CBCS SCHEME

USN | | | | | | | | | |

15ARC/ENG15

First Semester B.Arch. Degree Examination, Aug./Sept.2020
Building Structures - I

Time: 3 hrs. Max. Marks:100

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

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 - 1

1 a. Explain Lateral resistance system with relevant sketches. (10 Marks)
b. Explain one way and two way system with reference to Yield line theory. (10 Marks)

OR

2 a. Explain Force system in Arch , Dome and Truss with sketch. (10 Marks)
b. Explain structure as a device for channeling loads. (10 Marks)

MODULE - 2

3 Brief Mechanical properties of the following :
a. Wood
b. Masonary.
c. Steel.
d. Concrete. (20 Marks)

OR

4 Explain the following :
a. Dead load.
b. Live load.
c. Impact load.
d. Thermal load.
e. Lateral load [Seismic and Wind load]. (20 Marks)

MODULE - 3

5 Explain the following with neat sketches :
a. Stress.
b. Tension.
c. Compression.
d. Shear.
e. Bending.
f. Torsion. (20 Marks)

OR

6 a. Explain equations of Equilibrium. (06 Marks)
b. Find the reactions for the following fig. Q6(b) : (08 Marks)

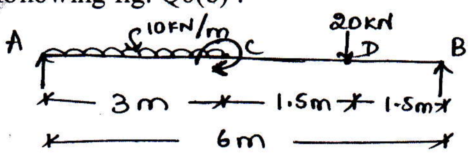
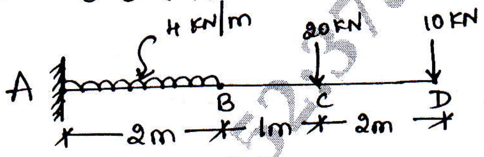


Fig. Q6(b)

c. Find the reaction for the following fig. Q6(c). (06 Marks)

Fig. Q6(c)

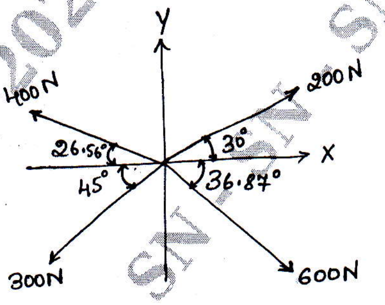


MODULE - 4

7 a. Explain Stress – Strain Graph of Mild steel. (10 Marks)

b. Define Parallellogram law of forces and find the resultant and angle for the following Fig. Q7(b). (10 Marks)

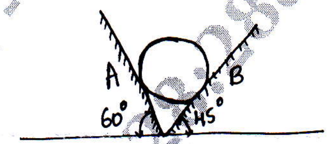
Fig. Q7(b)



OR

8 a. A 400N sphere is resting in a trough as in fig. Q8(a). Determine the reactions at contact surfaces A and B. Assume surfaces are smooth. (10 Marks)

Fig. Q8(a)



b. Explain i) Poisson's ratio ii) Stress iii) Strain. (10 Marks)

MODULE - 5

9 a. Explain the concept of Triangulation in Truss. (10 Marks)

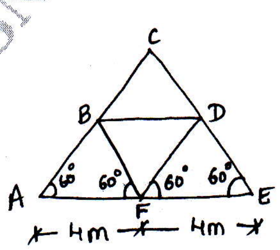
b. Explain the different methods used to analyse the Truss. (10 Marks)

OR

10 a. What are the assumptions made in the analysis of Truss? Explain the classification of Trusses with example for each. (12 Marks)

b. Calculate the weight of the Truss shown in the fig. Q10(b), if the members are ISA 45 × 45 × 6mm and 4.0kg/m. (08 Marks)

Fig. Q10(b)



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