16]



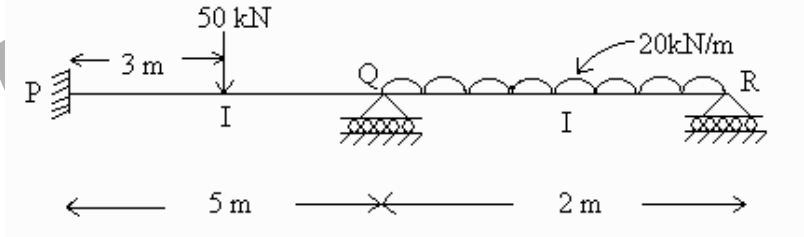
5. Analyse the symmetrical portal frame shown below using MOMENT DISTRIBUTION METHOD? Draw SFD & BMD. Also draw elastic curve. [16]



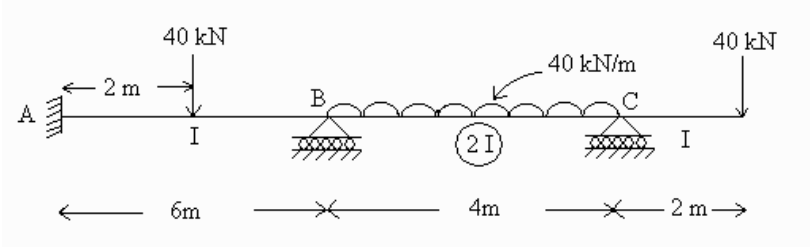
6. Analyse the continuous beam shown below by KANI's method. Draw SFD, BMD and Elastic curve. Find the distances of points of contraflexure from supports. [16]



7. Analyse the continuous beam shown below using flexibility matrix method. [16]



8. Analyse the continuous beam shown below by Stiffness matrix method. Draw SFD, BMD and Elastic curve. Find the distances of points of contraflexure from supports. [16]



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CODE NO: 07A50104 | R07 | SET - 2

III B.TECH - I SEMESTER EXAMINATIONS - MAY, 2011
STRUCTURAL ANALYSIS-II
(CIVIL ENGINEERING)

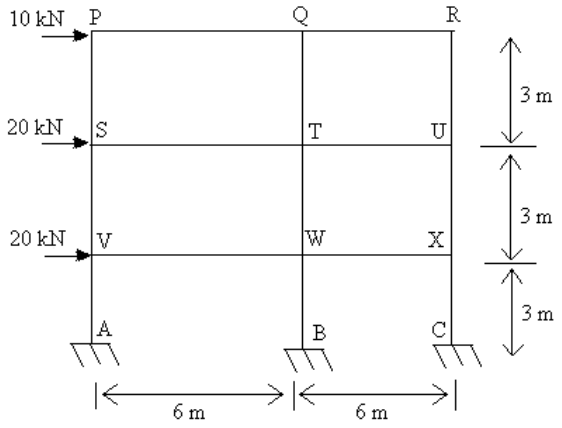
Time: 3hours **Max. Marks: 80**

Answer any FIVE questions
All Questions Carry Equal Marks
- - -

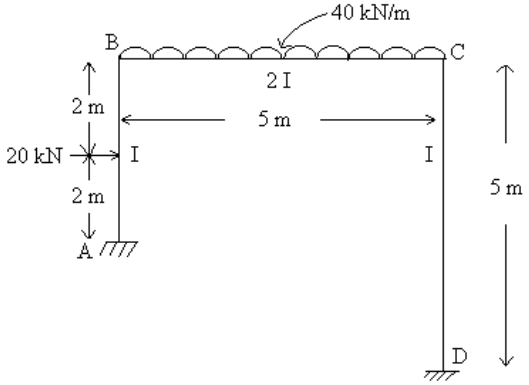
1. A three hinged parabolic arch hinged at the supports and at the crown has a span of 24 m and a central rise of 4m. it carries a concentrated load of 40kN at 20m from the left support and a uniformly distributed load of 36 kN/m over the left half portion. Determine the thrust, radial shear and moment at a section 8 m from the left support? [16]

2. Obtain the expression for horizontal thrust for a two hinged parabolic arch subjected to a concentrated load 'W' at a distance 'a' from left support (a<L/2) where L is the span. [16]

