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.

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-1

1 Explain with neat sketches:
- a. Moment resistant frame. **(05 Marks)**
- b. Advantages and principles of flat slab system. **(05 Marks)**
- c. Differences between flat plate and flat slab system. Where is flat plate system used? **(05 Marks)**
- d. 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 800×800mm at 10.8 m center to center, cast with a flat slab systems. Draw (make appropriate assumptions for reinforcement ϕ and C/C spacing)
- a. Plan showing reinforcement detail in 1 : 50 scale. (Show at least 2 bays in X-direction and 2 bays in Y-direction). **(08 Marks)**
- b. Structural section in 1 : 25 scale. **(08 Marks)**
- c. Explain the importance of column capital drop slab in flat slab system, with sketches. **(04 Marks)**

Module-2

3 Explain with neat sketches:
- a. Waffle slab, its advantages and disadvantages and its sequential method of construction. **(10 Marks)**
- b. 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
- a. 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)**
- b. Section showing filler material and reinforcement (1 : 25 scale). **(08 Marks)**
- c. A sketched view of finished slab/space. **(04 Marks)**

Module-3

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

OR

6 A column free manufacturing unit with dimensions 10m × 10m × 5.5m has to be constructed using structural steel members. Draw

a. Floor plan (1 : 50 scale) **(04 Marks)**
b. Structural framing plan (1 : 50 scale) **(04 Marks)**
c. Detail out any two connections (1 : 5 scale) **(05 Marks)**
d. 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 × 1200mm (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:

a. Steel doors for garages. **(05 Marks)**
b. Steel doors for workshops. **(05 Marks)**
c. Collapsible gate-details and uses. **(05 Marks)**
d. 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 1800mm × 1100mm. (1 : 20 scale) **(10 Marks)**
b. Draw any two joinery details in 1 : 2 scale. **(10 Marks)**

OR

10 Write short notes on:

a. Aluminium as a building material. **(10 Marks)**
b. Types and details of aluminium partition. **(10 Marks)**
(Include neat sketches in your answers)

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