

USN

--	--	--	--	--	--	--	--	--	--

15ARC42

## Fourth Semester B.Arch. Degree Examination, July/August 2021 Materials and Methods in Building Construction – IV

Time: 4 hrs.

Max. Marks: 100

**Note: 1. Answer any FIVE full questions.  
2. Draw sketches wherever necessary.**

- 1 Explain with neat sketches:
  - a. The concept of flat slab and where are they used. (04 Marks)
  - b. Differentiate between flat slab and conventional slab system. (08 Marks)
  - c. The general design principles followed in the design of moment framed structure. (08 Marks)
- 2 Draft the flat slab roof with drop panel and column capital with RCC columns of size  $600 \times 600$  at 6.00 mts c/c. Assume necessary detail. Draw to suitable.
  - a. Plan with reinforcement showing. (06 Marks)
  - b. Cross section (06 Marks)
  - c. Enlarged section of flat slab with drop panel and column capital with reinforcement detail. Scale 1:10. (08 Marks)
- 3
  - a. Explain RCC filler slab construction. State its advantages and disadvantages. (10 Marks)
  - b. Draw an enlarged cross section in 1:10 scale indicating slab reinforcement details, ribs and suitable filler materials with adequate labeling and dimensioning (consider the span as 5m with intermediate ribs). (10 Marks)
- 4
  - a. List down the advantages and disadvantages of waffle slab and partplan. (08 Marks)
  - b. Draft a part section of an entrance porch of a college building having a waffle slab arrangement. The section should include all the reinforcement details, placement of pods with necessary labeling and dimensions [1:50 scale]. (12 Marks)
- 5 Explain the principles and method of construction of typical steel columns and beams with appropriate detail sketch. (20 Marks)
- 6 Show the joinery detail to a scale of 1:2. Using ISMB and ISMC with standard sections.
  - a. Junction in between column and beam. (07 Marks)
  - b. Junction in between base plate and column showing necessary detail. (07 Marks)
  - c. Junction between beam and purlin. (06 Marks)
- 7
  - a. Sketch the details opaque collapsible steel gate and label all the parts. Indicate the specifications of materials and dimensions. (10 Marks)
  - b. Write notes on steel door for garages and workshops. (10 Marks)

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.

- 8 a. Draw plan, elevation of rolling shutter for a car showroom with MS perforated shutter of opening size  $3600 \times 3300$ mm. Draw to suitable scale. (10 Marks)
- b. Show the detail at corner junction, how the channel is fixed to wall. Scale = 1:5. (05 Marks)
- c. Show the rolling shutter barrel enlarged detail. How it is fixed to wall? (05 Marks)
- 9 Draw the plan, elevation and section of an aluminium office partition;  $3.0 \text{ m} \times 3.0 \text{ m}$  ; with an aluminium sliding door  $0.9 \text{ m} \times 2.1 \text{ m}$  to one side. The infill panels are a combination of prelaminate board and glass. Draw all relevant details in 1 : 10 scale. (20 Marks)
- 10 Draw the plan, elevation and section of an aluminium framed three track window;  $3.0 \text{ m} \times 1.2 \text{ m}$  ; with sliding shutters. Draw all relevant details in 1:10 scale. (20 Marks)

\*\*\*\*\*