

CBCS Scheme

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15ARC4.2

Fourth Semester B.Arch. Degree Examination, Dec.2017/Jan.2018 Material & Methods in Building Construction – IV

Time: 4 hrs.

Max. Marks: 100

Note: 1. Answer any ONE full questions from each module.
2. Any missing data can be assumed suitably.

Module-1

- 1 Explain with neat sketches:
- Moment resistant frame. (05 Marks)
 - Advantages and principles of flat slab system. (05 Marks)
 - Differences between flat plate and flat slab system. Where is flat plate system used? (05 Marks)
 - A column head drop slab's detail for flat slab. (Consider effective length as L_1 and L_2 on X and Y axis respectively. No need to specify the reinforcement dia) (05 Marks)

OR

- 2 For an open office floor plate with columns 800×800 mm at 10.8 m center to center, cast with a flat slab systems. Draw (make appropriate assumptions for reinforcement ϕ and C/C spacing)
- Plan showing reinforcement detail in 1 : 50 scale. (Show at least 2 bays in X-direction and 2 bays in Y-direction). (08 Marks)
 - Structural section in 1 : 25 scale. (08 Marks)
 - Explain the importance of column capital drop slab in flat slab system, with sketches. (04 Marks)

Module-2

- 3 Explain with neat sketches:
- Waffle slab, its advantages and disadvantages and its sequential method of construction. (10 Marks)
 - Filler slab; its principles and various filler materials that can be used for the same. (10 Marks)

OR

- 4 An open cafeteria $5m \times 5m \times 3m$ has to be cast using Filler slab supported on beams and columns. Assuming appropriate details regarding column, beam and reinforcement sizes. Draw
- Roof plan with 200 mm dia and 100 mm deep (external dimensions) earthen pots as filler material. Show reinforcement detail as well. (1 : 25 scale). (08 Marks)
 - Section showing filler material and reinforcement (1 : 25 scale). (08 Marks)
 - A sketched view of finished slab/space. (04 Marks)

Module-3

- 5 Write short notes with neat sketches wherever applicable :
- Properties of mild steel. (05 Marks)
 - List and describe FIVE uses of structural steel as construction building material. (05 Marks)
 - Draw a typical bolted connection between I section steel column and an I section steel beam. (05 Marks)
 - Types of steel used in construction-on the basis of finishing method used. (05 Marks)

OR

- 6 A column free manufacturing unit with dimensions $10\text{m} \times 10\text{m} \times 5.5\text{m}$ has to be constructed using structural steel members. Draw
- Floor plan (1 : 50 scale) (04 Marks)
 - Structural framing plan (1 : 50 scale) (04 Marks)
 - Detail out any two connections (1 : 5 scale) (05 Marks)
 - Sketch a free hand proportionate isometric of the structure. (07 Marks)

Module-4

- 7 a. Draw plan, elevation and section of a steel glazed casement window (with z sections) of size $1500 \times 1200\text{mm}$ (1 : 10 scale) (10 Marks)
- b. Draw any two joinery details in 1:2 scale. (10 Marks)

OR

- 8 Write short notes with neat sketches:
- Steel doors for garages. (05 Marks)
 - Steel doors for workshops. (05 Marks)
 - Collapsible gate-details and uses. (05 Marks)
 - Rolling shutters-principle, details and uses. (05 Marks)

Module-5

- 9 a. Draw plan, elevation and section of an aluminium sliding glazed window of size $1800\text{mm} \times 1100\text{mm}$. (1 : 20 scale) (10 Marks)
- b. Draw any two joinery details in 1 : 2 scale. (10 Marks)

OR

- 10 Write short notes on:
- Aluminium as a building material. (10 Marks)
 - Types and details of aluminium partition. (10 Marks)
(Include neat sketches in your answers)
