Maximum Marks – 100   **Time – 3.00 Hours**

a) Answer any Four out of 1 to7 questions.
b) Question No.8 is compulsory and answer any four out of six sub questions.
c) Scientific Calculator permitted.

Q1 a) Mention any four lateral load resisting systems and draw their sketches.   **(10M)**
    b) What is segmental construction? Draw sketches explaining the same.   **(10M)**

Q2 Draw the sketch of a three room building with a canopy that is used in the United States of America **(20M)**
with Wooden members for residential purpose. Also draw the sections at foundations and eave's
level.

Q3   **(20M)**
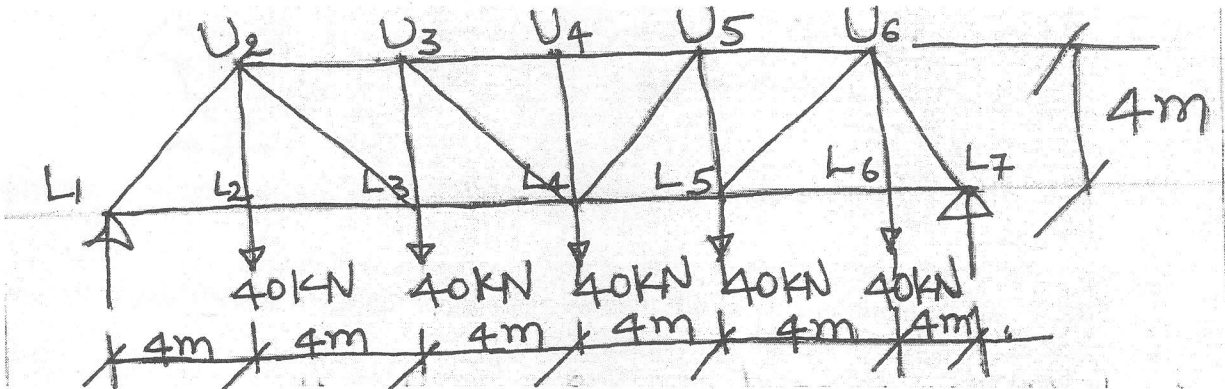
Determine the forces in members L_1U_2, U_2L_2, U_3U_3, L_2L_3 & U_3L_3 using method of Sections.
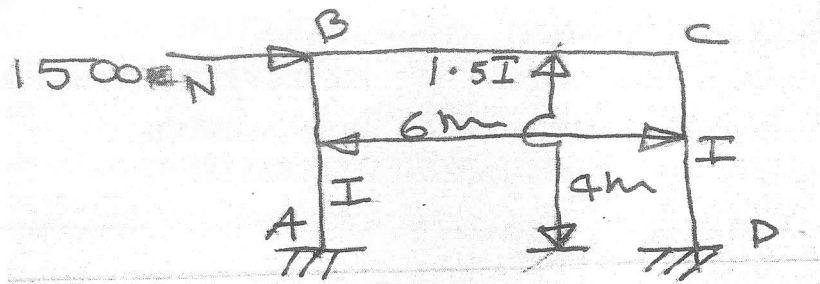
Q4 Draw the Structural systems used in high rise structures and briefly explain as to how they work.   **(20M)**

Q5 A dome of water tank is 12.5m in span. Design the dome and ring beam. Choose Limit State design or **(20M)**
Working Stress method (elastic design). Use Fe 415 steel and m30 grade Concrete.

Q6 Part of roof structure of an industrial building is subjected to point loading as shown in the figure **(20M)**
below:
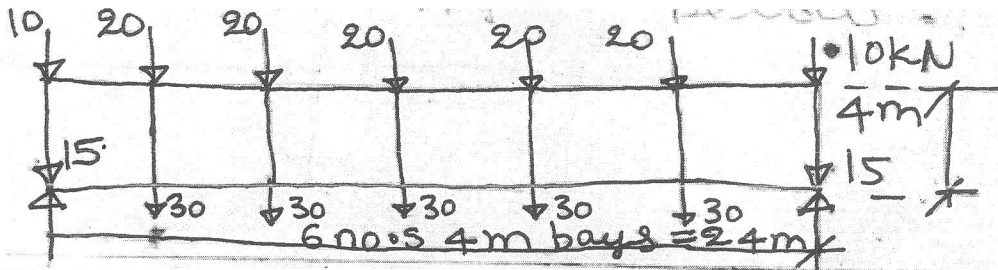
Analyse the Structure using Statically determinate analysis and draw the Bending Moment diagram.

