

Roll No.

CE-702 (GS)

B.E. VII Semester

Examination, November 2018

Grading System (GS)

Advanced Structural Design - II (R.C.C.)

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.

ii) Assume data suitably, if any missing.

1. A six storey three bay building is to be located at Bhopal . Determine lateral forces on an inner frame due to wind load and earthquake loads. Using the following data. 14

Bay width = 6.5m/c

Frame spacing = 5m/c

Height of ground floor = 4m

Height of other floor = 3.5m

Live load 5kN/m²

Floor thickness = 15cm

Floor finish = 4cm

Columns = 30cm × 60cm

Beam = 30cm × 40cm

2. Design a cantilever Retaining Wall for the following data: 14
Height of the fill to be retained by the wall = 5m,
Weight of earth = 1800kg/m³, Angle of internal friction = 30°
Coefficient of friction between soil and base slab = 0.6,
bearing capacity of soil = 20t/m².
Depth of foundation = 1.5m, Material available: M 20 concrete and grade Fe415 steel.

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3. Design an Intze type elevated water tank for 600,000 litres capacity. Design up to ring girder supported on 10 columns. 14

4. Design side walls and hopper bottom of a rectangular bunker of capacity 200kN to store coal using M20 concrete and Fe 415 steel Given: 14

i) Unit wt of coal is 8kN/m³.

ii) Angle of repose of coal $\phi = 30^\circ$

iii) Coefficient of friction between coal and concrete
 $\mu = 0.444$

5. A silo with internal diameter 5m, height of cylindrical portion 20 m and central opening with 0.5 m is to be built to store wheat. Design the silo using M 20 grade concrete and Fe 415 steel. given; 14

i) Unit wt. of wheat = 8kN/m³.

ii) Angle of internal friction = 30°

6. Design a rectangular tank resting on the ground for a capacity 100kilolitres. Use M25 concrete and Fe 415 rebars. 14

7. Design a slab bridge with carriage way of 12m with Kerbs only for an effective span of 6.0m for IRC 70 loading. Concrete used is M25 and HYSD bar of grade Fe415 are used. 14

8. Write short notes on the following: 14

i) Assumptions in PSC design.

ii) Types of prestressing

iii) I R C loads.

iv) Load distribution amongst longitudinal girder in a T-Beam bridge.

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