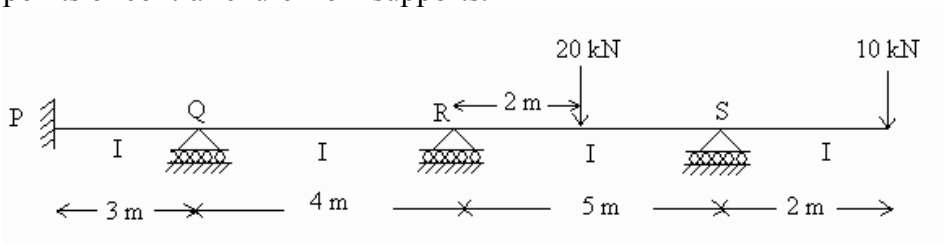
3. Analyse frame shown below by PORTAL METHOD?



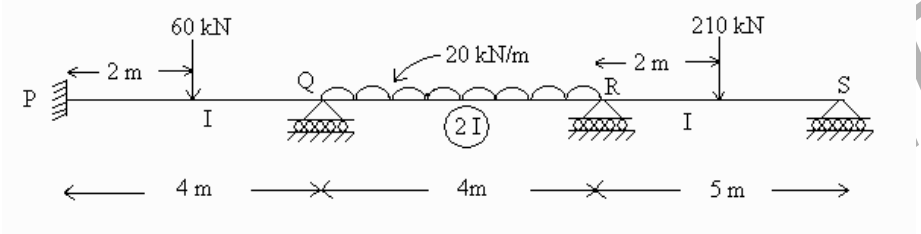
4. Analyse the frame shown in the figure below using slope deflection method and draw Bending Moment Diagram. Also draw elastic curve. [16]



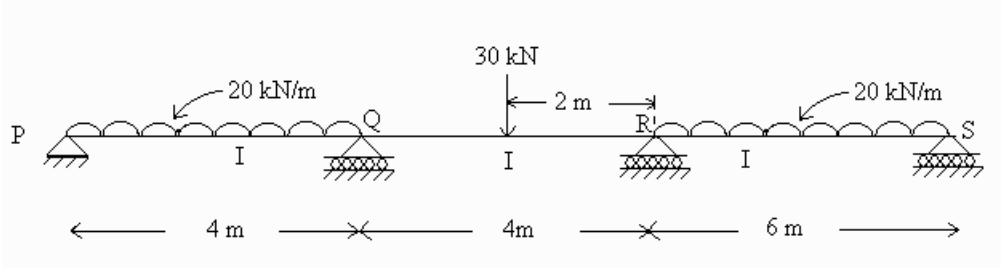
5. Analyse the beam shown below using moment distribution method and draw SFD and BMD. Support Q series by 10mm. Draw elastic curve. Find the distances of points of contraflexure from supports. [16]



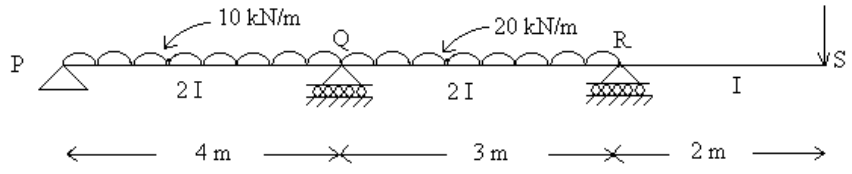
6. Analyse the continuous beam shown below by KANI's method. Draw SFD, BMD and Elastic curve. Find the distances of points of contraflexure from supports.[16]



7. Analyse the continuous beam shown below using Flexibility matrix method?[16]



8. Analyse the continuous beam shown below by stiffness matrix method? Draw SFD, BMD and Elastic curve. Find the distances of points of contraflexure from supports. [16]



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CODE NO: 07A50104 | R07 | SET - 3

III B.TECH - I SEMESTER EXAMINATIONS - MAY, 2011
STRUCTURAL ANALYSIS-II
(CIVIL ENGINEERING)

Time: 3hours **Max. Marks: 80**

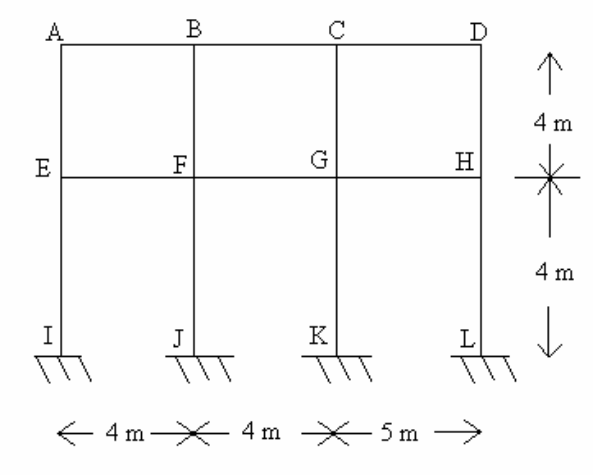
Answer any FIVE questions
All Questions Carry Equal Marks
- - -

