JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- OCT-2018

B.Tech. IIIrd Semester

COURSE CODE: 10B11CE311   MAX. MARKS: 25

COURSE NAME: Mechanics of Solids

COURSE CREDITS: 04   MAX. TIME: 1.5 Hours

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


Q.1 A rigid block ABC, weighing 180kN is supported by three rods symmetrically placed as shown below. Assuming that the block was initially horizontal and remains horizontal after increasing the temperature of the rods by 25^{0}C. Determine the stress in each rod. E for steel = 200kN/mm^2, E for bronze = 80 kN/mm^2, α for steel = 12 X 10^{-6}, α for bronze = 20 X 10^{-6} per ^{0}C.

(6)
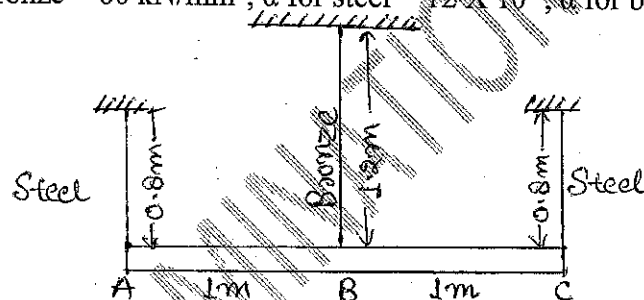
Q.2. Draw the shear force and bending moment diagram for the given beam. Also draw the bending pattern of the beam.
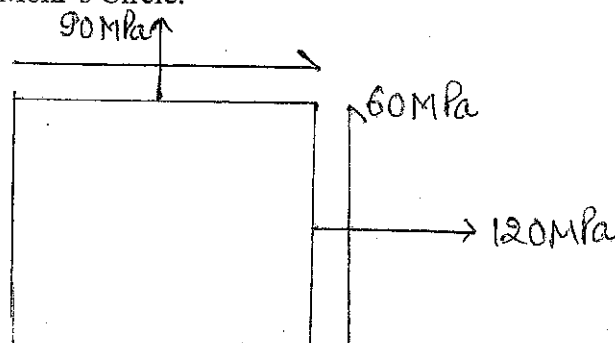
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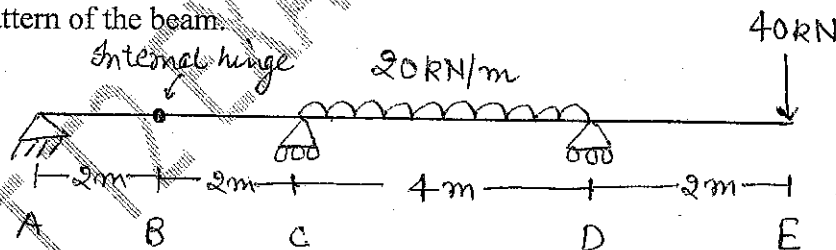
Q.3. For the given section find (i) Principal Plane (ii) Principal Stress (iii) New normal and shear stress after rotating the element by 35^0 in anticlockwise direction by using prescribed equation. Also validate your answers by Mohr's Circle.

(8)

Q.4. Draw the loading and support of beam by using bending and shear force diagram of the beam shown below. Distance between AE = 4m, EG = 4m, GB = 2m, BC = 2m, CF = 4m, FD = 4m. **(5)**