Mr. Chanderpel

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -1 EXAMINATION-SEP-2018
B.Tech. - IIIrd Semester

COURSE CODE:10B11CE311   MAX. MARKS:15

COURSE NAME: Mechanics of Solids

COURSE CREDITS: 04   MAX. TIME: One Hour

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

Q.1. (i) Define the following terms and its uses in practical life.   **(2+1+2 = 5)**

    (1) Resilience   (2) Creep

(ii) Draw the Stress and Strain diagram for mild steel showing different zones.

(iii) Derive the relation between following elastic constants

    (1) E, υ and G   (2) K, G and υ

Q.2. In the arrangement as shown below, the stepped steel bar ABC is loaded by a load P. The material has young modulus E = 200 GPa and the two portion AB and BC have an area of cross section 1 cm^2 and 2 cm^2 respectively. Find the magnitude of load in kN to fill the gap of 0.75mm.   **(5)**
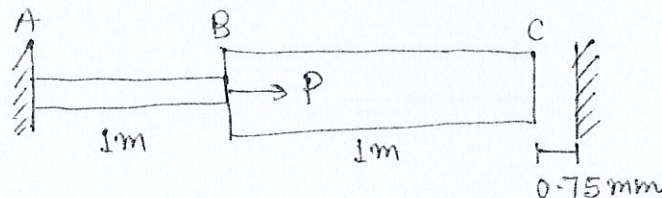
Q.3. The cross-sectional area of a bar is given by $(100 + x^2/100)$ mm^2, where x is the distance of the section from one end. Find the increase in length of the bar for given loading. E = 2 X 10^5 N/mm^2.   **(5)**