1. A three hinged parabolic arch with 20m span and 4m central rise carries a point load of 2 kN at 5m horizontally from left support. Calculate the normal thrust, shear force at a section 8 m from left support. Find maximum positive and negative bending moment? [16]

2. Obtain the expression for horizontal thrust for two hinged circular arch subjected to concentrated load W at a section which makes an angle α with the centre line? [16]

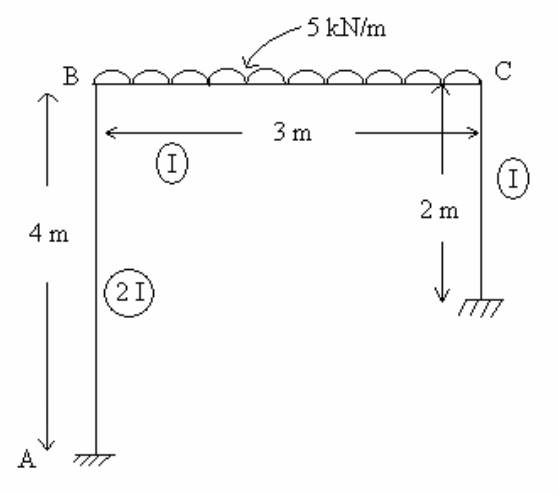
3.a) Explain the assumptions made in the analysis of multi structure frames using cantilever method?

b) Analyse the frame shown below with all members hang same cross sectional area using cantilever method? [8+8]

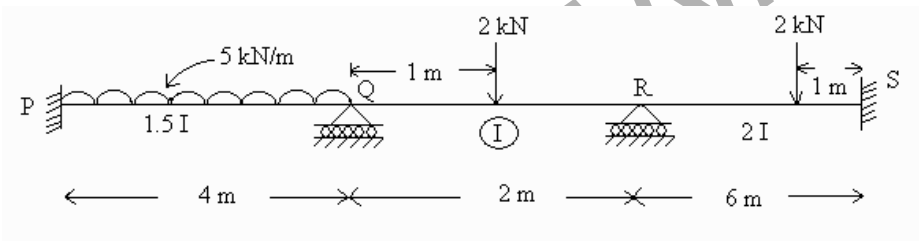


4. From fundamentals derive the slope deflection equation? How the sinking of supports are taken into account? [16]

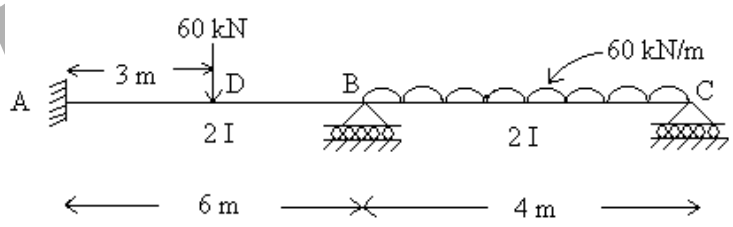
5. Draw the BMD and sketch the deflected shape of the frame shown below. Use moment distribution method. [16]



6. Analyse the beam shown below by KANI's method. Draw SFD, BMD and Elastic curve. Find the distances of points of contraflexure from supports. [16]



7. Analyse the beam shown below using flexibility matrix method draw BMD. EI = 6000 kN-m^2. [16]



8.a) Explain the terms STATIC and KINEMATIC indeterminacies with examples.
b) Explain 'Stiffness matrix'.
c) Obtain the relation between flexibility and stiffness matrices. [16]

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CODE NO: 07A50104 | R07 | SET - 4

