Q.P. Code: (16CE103) **R16**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations Nov/Dec 2019

STRENGTH OF MATERIALS-I

(Civil Engineering)

Time: 3 hours Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	**a**	Define Stress, Strain and Young's modulus	**6M**
	b	Fid the Young's Modulus of a brass rod of diameter 25 mm ad of length 300 mm subjected to a tensile load of 60 kN when the extension of the rod is equal to 0.2 m.	**4M**

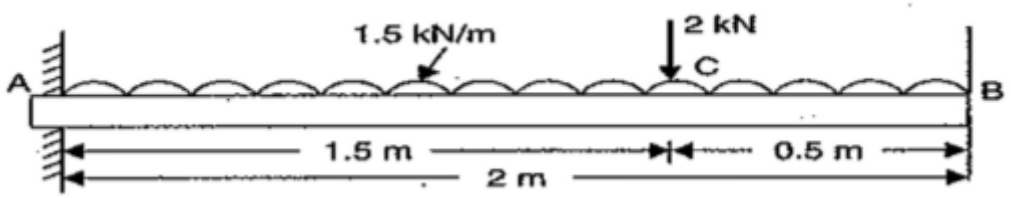
OR

2		Derive the relation between Young's Modulus (E), Rigidity Modulus (G) and Bulk Modulus (K).	**10M**

UNIT-II

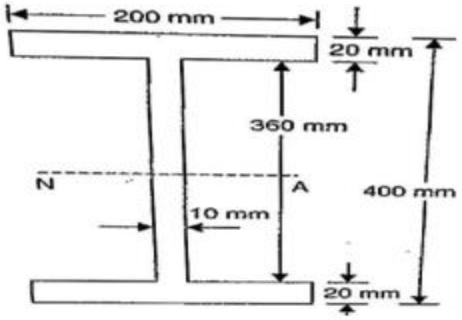
3		Draw shear force and bending moment diagram for cantilever beam subjected to uniformly distributed load.	**10M**

OR

		Draw shear force and bending moment diagram for the following beam.	**10M**
4			

UNIT-III

5		A rolled steel joist of I section has a dimensions as shown in fig. This beam of I section carries a uniformly distributed load of 40 kN /m run on a span of 10 m, calculate the maximum stress produced due to bending.	**10M**



OR

6		A beam is simply supported and carries a uniformly distributed load of 40KN/m run over the whole span. The section of the beam is rectangular having depth as 500mm. If the maximum stress in the material of the beam is 120 N/mm^2 and moment of inertia of the section is 7 x 10^8 mm4, find the span of the beam.	**10M**

UNIT-IV

7 A beam 6 m long, simply supported at its ends, is carrying a point load of 50 kN at its center. The moment of inertia of the beam is given as equal to 78 x 10^6 mm4 and if E for the material of the beam = 2.1 x 10^5 N/mm^2, calculate: (i) Deflection at the Centre of the beam and (ii) slope at the supports. **10M**

OR

8 A cantilever of length 3m carries a uniformly distributed load over the entire length. If the deflection at the free end is 40 mm, find the slope at the free end. **10M**

UNIT-V

9 A cantilever beam of length 3m carries a uniformly distributed load of 80 kN/m over the entire length. If E= 2 x 10^8 kN/m^2 and I=1 x 10^8 mm^4, find the slope and deflection at the free end using conjugate beam method. **10M**

OR

10 A solid shaft of 200 mm diameter has the same cross sectional area as that of a hollow shaft of the same material with inside diameter of 150 mm. Find the ratio of the power transmitted by the hollow shaft by the same speed. **10M**

*** END ***