

Ref. No.: Ex/CE/PC/H/T/425/2025

**B.E. CIVIL ENGINEERING
FOURTH YEAR
SECOND SEMESTER EXAM 2025**

DESIGN OF STRUCTURES – IV (Honours)

Full Marks- 100

Time: 3 hours

Answer Question 4 and any two from the rest

(IS 456,875,1893,800,801,804,3935,3370 and SP 6(1) are allowed in the hall)

1. A square pressed steel tank 5m X 5 m X 2.5 m (depth) is to be supported at 10 m height above ground in Delhi. Suggest a suitable staging system and calculate the seismic force and moment acting at the foundation level (1.5 m below ground level). Assume practical value of any other data that you may need. 30
2. Design and detail the girders including shear connectors of a concrete deck-steel girder composite foot bridge of span 12 m and overall width including kerbs as 5.0 m suggesting the general arrangement .Take live load = 4 kN/sq.m . Assume M30 concrete . Assume propped construction. 30
3. Design and detail the deck of a concrete deck-steel girder composite foot bridge of span 12 m and overall width including kerbs as 5.0 m suggesting the general arrangement .Take live load = 4 kN/sq.m . Assume M30 concrete . 30
4. A semi-underground concrete water tank of inner dimensions 9 m x 6 m X 3m (depth) has 250 mm above GL.The soil has a unit weight of 18 kN / cu.m. and an angle of internal friction of 30° .Using M30 concrete and Fe500 steel , design the long wall only and check for an allowable crack width of 0.1 mm. 40