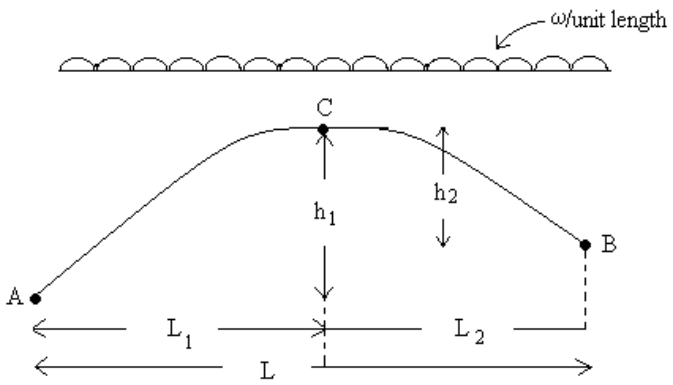
III B.TECH - I SEMESTER EXAMINATIONS - MAY, 2011
STRUCTURAL ANALYSIS-II
(CIVIL ENGINEERING)

Time: 3hours **Max. Marks: 80**

Answer any FIVE questions
All Questions Carry Equal Marks

\- - -

1. A three hinged arch in the form of a parabolic with axis vertical has hinges at the abutments and the vertex. The abutments are at different levels as shown. Find out the expression for horizontal thrust due to a load ω/unit length uniformly distributed over the total span 'L'. [16]



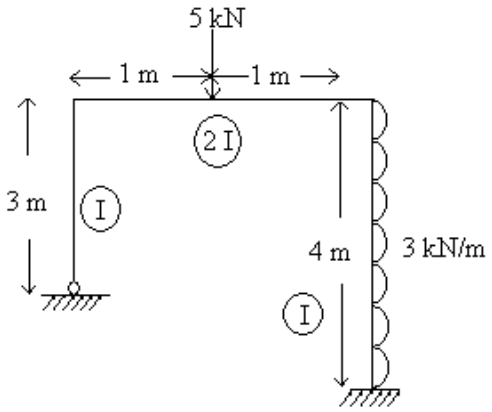
2. A two hinged parabolic arch has a span of 30m and rise 5m. A concentrated load of 15 kN acts at 10m from the left hinge. The second moment of area varies as the secant of the slope of the rib axis. Calculate the horizontal thrust, and the reactions at the hinges. Also calculate the maximum bending moment anywhere in the arch. [16]

3.a) List the advantages and assumptions in the portal method of analysis of multi storied buildings?

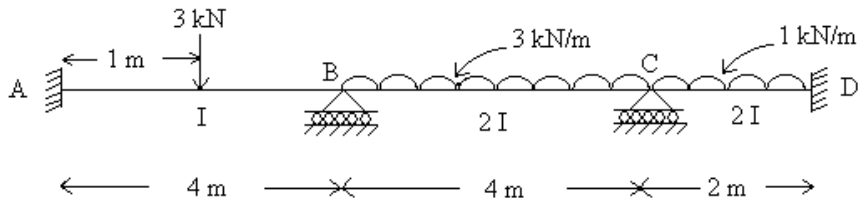
b) Explain in detail the cantilever method of analysis of multi stories buildings. What are the assumptions made? [8+8]

4. A straight elastic beam of uniform section rests on four similar elastic supports which are placed 'L' meters apart. The supports are such that they are compressed by 'd' for each unit of load upon them. Show that when a uniformly distributed load of total amount comes on them, the reactions at each central support are $\frac{W\left[\frac{11}{6}+\frac{3EId}{L^3}\right]}{\left[5+\frac{12EId}{L^3}\right]}$. Use theorem of three moments. [16]

5. Analyse the frame shown below using moment distribution method and draw BMD? Also draw elastic curve. [16]

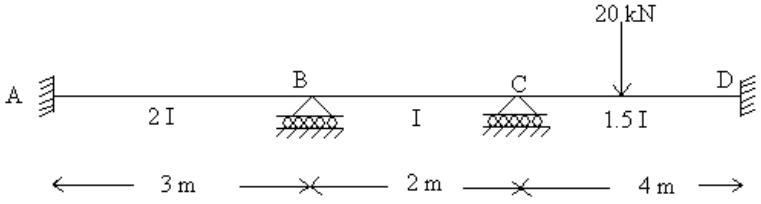


6. Analyse the beam shown below using Kani's method. Draw SFD, BMD and Elastic curve. Find the distances of points of contraflexure from supports. [16]



7.a) What is flexibility matrix method? Explain.
b) Explain the term kinematic under minancy with examples?
c) Explain the term Generalized coordinate systems? [16]

8. Analyse the continuous beam shown below using stiffness method?
EI = 4500 kNm^2. Support B sinks by 10mm. Draw SFD, BMD and Elastic curve. [16]



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