

6E6034

Roll No. _____

Total No of Pages: **4****6E6034****B. Tech. VI-Sem. (Main/Back) Exam., April/May-2016****Civil Engineering****6CE4A Design of Concrete Structures-II****Time: 3 Hours****Maximum Marks: 80****Min. Passing Marks (Main & Back): 26****Instructions to Candidates:-**

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly.

Units of quantities used/ calculated must be stated clearly.

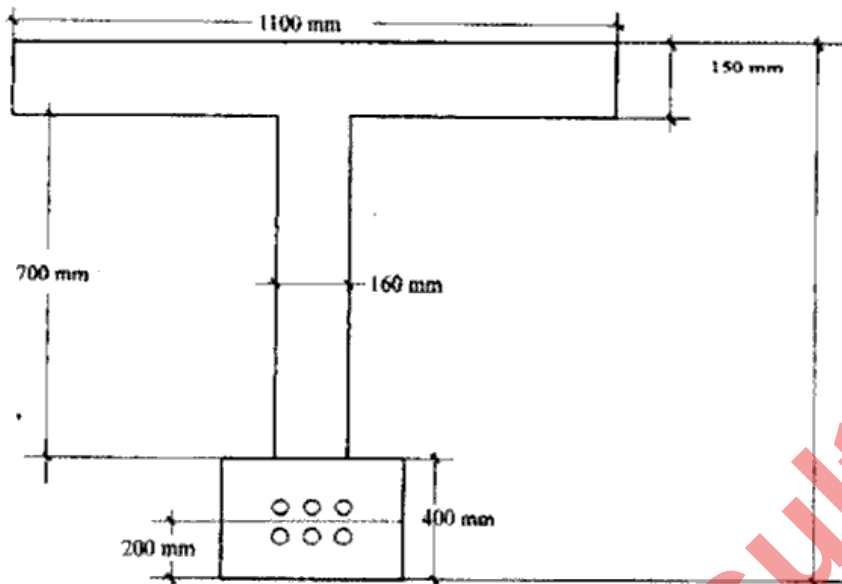
Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NILNIL**UNIT-I**

Q.1 Write different losses in pre – stressed concrete. Explain each of them. [16]

OR

Q.1 Calculate stresses in a post tensioned beam at initial stage and final stage if the beam is post stressed with 5 cables of 12 wires of 5 mm diameter. The initial prestress in wires is 1100 N/mm^2 and effective stress after all losses is 1000 N/mm^2 . The beam span is 20 m and IL on beam is 10 KN/m [16]



UNIT-II

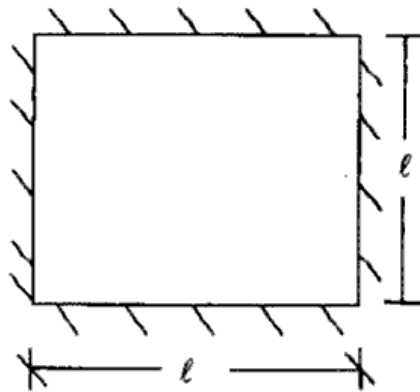
Q.2 Calculate the requirement of reinforcement with detailing in a given beam of size 350 mm \times 600 mm if the beam is subjected to factored B.M = 120 KN-m, factored torsion moment of 50 KN-m & factored shear force of 60 KN. Consider concrete grade of M20 and steel grade of Fe 415. [16]

OR

Q.2 Develop the expression for shear force and bending moment at any point in a circular beam supported symmetrically. [16]

UNIT-III

Q.3 Calculate load carrying capacity of square slab by yield line method using virtual work method & equilibrium method for an isotropically reinforced slab. [16]



OR

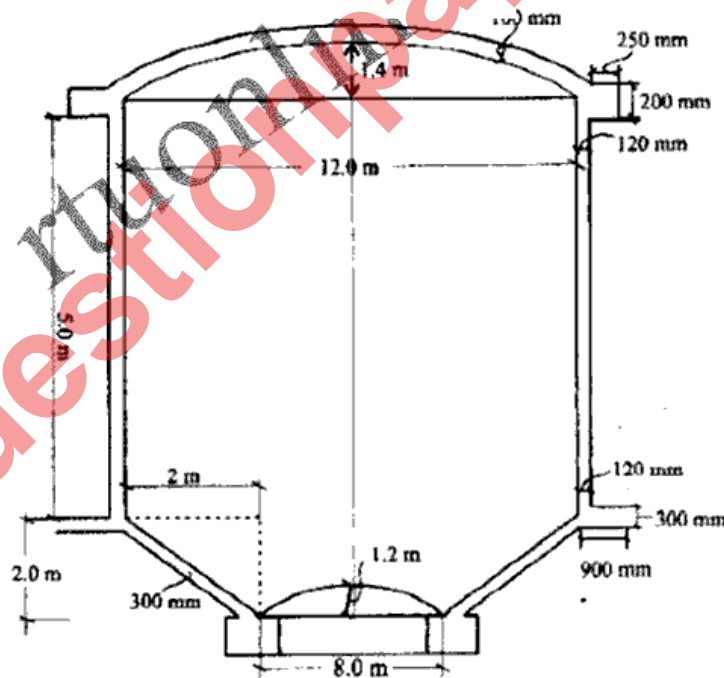
Q.3 Develop the expression for calculation of meridional thrust and hoop stresses in a spherical dome subjected to uniformly distributed load. [16]

UNIT-IV

Q.4 Design a rectangular tank of size 5m × 12m × 4.0m resting on the ground. Consider concrete grade M 20 and steel of grade Fe 415. [16]

OR

Q.4 Design top ring beam, cylindrical wall, balcony ring beam and conical dome of an Intze tank as shown in the fig below. Consider concrete grade M 20 & steel grade Fe 415. [16]



UNIT-V

Q.5 Design a culvert for span 6.0 m (clear) and carriage way width of 7.5 m. Consider class AA loading and assume all other dimensions. Consider concrete grade M25 and steel grade of Fe 415. [16]

OR

Q.5 Design a cantilever retaining wall with stability check if the height of the retaining wall above ground level is 4.0 m. The back fill is horizontal and unit weight of soil is 18 KN/m^3 . The safe bearing capacity of the soil is 120 KN/m^2 , the coefficient of friction between soil & concrete is $\mu = 0.55$. The angle of repose of soil may be assumed as $\phi = 30^\circ$. [16]