Q7 Analyse the frame shown in the figure below and find reactions at supports and moments at **(20M)**
significant locations and draw the Bending Moment diagram with values.   **P.T.O**

1500 kN at B, 1.5I on beam BC, 6m span, I on columns, 4m heights, supports at A and D.

Q8 a) Describe built active systems along with examples and skecthes.   (4x5=
    b) Draw the equivalent frames for analysis of the frames shown below.   20M)
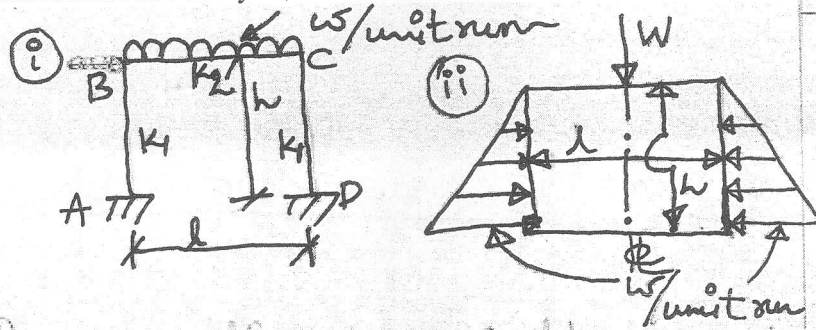

    c) Represent diagrammatically commomnly used Folded Plate roofs mentioning the advantages and
        disadvantages.
    d) Discuss the advantages and disadvantages of Shell roofs versus Slab beam type of roofs.
    e) Draw the critical loading conditions for maximising support moment at A ('-'ve), moment in
        column at A, '+'ve and '-'ve moments at B.
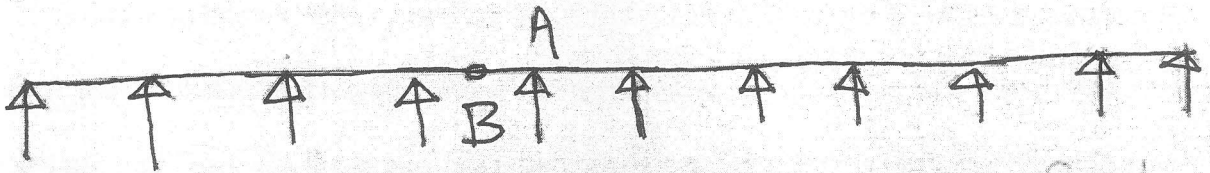
    f) Using moment distribution, find maximum '-' ve bending moment at joint I
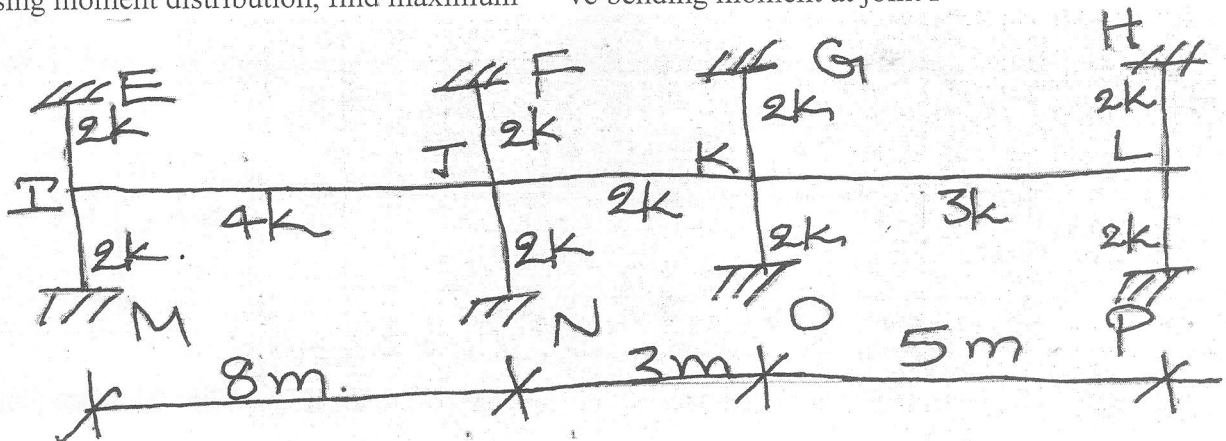
    Total dead load = 25kN/m, 23kN/m & 24kN/m on spans IJ, JK & KL respectively.
    LL = 20kN/m on all spans.

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