

Roll No.

CE-803

B. E. (Eighth Semester) EXAMINATION, June, 2009

(Civil Engg. Branch)

ADVANCED STRUCTURAL DESIGN – II (STEEL)

(CE – 803)

Time : Three Hours

Maximum Marks : 100

Minimum Pass Marks : 35

- Note :**
- (i) Attempt any *four* questions.
 - (ii) All questions carry equal marks.
 - (iii) Assume suitable data if found necessary and state them clearly.
 - (iv) Use of the relevant I. S. codes and Steel tables is permitted.

1. Design the central section for a welded plate girder having an effective span of 12 m. It has to support a live load of 62 kN/m and total dead load of 42 kN/m. Take impact factor $= \frac{20}{14 + L}$, where L is span in metres. Sketch the details neatly.
2. Following data are given for a foot bridge :
 - (i) Types of girder – N type truss
 - (ii) Span of girder – 20 m c/c
 - (iii) Spacing of cross girders = 2.5 m/c/c

(iv) Live load = 4 kN/m^2

(v) Flooring-timber planks.

Design the most critical member(s) of top chord, bottom chord and the diagonal members.

3. Design the container of a circular hemispherical bottom water tank for capacity of 200 kL. Assume the following data :

(i) Staging height = 15 m

(ii) Wind speed = 39 m/s

(iii) Seismic Zone III

(iv) Foundation—Isolated footing

4. Design a silo to hold 1000 kN of wheat. Given :

Angle of internal friction $\phi = 25^\circ$

Unit weight of wheat = 8.5 kN/m^3

Sketch the relevant details.

5. Design for Indore, a self-supporting steel stack of height 60 m. The diameter of cylindrical shell is 4.25 metres. Foundation is raft resting on medium soil. Assume that 100 mm thick lining is supported by the stack throughout the stack.

6. Write short notes on any *five* of the following :

(a) Web splicing in girders

(b) Bearing stiffeners for plate girders

(c) Pressed steel tanks

(d) Design of transmission towers

(e) Rocker bearings

(f) Müller-Breslau principle