SEAT No :

P2149

[Total No. of Pages : 2

[5059]-516

B.E.(Civil)

ADVANCED STRUCTURAL DESIGN

(2012 Course) (401009A) (Semester - II) (End Sem.)(Elective -III)

Time : 2½ Hours]   *[Max. Marks : 70*

Instructions to the candidates:

1)   *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5or Q.6, Q.7 or Q.8, Q.9 or Q.10.*
2)   *Figures in bold to the   right indicate full marks.*
3)   *All relevant IS codes and Steel Table are allowed in the examination.*
4)   *If necessary, Assume suitable data and indicate clearly.*
5)   *Use of electronic pocket calculator is allowed.*

Q1) What is form factor? Explain with an example.   **[10]**

OR

Q2) A 3.0m simply supported beam carries a uniformly distributed load of 4kN/m. Design the beam.   **[10]**

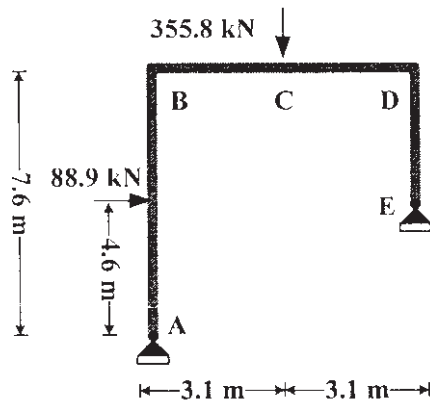*Q3)* Obtain the collapse moment for the frame shown in Fig. 1.   **[10]**

Fig. 1

OR

Q4) How are the dimensions of a steel chimney determined? Explain with an example.   **[10]**

P.T.O.

Q5) Determine the uniformly distributed collapse load for the slab shown in Fig.2.**[16]**
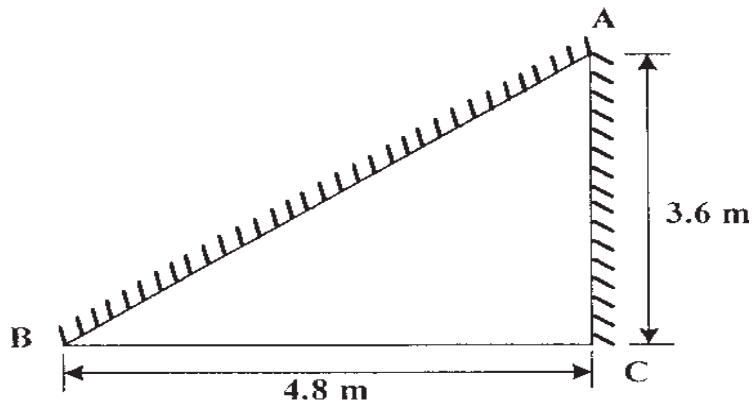

Fig. 2

OR

Q6) Explain the following: **[16]**
   a) lower bound theorem.
   b) upper bound theorem.
   c) uniqueness theorem.
   d) corner levers.

Q7) An elevated square water tank is 6m in size and 4 m high. It is supported on a concrete staging of 4 columns. The height of the staging is 9 m. Bracings are provided at a vertical spacing of 3 m. The circular columns of the staging are 450 mm in diameter. The structure is located in zone II. the preliminary dimensions of the elements of the water tank for the analysis may be suitably assumed and clearly mentioned. Assume suitable dimensions for various elements and mention them clearly. Analyze the tank for tank full condition. **[18]**

OR

Q8) For the water tank of Q.7, analyze for tank empty condition. **[18]**

Q9) a) Explain the modes of failure of a RC shear wall. **[8]**

   b) Write a note on coupled shear wall system. **[8]**

OR

Q10) Explain step-by-step design procedure of a RC shear wall. Also explain how boundary elements are designed. **[16]**

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