VIT
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Continuous Assessment Test – I

Programme Name & Branch: B tech Civil Engineering

Course Name & Code: CLE 2002-Strength of Materials

Class Number: 3730 **Slot: C1+TC1** **Exam Duration: 90 mins** **Max Marks: 50**

General instruction:

Answer all questions

Section A (10 x 5 = 50 marks)

1. A brass bar having a cross-sectional area of 1000 mm^2 is subjected to an axial force as shown in Figure 1. Find the total change in the length of the bar.
Take E = 1.1 x 10^5 N/mm^2

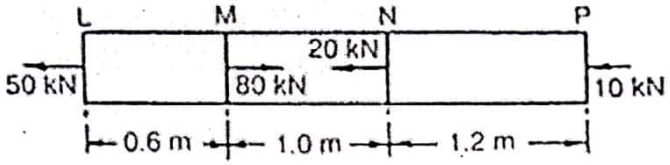

Figure 1

2. A brass and two steel rods supports a load of 1000 kN as shown in Figure 2. The cross sectional area of brass and steel rods are 3000 mm^2 and 2000 mm^2. Find the stresses in steel and brass rods. Take E for steel = 2 x 10^5 N/mm^2 and E for brass =1 x 10^5 N/mm^2.

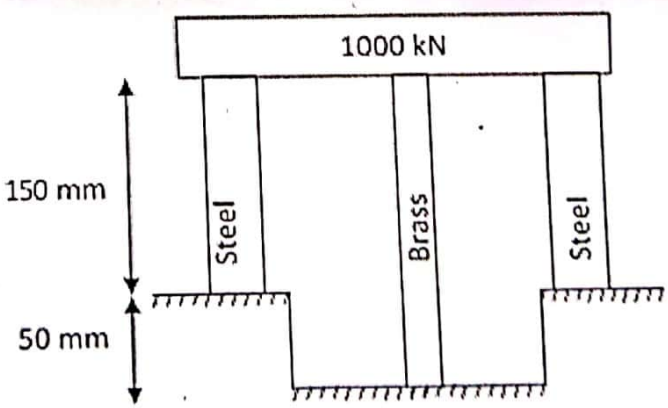

Figure 2

3 Define modulus of elasticity and modulus of rigidity and derive expression relating them.

4 Draw the variation of bending moment and shear force along the length of the beam shown in Figure 3 and find values at salient points

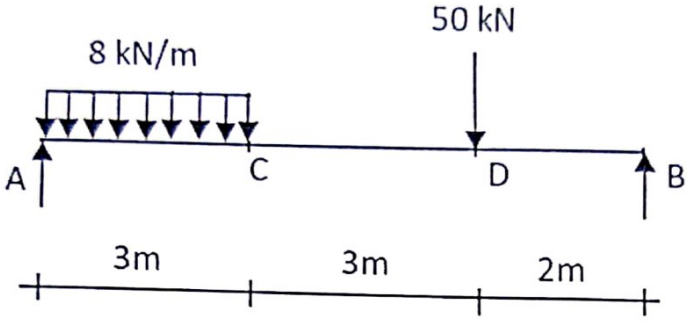

Figure 3

5 Draw shear force and bending moment diagram for the overhanging beam shown in Figure 4. Also find maximum bending moment and locate the point of contra flexure.

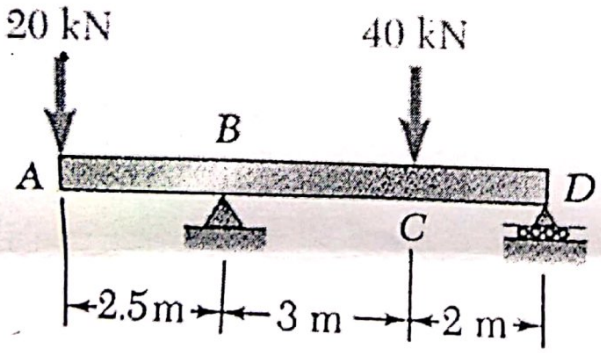

Figure 4