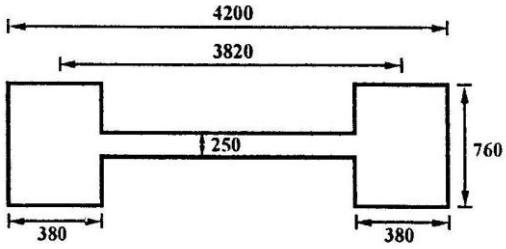
1. Design a shear wall of length 4.20 m and thickness 250 mm subjected to the following forces (see fig.). Assume fck = 25 and fy = 415 N/mm2 and the wall is a high wall with the following loadings : 20.

	Loading	Axial Force (kN)	Moment (kNm)	
1	DL+LL	1950	600	20
2	Seismic load	250	4800	700



Or

2. (a) What are the conditions under which a frame sway ? 5
(b) Explain and compare the "Cantilever and Portal method ofapproximate analysis." 15

3. Design the stem of a cantilever retaining wall to retain levelled earth 6.0 m above base level. Take density of soil as 18 kN/m3 and angle of repose as 30°. Safe bearing capacity of soil is 150 kN/m2. 20

Or

Design the stem of a counter for retaining wall to support earth: embankment 10.0 m high above ground level. Take density of soil as 18 kN/m3 and angle of repose as 300. Safe bearing capacity of soil is 120 kN/m2. 20

5. Design a circular tank 12 m in diameter and 3.0 m height of wall. Free board of 0.20 m includes height of wall. The tank rests on a firm ground.: The wall are fixed at base and free at top. Assume thickness of wall 150 mm. 20

or

6. Design the top dome, top ring beam and cylindrlical wall of an Intze tank. The diameter of tank is 8.0 m and height of cylindrical wall is 4.0 m. 20

7. (a) Distinguish clearly between a bunker and silo. 5
(b) Using Janssen's theory, derive an expression for horizontal and vertial pressure at any depth h below the top in a silo. Also derive an expression for total vertical load of the grain transferred to the walls. 15

Or

8. Design the side wall of bunker to store 400 kN of each take : 20
(i) Unit weight of coal - 8.5 kN/m3
(ii) Size of bunker - 3.5 x 3.5 m
(iii)Hopper portion height - 1.5 m with a central hole of 0.5 m x 0.5 m
(iv)Angle of repose 300. The stored coal is surcharged at its angle of repose.

9.(a) List the different loads considered for the design of bridge. 5

(b) Explain the method of finding reaction factor of B.M. in longitudinal girder. Use Courbon's method. http://www.rgpvonline.com

Unit-V

Or

10. A straight pretensioned concrete member 1F.2 m long, with a cross- section of 380 mm x 380 mm is concentrically pre-stressed with 780 mm3 of steel wires which are anchored with A stress of 1035 N/mm2 of E, = 33000 N/mm2 and Es = 2 x 105 1\l/n-72. Compute the loss of pre- stress due to the elastic shortening of concrete at transfer of pre-stress. 20