Total No. of Questions : 10]

SEAT No. : ____

P2123

[Total No. of Pages : 2

[5254] -516
B.E. (Civil)
ADVANCED STRUCTURAL DESIGN
(2012 Pattern) (Elective - III) (Semester - II)

Time : 2½ Hours] ***[Max. Marks :70***

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10.***
2) ***Figures 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) Design a column of length 2.0 m with restrained ends to carry a load of 200 kN. **[10]**

OR

Q2) A simply supported beam of span 4.0 m carries a uniformly distributed load of 3 kN/m. Design the beam. **[10]**

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

OR

Q4) Write a note on forces acting on a steel chimney. **[10]**

Q5) Determine the uniformly distributed collapse load of a circular slab having clamped support along the periphery and a column support at the centre of the slab. **[16]**

OR

Q6) Obtain the value of β for the simply supported slab shown in Fig. 2 The slab carries a uniformly distributed load of w. **[16]**

P.T.O.

Q7) An elevated square water tank is 6 m 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 functions of shear walls. What are proportionate and non proportionate shear walls? **[8]**

b) Sketch a typical reinforcement details of a RC shear wall with boundary elements. **[8]**

OR

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

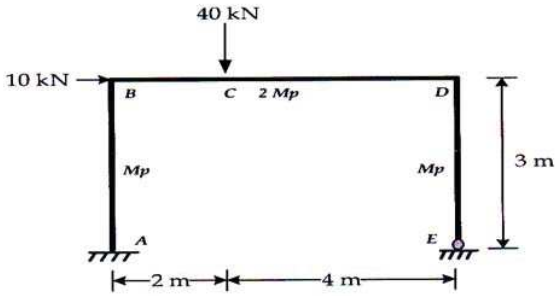

Fig. 1

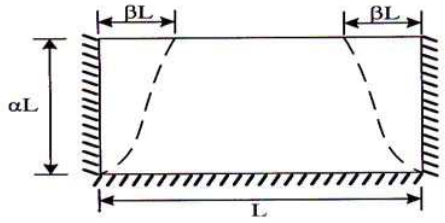

Fig. 2

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