M.Tech. Structural Engineering & Construction (CBCS Pattern) Semester - II

PSES252 / PSES25 (B) - Advanced Design of Steel Structures

P. Pages : 1

Time : Three Hours

1249

Max. Marks : 70

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Notes :
1. All questions carry equal marks.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Illustrate your answers wherever necessary with the help of neat sketches.
5. I.S.I. Hand Book for structural steel section, I.S. Code 8000/1962 or 1964, I.S. 456 (Revised), I.S. 875 may be consulted.

1. Design a gantry girder for following data **35**
   Width of bay = 5 m c/c
   Spacing of columns along bridge = 11m
   Self Wt of crane girder and trolley = 330 kN
   Minimum Hook approach = 1.5 m
   Diameter of crane wheels = 150 mm
   Self Wt. of rails = 0.35 kN/m
   Wheel base = 2.5 m
   Maximum weight to moved = 20 kN
   Steel grade = Fe410 $\left(f_y = 250\,\text{MPa}\right)$

OR

2. Design a steel chimney 50 m in height located at Nagpur area. SBC of Soil is **35** $200\,\text{kN}/\text{m}^2$. Diameter of cylindrical part is 5 m. Steel grade = Fe 410 $\left(f_y = 250\,\text{MPa}\right)$ Sketch structural details.

3. Design a welded plate girder to carry UDL of 30 kN/m on whole span and 60 kN point at **35** 4 m from left support. Effective span is 17 m. Support width is 300 mm. $f_y = 250\,\text{MPa}$. Sketch structural details.

OR

4. Design a overhead square pressed steel tank for 2.5 lac liters of water capacity. **35** Staging hf = 14m, free board = 0.4 m. $f_y = 250\,\text{MPa}$. Sketch structural details.

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