

CBCS SCHEME

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15ENG1.5

First Semester B.Arch. Degree Examination, Dec.2018/Jan.2019

Building Structures – I

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Draw and describe the properties of arch. Indicate load path. (10 Marks)
b. Explain with neat sketch the classification of structural elements based on geometry and stiffness. (10 Marks)

OR

- 2 a. Write short note on: i) Dome ii) Vault iii) Shell iv) Cable stayed v) Membranes & net. (10 Marks)
b. Explain the resistance mode for any five structural system with neat sketch. (10 Marks)

Module-2

- 3 a. What are the advantages and disadvantages of wood, steel, concrete and masonry structures? (10 Marks)
b. What are the different materials used in structural building? (10 Marks)

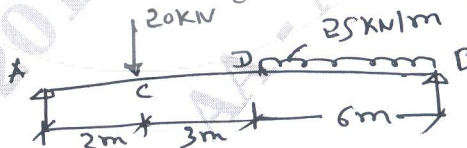
OR

- 4 a. Calculate the dead load of RCC beam of size 25cm × 50cm, length of beam is 5m. Unit weight of RCC beam is given by 2400 kg/m³. (10 Marks)
b. Explain the following briefly:
i) Live load ii) Dead load iii) Gravity load iv) Lateral load. (10 Marks)

Module-3

- 5 a. Describe load path and tributary load. Explain the mechanism of load transfer. (10 Marks)
b. Find the reactions at supports for the following beam shown in Fig.Q5(b). (10 Marks)

Fig.Q.5(b)



OR

- 6 a. What are the different types of supports and loads? (10 Marks)
b. Draw and describe the following:
i) Compression ii) Tension iii) Bending iv) Torsion v) Shear. (10 Marks)

Module-4

- 7 a. With the help of neat sketch, explain the stress strain relationship for mild steel specimen. (10 Marks)
b. A bar of 300mm length and of 15mm diameter is stretched by 0.8mm due to axial pull of 20kN. Calculate stress, strain, and modulus of elasticity. (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.

OR

- 8 a. State Varignon's theorem and state the conditions of equilibrium for Coplanar non concurrent force system. (10 Marks)
- b. The following forces act at a point:
- 20N inclined at 30° towards north of east
 - 25N towards north
 - 30N towards north west
 - 35N inclined at 40° towards south of west
- Find the magnitude and direction of the resultant force. (10 Marks)

Module-5

- 9 a. Explain geometric stability of truss with neat sketch. (10 Marks)
- b. List any five common types of trusses with a neat sketch. (10 Marks)

OR

- 10 a. What is a truss? Explain what is perfect truss and imperfect truss. (10 Marks)
- b. Find the self weight or dead load of the truss shown in Fig.Q.10(b) and support reactions for self weight using ISA $75 \times 75 \times 10$ (weight per meter = 11 kg/m) as truss members. (10 Marks)

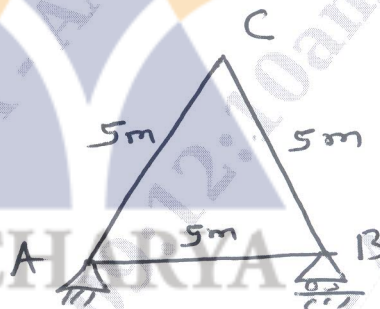


Fig.Q.10(b)
