**Term Paper**
**Course : Solid Mechanics I**
**Course Code: CE 502**

1. a) What is stress and strain? Disscuss the stress-strain curve for mild steel.                                                                       **5**

   b) An aluminum rod is rigidly attached between a steel rod and a bronze rod as shown in Fig. P-108. Axial loads are applied at the positions indicated. Find the maximum value of P that will not exceed a stress in steel of 140 MPa, in aluminum of 90 MPa, or in bronze of 100 MPa.          **5**
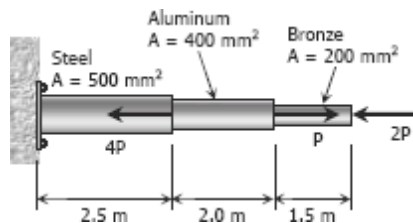


2.a)Discuss            different            types            of            loading.         **3**

   b) Cantilever beam loaded as shown in Fig. Draw SFD and BMD. **7**
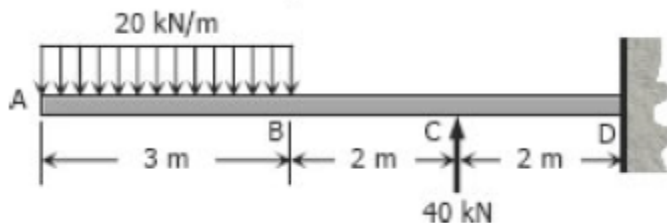


3. a) : A simply supported rectangular beam, 2 in wide by 4 in deep, carries a uniformly distributed load of 80 lb/ftover its entire length. What is the maximum length of the beam if the flexural stress is limited to 3000 psi?**5**

   b)A beam made by bolting two C10 ×30 channels back to back, is simply supported at its ends. The beam supports a central concentrated load of 12 kips and a uniformly distributed load of 1200 lb/ft, including the weight of the beam. Compute the maximum length of the beam if the flexural stress is not to exceed 20 ksi.                                                                       **5**

Designation                    C10 ×30

S                              20.7 in3

4. a) Two plates of 7 mm thickness are connected by a double riveted lap joint of zigzag pattern. Calculate rivet diameter, rivet pitch and distance between rows of rivets for the joint. Assume 90MPa t s = , 60 MPa s s = , 120MPa.                                **5**

  b) A plate 50 mm wide and 12.5 mm thick is to be welded to another plate by means of parallel fillet welds. The plates are subjected to a load of 50 kN. Find the length of the weld. Assume allowable shear strength to be 56 MPa.
**5**