SCHOOL OF PLANNING AND ARCHITECTURE, VIJAYAWADA

SEMESTER END EXAMINATIONS (SUPPLEMENTARY), DECEMBER-2015

B. ARCH, IV YEAR, VII SEMESTER

TS 7: THEORY OF STRUCTURES

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

a) Answer any __Four questions out of 1 to 7 questions__.
b) Question No. 8 is compulsory and __answer any four__ out of six sub-questions.
c) Scientific calculator is allowed.

Q1.   a) Give examples of long span structures and draw their sketches.   (2x10
      b) What is segmental construction and draw the sketches explaining the same.   =20M)

Q2.   Using Substitute frame method, find maximum '–'ve (hogging) moment at joint   20M
      J and maximum '+'ve (sagging) moment at mid span of IJ for the following
      frame.
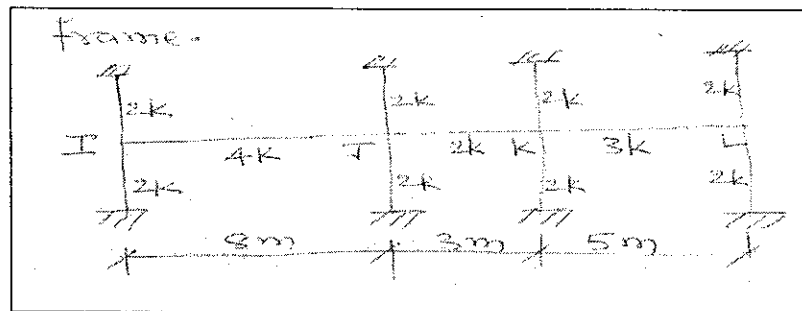
DL on span IJ = 19 KN/m
DL on span JK = 17 KN/m
DL on span KL =18 KN/m
LL   = 20 KN/m

Q3.   20M
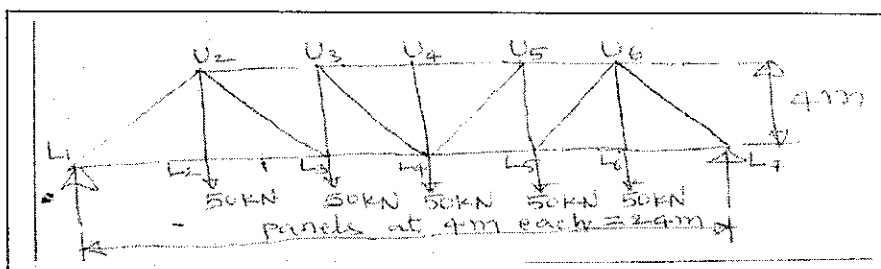
Determine the forces in members, L_1U_2 , $U_2 L_2$, $U_2 U_3$, L_2L_2 & U_3L_3 using
method of sections.

Q4.   Draw the sketch of an individual residential building that is used at United   20M
      States with wooden members. Also draw the sections at foundation and eve's
      level. Building should be for 4 – rooms.

Q5.   A dome for water tank is 12.5 m in span. Design the dome and ring beam.   20M
      Choose Limit state design or working stress method (elastic design). Use Fe
      415 steel and M30 grade concrete.   P.T.O
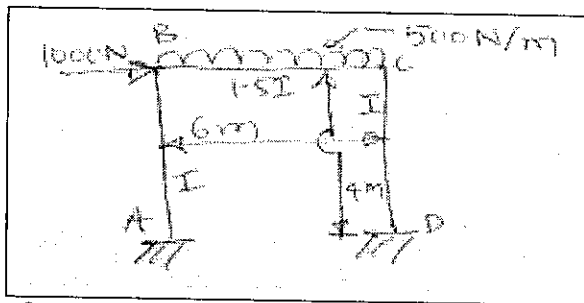
Q6. Part of roof structure of an industrial building is subjected to point loading as shown in figure below.

All the loads are in KN.
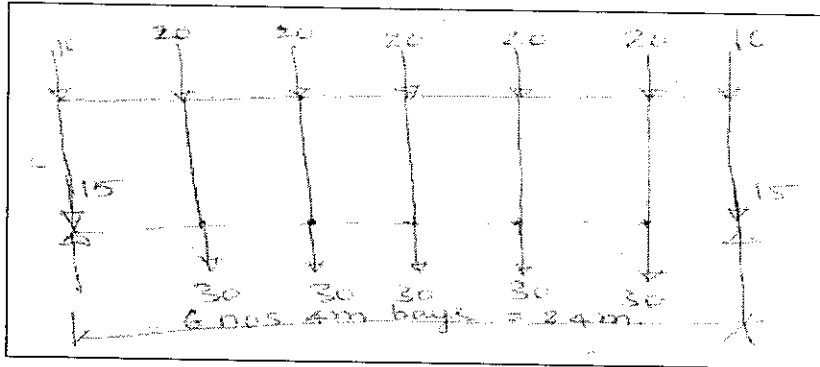
Q7. Analyse the frame shown in the figure below. And find reactions at supports and moments at significant locations and draw the bending moment diagram with values.   **20M**


Q8. Answer any four questions.   **(4x5M = 20M)**
   a) Describe built active systems along with examples and sketches.
   b) Discuss the advantages and disadvantages of shell roofs versus folded plate roofs.
   c) Represent diagrammatically commonly used folded plate roofs mentioning the advantages and disadvantages.
   d) Explain briefly about behavior of shells.
   e) Draw the critical loading conditions for maximising support moment at A('-'ve), moment in column at A, positive and negative moments at B.
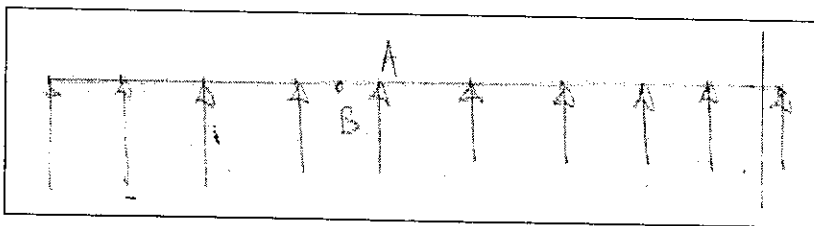
   f) Using moment distribution, find maximum '-'ve moment at joint 'L'
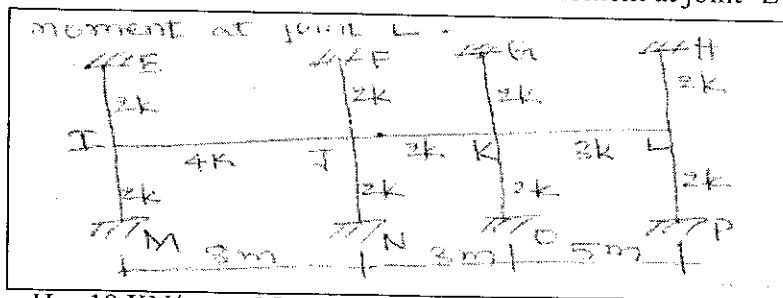
DL on span IJ = 19 KN/m;   LL = 20 KN/m on all spans.
DL on span JK = 17 KN/m
DL on span KL = 18 KN/m