B.E. Civil Engineering ,4 th Year 2 nd Semester Examination, 2023

Subject – Design of Structures –IV (Hons.)

Full Marks- 100   Time: 3 hours

Answer all questions

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

1. A square pressed steel tank 6.25m X 6.25 m X 2.5 m (depth) is to be supported at 10 m height above ground in Kolkata. Suggest a suitable staging system and calculate the seismic force and moment acting at the foundation level (2 m below ground level). Assume practical value of any other data that you may need.   CO1   25

2. Calculate the safe axial load carrying capacity of the light gauge steel column of effective length of 5 m and fabricated with mild steel. Section shown below.
                                                                                CO2   25
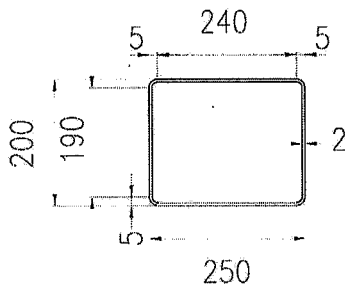
3. Design the girders of a concrete deck-steel girder composite foot bridge of span 10 m and overall width including kerbs as 4.5 m suggesting the general arrangement .Take live load = 4 kN/sq.m . Assume M25 concrete . Assume un-propped   construction. You need not design the concrete deck and the shear connectors.   CO3   25

4. A semi-underground concrete water tank of inner dimensions 8 m x 6 m X 3m (depth) has 200 mm above GL.The soil has a unit weight of 18 kN / cu.m. and an angle of internal friction of 30^0.Design the long wall only and check for an allowable crack width of 0.2 mm.   CO4   25