

- b) Briefly explain the use and design of ring beam in dome structure. 5
- 6 a) A circular slab is 6 m diameter and is simply supported at the edges. It is loaded with a live load of 4 kN/m^2 . Design the reinforcement for the slab and sketch the details. Assume M 20 concrete and Fe 415 steel. 15

PART C

Answer any two full questions, each carries 20 marks.

- 7 a) Design and detail a circular tank with fixed base for a capacity of 6 lakh litres. (20)
The depth of water is to be 5m including freeboard of 250mm. The tank is supported on ground. Design using M20 concrete and 415 grade steel.
- 8 a) Differentiate between pre-tensioning and post-tensioning. (5)
- b) Determine the extreme fibre stresses developed at the mid span section of a simply supported prestressed concrete beam of rectangular section 250 mm x 600 mm prestressed using high tensile steel of cross sectional area 1000 mm^2 stressed to 1500 N/mm^2 . The center of gravity of the steel is 150 mm above the soffit of the beam. The superimposed load is 16 kN/m . Span of the beam is 12 m. Draw the stress diagram at mid span. 15
- 9 a) Explain the various losses of prestress. 5
- b) A prestressed concrete beam 250mm wide and 350 mm deep is prestressed by 12 wires of 6mm diameter located at an eccentricity of 40 mm and carrying a initial stress of 1500 N/mm^2 . The span of the beam is 8m. Calculate the percentage of losses in wires if it is pretensioned $E_s = 210 \text{ KPa}$ and $E_c = 35 \text{ Kpa}$, relaxation of steel stress = 5% of the initial stress, total shrinkage strain is 200×10^{-6} . 15
