

B.Tech. Civil (Construction Management)

Term-End Examination

00752

December, 2016

ET-521(C) : DESIGN DETAILING

Time : 3 hours

Maximum Marks : 70

Note : Attempt any five questions. Use of IS 456 & 800 and scientific calculator is permitted. Any missing data may be assumed suitably.

1. (a) Draw a typical junction of a continuous beam and a column indicating the layout of reinforcement. Can you label this as a monolithic construction? Give reasons.
- (b) Explain in detail the test performed on cement as per IS 269 and also state the expected requirements. *2×7=14*
2. (a) For a rectangular column of size 400 × 850 mm, there are 4 bars equispaced along each short face and 4 bars equispaced along each long face. The total number of bars is 12 of 20 mm diameter. Draw a neat sketch to show the link-details for the column.
- (b) Draw a typical ductile detailing of a beam and column system as per IS code 13920.

2×7=14

3. (a) Explain the following terms :
- (i) Tie Bolt
 - (ii) Wedge
 - (iii) Sleeper
 - (iv) Raker Prop
 - (v) Joint Sealers
- (b) Draw the plan and elevation of 100 cum. capacity of an overhead tank of clear plan dimensions (6 m × 6 m) and free board of 200 mm. Assume height of staging to be 16 metres from the G.L. Assume footing to be 2 metres below the G.L. $2 \times 7 = 14$
4. (a) Design the member and gusset plate connection of a truss to carry an axial tension of 80 kN.
- (b) Explain the different types of welded joints in detail with proper symbols. $2 \times 7 = 14$
5. (a) Indicate the need of wind bracings in a vertical plane.
- (b) Draw the typical details of a solid web plate girder. $4 + 10 = 14$
6. (a) Explain in detail different kinds of loads coming on Roof truss. What are the methods to calculate the loads ?

- (b) Figure 1 (a) shows a staggered riveted group subjected to axial load P_1 . The riveted group has rivets in four straight rows and subjected to axial load P_2 .

Diameter of the rivets = 25 mm

Thickness of plate = 16 mm

Determine the safe loads P_1 and P_2 for the two cases.

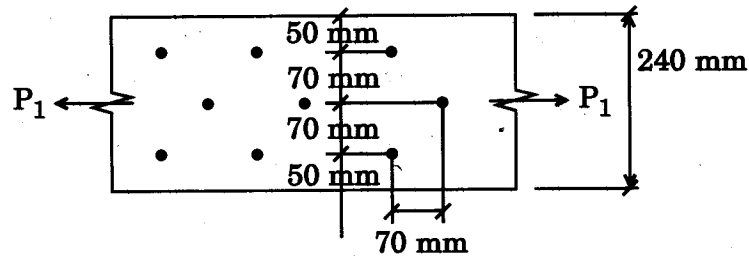


Figure 1 (a)

Edge distance is 50 mm; staggered pitch 70 mm; gauge is 70 mm.

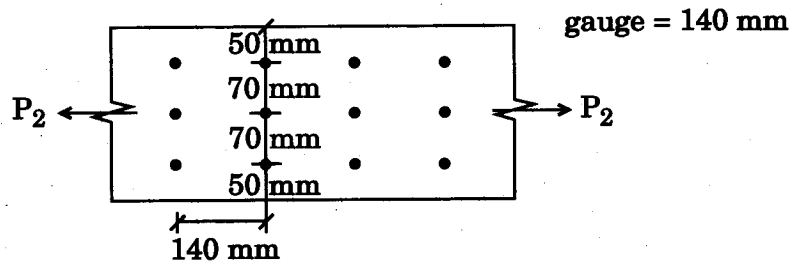


Figure 1 (b)

Assume the missing data suitably.

$2 \times 7 = 14$

7. Write short notes on any *four* of the following :

$$4 \times 3 \frac{1}{2} = 14$$

- (a) Voltage Regulation
- (b) UPS with Block Diagram
- (c) Transformers
- (d) Air-Conditioning Systems
- (e) Refrigeration Cycle

8. (a) What are the different types of wiring ?
Describe circuit and point wiring.

(b) What provisions are made in structures for
light installations ? What precautions are
required to be taken for them ? $2 \times 7 = 14$