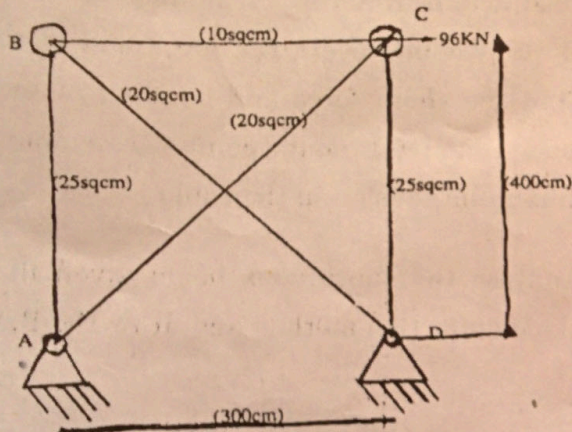
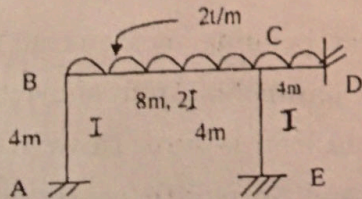


7. Analyse the truss with cross diagonals and two hinged supports shown in figure below. Using the horizontal reaction at A as redundant $E = 20,000 \text{ KN/cm}^2$.



8. Using Kanis method of analysis, sketch the bending moment and shear force Diagram for the figure below.



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III/IV B.E. DEGREE EXAMINATION.

Second Semester

Civil Engineering

STRUCTURAL ANALYSIS — III

(Common for Civil and Civil Environmental Engineering)

(Effective from the admitted batch of 1999–2000)

Time : Three hours

Maximum : 70 marks

Answer question No.1 and any other FOUR questions.

Question No.1 carries 20 marks and the remaining carry 12 marks each.

Neat presentation carries 2 Marks.

Any data missing may be assumed suitably.

All bits of question No.1 should be written at one place in the same order as they appear.

1. (a) Distinguish between internal static indeterminacy and external static indeterminacy.
- (b) What is column analogy method?
- (c) What are the two different approaches to matrix method of Structural analysis?

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- (d) What is an arch? Explain.
- (e) What is the effect of temperature on 3-hinged arch?
- (f) What are the two different approaches to matrix methods of structural analysis?
- (g) What are the various methods available for analysing the arches?
- (h) What are the main functions of stiffening girders in suspension Bridges?
- (i) What is "rotational factor"? Sum of rotational factors at a joint is?
- (j) What are the limitations of slope deflection method?

2. Explain flexibility method of analyses through an example.

3. Analyse the continuous beam shown in figure 1 by flexibility matrix method

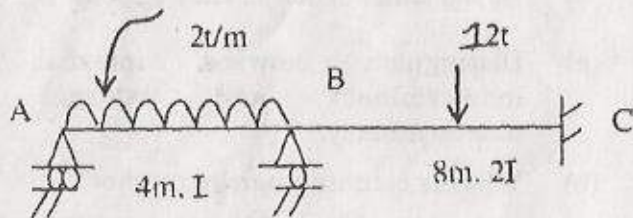
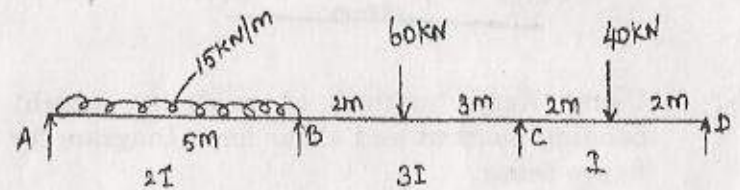


Fig 1

4. A suspension bridge of 200m span has two numbers of 3 hinged stiffening girders supported by 2 cables with a central dip of 10 m. The width of the roadway supported by the girder is 7M. The dead load is 10KN/m² of the floor area. A live load of 12.5KN/m² covers the left hand of the bridge. Find the shear force and bending moment at the loaded quarter span point Determine also the maximum tension in the cable.
5. Analyse the continuous beam given in figure by slope deflection method and draw the B.M.D.



6. Prove that bending moment at any section of a 3-hinged parabolic Arch subjected to uniformly distributed load is zero. Draw Radial shear Force diagram and Normal thrust diagram of the arch.