CBCS SCHEME

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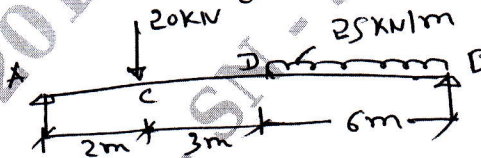
6   a.   What are the different types of supports and loads? **(10 Marks)**
    b.   Draw and describe the following:
         i) Compression   ii) Tension   iii) Bending   iv) Torsion   v) Shear. **(10 Marks)**

Module-4

7   a.   With the help of neat sketch, explain the stress stain 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)**

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:
   i)   20N inclined at 30° towards north of east
   ii) 25N towards north
   iii) 30N towards north west
   iv) 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)**
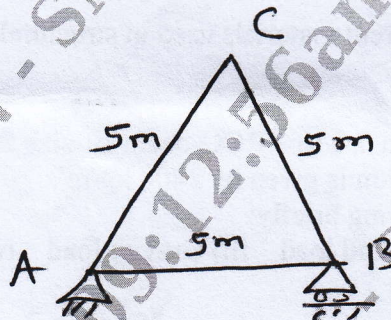

Fig.Q.10(b)

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