

CBCS SCHEME

USN

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

15ENG/ARC15

First Semester B.Arch. Degree Examination, Dec.2019/Jan.2020 Building Structures I

Time: 3 hrs.

Max. Marks: 100

**Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. Assume missing data suitably.**

Module-1

1 Explain in detail 'How the structures evolved' from primitive to modern time. (20 Marks)

OR

2 Write a brief note on: (i) Truss (ii) Arch (iii) Vault (iv) Dome (20 Marks)

Module-2

3 a. What are the advantages of mildsteel and concrete? (10 Marks)

b. What is reinforce cement concrete? Mention the important properties of cement and steel. (10 Marks)

OR

4 a. Briefly explain:
(i) Live load (ii) Dead load (iii) Impact load (iv) Earth quake load (10 Marks)

b. Briefly explain tall buildings and long span buildings. (10 Marks)

Module-3

5 a. Explain the principle of transmissibility of forces. (05 Marks)

b. Find the magnitude and direction of the resultant of the coplanar force system shown in Fig. Q5 (b). (10 Marks)

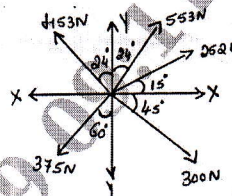


Fig. Q5 (b)

c. Explain types of loads and supports. (05 Marks)

OR

6 a. A simply supported beam of span 6 m is subjected to loading as shown in Fig. Q6 (a). Determine the reactions at A and B. (10 Marks)

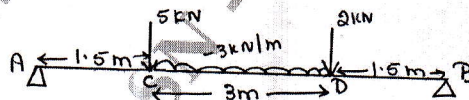


Fig. Q6 (a)

b. A sphere weighing 100 N is fitted in a right angled notch as shown in Fig. Q6 (b). If all contact surfaces are smooth, determine the reactions at contact surface. (10 Marks)

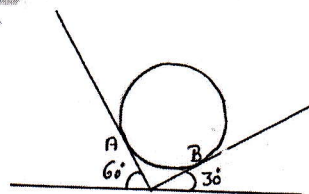


Fig. Q6 (b)

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-4

- 7 a. Explain the terms stress, strain and Poisson's ratio. (06 Marks)
 b. Find the stress, strain and elongation of a steel rod, 1 m in length and 20 mm in diameter, when it is subjected to an axial pull of 50 kN, $E_s = 200 \text{ GN/m}^2$. (09 Marks)
 c. Calculate the modulus of elasticity of the material of a bar of length 300 mm and a diameter of 30 mm subjected to a tensile load of 60 kN. The elongation of bar is 0.4 mm. (05 Marks)

OR

- 8 a. State and explain parallelogram and polygon law of forces. (06 Marks)
 b. Find the moment of the force $F = 600 \text{ N}$ about A as shown in Fig. Q8 (b). (04 Marks)

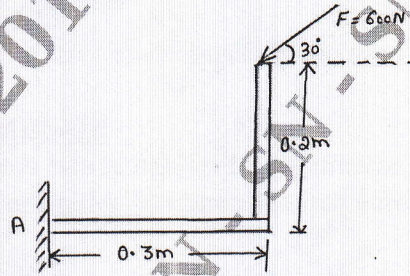


Fig. Q8 (b)

- c. With neat sketch, explain stress strain curve for mild steel. (10 Marks)

Module-5

- 9 a. Explain the concept of triangulation. (10 Marks)
 b. List and explain the classification of trusses. (06 Marks)
 c. Find the support reactions for the truss shown in Fig. Q9 (c). (04 Marks)

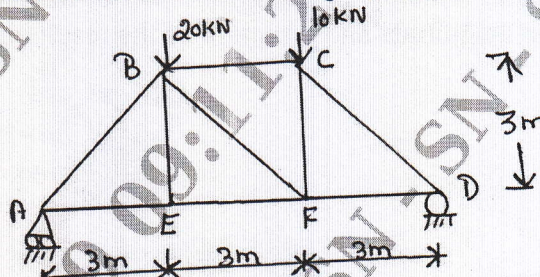


Fig. Q9 (c)

OR

- 10 Explain the two methods used for the analysis of truss. (20 Marks)
