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Fifth Semester B.Arch. Degree Examination, Jan./Feb. 2023 Material and methods in Building Construction – V

Time: 4 hrs.

Max. Marks: 100

- Note:* 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. Adherence to scale is compulsory.
3. Provide explanatory notes and specifications as necessary.
4. Assume suitable data where missing.

Module-1

- 1 An industrial building required to provide a 'L' angle roof truss for a span of size 9.00 mtr 15.00 mtr wide. A truss is resting on ISMC column of size 300mm wide and 600mm depth. Draw the following construction details :
- a. Cross section of 'L' – angle truss – 1 : 50 scale (10 Marks)
b. Gutter detail – 1 : 5 scale (05 Marks)
c. Ridge detail – 1 : 5 scale. (05 Marks)

OR

- 2 A warehouse Garment factory requires, North light Roofing made up of Tubular Truss for a span of 12.00mtr × 18.00mtr supported on ISMC of 300 dia column provide the following construction detail :
- a. Roof plan – 1 : 100 (06 Marks)
b. Section showing North light truss – 1 : 50 (08 Marks)
c. Gutter detail in between two truss – 1 : 10 (06 Marks)

Module-2

- 3 A factory building requires PEB structures for a span of 18.00mtr × 30.00mtr, and has a clear height of 6.00mtr showing roofing and siding with M.S sheets, provide the following details :
- a. Section showing portal frame – 1 : 100 scale (10 Marks)
b. Details showing fixing of roofing – 1 : 10 scale (05 Marks)
c. Detail showing fixing at ridge and Girt – 1 : 10 scale. (05 Marks)

OR

- 4 Explain the concept and principle for the following necessary sketch details on :
- a. Shell structure (10 Marks)
b. Geodesic Domes. (10 Marks)

Module-3

- 5 Explain construction of a Hyperbolic paraboloid Roof for a square base of 10.0m. Give details of reinforcement. (10 Marks)
- a. Plan to scale 1:100 (10 Marks)
b. Cross section of scale 1:100

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.

OR

- 6 A folded plate Roof is proposed for a building of size 12.0m × 24.0m. Draw the following:
- Roof plan to scale 1:100 (05 Marks)
 - Partial section with reinforcement details to scale 1:50 (10 Marks)
 - Sky light fixing in folded plate. (05 Marks)

Module-4

- 7 Explain with neat sketches:
- Tensile structures (10 Marks)
 - Pneumatic structures. (10 Marks)

OR

- 8 An exhibition space of 10m × 20m needs a space frame structure to be designed. Provide the following drawings.
- Roof plan – 1:100 (08 Marks)
 - Section – 1:50 (08 Marks)
 - Any 2 details – 1:5 (04 Marks)

Module-5

- 9 a. How waterproofing is done in following cases:
- Toilets
 - Basement. (10 Marks)
- b. Explain various construction chemicals used in buildings. (10 Marks)

OR

- 10 Write short notes on:
- Sealants
 - Plaster of paris
 - Gypsum
 - Adhesive
 - Fibre reinforced plastic. (20 Marks)

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