

Roll No.

23521

**M. Tech 3rd Semester (Civil Engg.)
(Specialization in Structural Design)
Examination – May, 2018**

DESIGN OF STRUCTURES - III

Paper : MTSD-301

Time : Three Hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt five question in all. All question carrying equal marks. Use of reference books and relevant codes of practice are permitted in the examination.

1. Design a bunker wall of 250 mm depth for resisting a moment of 33 kNm using M 20 and Fe 415. 20
2. Design a spherical dome over a circular room of 20 m diameter. The rise of the dome may be taken equal to $\frac{1}{5}$ of the diameter. The dome carries a lantern load of 30 kN attached at the circumference of an opening of 2 m diameter at the apex. Take live load due to wind

23521- 100 -(P-2)(Q-8)(18)

P. T. O.

- etc. as 1.5 kN/m^2 of the surface area of the dome, Use M20 Concrete and Fe415 steel. 20
3. Explain in detail various joints in liquid retaining structures with diagram. 20
 4. Design a slab $3.5\text{m} \times 3.5\text{m}$ with two adjacent edge continuous and rest two edge discontinuous. Take loading on slab 8000N/m^2 including self weight of slab. Use M20 and HYSD bar. 20
 5. Explain the various force acting on chimney. Also explain the lining of chimney. 20
 6. A self-supporting steel chimney is 80 m high and its diameter at the top is 3 metres. Design breech (flue) opening. Adopt the wind force as per IS : 875. The location of the place is such that the intensity of wind pressure up to 30 m height is 130 kN/m . 20
 7. Explain in detail Jensen's methods of computing static pressure. Also explain flood irregularities and their effects. 20
 8. Design a rectangular bunker 16 m length and 8 m width supported. It stores maize. Height of vertical portion = 4 m. Height of hopper = 4m. 20