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## Second Semester B.Arch. Degree Examination, Aug./Sept. 2020 Materials and Methods in Building Construction

Time: 4 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

### Module-1

- 1 A terrace space measuring  $8000 \times 14000$ mm needs to be provided with Mangalore tiles – Queen post Roof. Consider the end supports with  $1\frac{1}{2}$  thick brick wall. Draw the following to scale specified and label all the parts with dimensions.
- Key plan of the roof (scale 1:100) (03 Marks)
  - Detailed plan (scale 1:20/1:30) (06 Marks)
  - Detailed section (Scale 1:20/1:30) (06 Marks)
  - Any two details to approximate scale. (05 Marks)

OR

- 2 Explain the following with neat sketches
- Different types of steel truss Roof (05 Marks)
  - Collared Roof (05 Marks)
  - King Post Roof (05 Marks)
  - Lean to Roof. (05 Marks)

### Module-2

- 3 Write short notes on :
- Different types of cement and their applicability (05 Marks)
  - What are the various recommended mixes of concrete used for construction? (05 Marks)
  - Composition of concrete and various admixtures used enhance its workability. (05 Marks)
  - What are the defects in steel with neat sketches? (05 Marks)

OR

- 4 Write short notes on:
- Write briefly about curing and water proofing of concrete. (05 Marks)
  - What are the different field tests and lab tests conducted for quality check of cement? (05 Marks)
  - What are the precautions to be taken while placing of concrete? (05 Marks)
  - Write briefly about different market forms of steel with neat sketches? (05 Marks)

### Module-3

- 5 A Rectangular column measuring  $450 \times 200$ mm has to be provided with an appropriate footing measuring  $1500 \times 1300$  mm and 1500 mm deep. Draw the following to scale specified and label all the parts with dimensions.
- Detailed Plan (Scale 1:20 / 1:30) (05 Marks)
- Detailed Section (Scale 1:20 / 1:30) (05 Marks)
- Detailed of Reinforcement to scale (03 Marks)
- Isometric view to scale. (07 Marks)

OR

- 6 Explain the following with neat sketches:
- Grillage foundation (05 Marks)
  - Raft foundation (05 Marks)
  - Construction or Expansion Joints (05 Marks)
  - Types of footings (05 Marks)

**Module-4**

- 7 A room measuring 6000mm × 6000mm has a RCC - waist slab - dog legged - External staircase to the terrace, made of Granite flooring and stainless steel railing. Consider the width of the staircase flight as 1200mm, Height of the room as 3150mm. Draw the following to scale specified and label all the parts with dimensions.
- Key plan of the room showing external staircase to terrace (Scale 1:100) (02 Marks)
  - Detailed plan (Scale 1:20 / 1:30) (06 Marks)
  - Detailed Sectional Elevation (Scale 1:20 / 1:30) (06 Marks)
  - Flooring and skirting detail (Scale 1:5 / 1:2) (03 Marks)
  - Railing and Baluster fixing detail (Scale 1:5 / 1:2) (03 Marks)

OR

- 8 Explain the following with neat sketches :
- Different types of staircase with reference to arrangement (05 Marks)
  - Folded plate staircase with reinforcement details (05 Marks)
  - Timber staircase with double stringer beam (05 Marks)
  - Pre-cast RCC staircase. (05 Marks)

**Module-5**

- 9 A children's library hall measuring 8000 × 5000 mm has a Straight flight – Internal staircase to the first floor Reading room, made of Timber and steel. The width of the staircase is 1500 mm height of the ground floor library hall is 3500 mm. Consider the railing made of stainless steel. Draw the following to scale specified and label all the parts with dimensions.
- Key plan of the room showing , external staircase to terrace (Scale 1:100) (02 Marks)
  - Detailed Plan (Scale 1:20 / 1:30) (06 Marks)
  - Detailed Sectional Elevation (Scale 1:20 / 1:30) (06 Marks)
  - Flooring and skirting detail (Scale 1:5 / 1:2) (03 Marks)
  - Railing and Baluster fixing detail (Scale 1:5 / 1:2) (03 Marks)

OR

- 10 Explain the following with neat sketches
- Spiral staircase (05 Marks)
  - Fire Escape Staircase (05 Marks)
  - Wood and concrete composite staircase (05 Marks)
  - Steel and Glass composite staircase. (05 Marks)

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