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14ENG1.5

First Semester B.Arch. Degree Examination, Dec.2016/Jan.2017
Building Structures - I

Time: 3 hrs.

Max. Marks:100

- Note: 1. Answer ONE full question from each Module.**
2. Missing data, if any, may be suitably assumed and clearly stated.

MODULE - 1

- 1 a. Explain different structural systems with sketches. (10 Marks)
 b. Explain shear wall, with relevant sketches. (10 Marks)

OR

- 2 a. Explain load path and load transfer with suitable examples for a natural structure and a man made structure. (10 Marks)
 b. Explain evolution of structures with respect to historical perspective and present developments. (10 Marks)

MODULE - 2

- 3 Explain the choice of structural material for domestic and industrial buildings and for tall and long span buildings. (20 Marks)

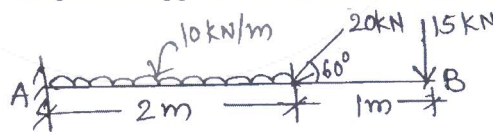
OR

- 4 Write short notes with examples :
 a. Dead load and live load. (05 Marks)
 b. Static and Dynamic load. (05 Marks)
 c. Wind load and Seismic load. (05 Marks)
 d. Impact load and Thermal load. (05 Marks)

MODULE - 3

- 5 a. Explain the principle of transmissibility of forces, with a suitable example. (06 Marks)
 b. Solve for the reactions developed at support for the beam shown in fig.Q5(b). (14 Marks)

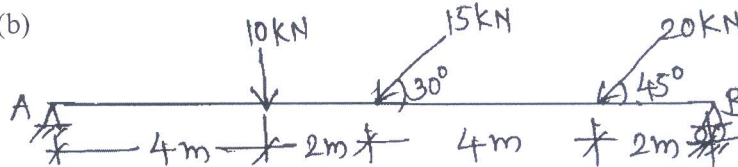
Fig.Q5(b)



OR

- 6 a. Explain different types of supports. (08 Marks)
 b. Find the reactions developed at supports A & B of the loaded beam shown in fig.Q6(b). (12 Marks)

Fig.Q6(b)



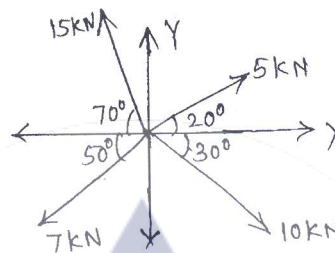
MODULE - 4

- 7 a. Explain the stress – strain relationship for mild steel. (08 Marks)
 b. A specimen of steel 25mm diameter with a gauge length of 200mm is tested to destruction. It has an extension of 0.16mm under a load of 80kN and the load at elastic limit is 160kN. The max. load is 180kN. The total extension at fracture is 56mm and diameter at neck is 18mm. Find i) The stress at elastic limit ii) Young's Modulus iii) Percentage elongation iv) Percentage reduction in area v) Ultimate tensile stress. (12 Marks)

OR

- 8 a. Explain Composition and Resolution of forces and state law of parallelogram and Polygon law of forces. (08 Marks)
 b. Determine the magnitude and direction of the resultant of forces shown in fig.Q8(b). (12 Marks)

Fig.Q8(b)

**MODULE - 5**

- 9 a. Explain the common truss configurations with relevant sketches. (10 Marks)
 b. Explain the concept of triangulation, with neat sketches. (10 Marks)
- OR
- 10 a. Define truss with an example. List the assumptions used in the analysis of trusses. (08 Marks)
 b. Explain different methods to analyse the truss. (12 Marks)

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