



## CBCS SCHEME

18CV72

### Seventh Semester B.E/B.Tech. Degree Examination, June/July 2025 Design of RCC and Steel Structures

Time: 3 hrs.

Max. Marks: 100

- Note: 1. Answer any TWO full questions, choosing ONE full question from each module.  
2. Use of IS-456, IS-800, IS-3370(part-iv), SP-16, SP(6), Steel tables provided.

#### Module - 1

1. Design a reinforced concrete combined rectangular slab footing for two columns located at 4.5 m apart. The overall sizes of the columns are 400mm × 400mm and 600mm × 600mm and they are transferring 600kN and 1000 kN respectively. The centre of the lighter column is 0.4 m from the property line. The safe bearing capacity of the soil is 150 kN/m<sup>2</sup>. Use M20 concrete and Fe 415 steel. (50 Marks)

OR

2. Design a R.C.C cantilever retaining wall to retain leveled earth embankment 5m high above the ground level. The unit weight of soil is 16 kN/m<sup>3</sup>, Angle of repose is 30°. The SBC of soil is 145 kN/m<sup>2</sup>. The co-efficient of friction between soil and concrete is 0.55. Use M20 grade of concrete and Fe 415 steel. Also design shear key. (50 Marks)

#### Module - 2

3. Design a welded plate girder for an effective span of 14 m. Imposed load on the girder consists of UDL 45 kN/m in addition to two point loads each of magnitude 400 kN, placed at distance of 3 m on either side of midspan of the girder.

Design :

- Mid span cross section
- End panel design
- Intermediate stiffness
- End bearing stiffeners.

(50 Marks)

OR

4. Design a simply supported gantry girder to carry an electrically operated crane with the following data :

Span of crane bridge	= 25 m
Column spacing	= 8 m
Wheel bore	= 3.5 m
Crane capacity	= 200 KN
Weight of crane bridge	= 150 KN
Weight of trolley or crab	= 75 KN
Minimum hook distance	= 1 m
Weight of rail	= 0.3 KN/m
Height of rail	= 105 mm.

(50 Marks)

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