

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- SEP- 2017

B.Tech.IIIrd Semester

COURSE CODE: 10B11CE311

MAX. MARKS:15

COURSE NAME: MECHANICS OF SOLIDS

COURSE CREDITS: 4

MAX. TIME: One Hr

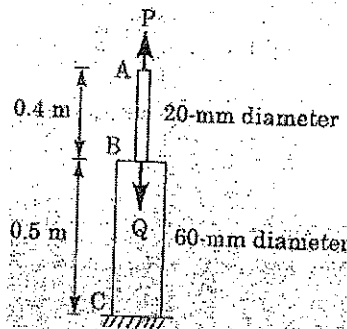
Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

Q.1. Draw the stress – strain diagram of mild steel and define different zones with explanation in the diagram. (2)

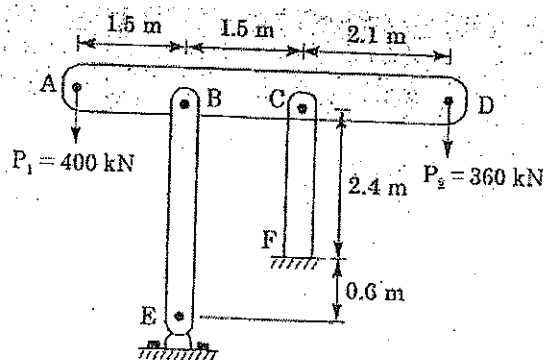
Q.2. Why Poisson's ratio for any material can't be more than 0.5? (1)

Q.3. Define Resilience of a material and its use? (1)

Q.4. The rod ABC is made up of aluminum for which $E = 70 \text{ GPa}$. Knowing that $P = 6 \text{ kN}$ and $Q = 42 \text{ kN}$, determine the deflection at point A and B. (5)



Q.5. The horizontal rigid beam ABCD is supported by vertical bars BE and CF and is loaded by vertical forces $P_1 = 400 \text{ kN}$ and $P_2 = 360 \text{ kN}$ acting at points A and D respectively. Bars BE and CF are made of steel ($E = 200 \text{ GPa}$) and have cross section areas $A_{BE} = 11000 \text{ mm}^2$, $A_{CF} = 9280 \text{ mm}^2$. Determine vertical displacement of point A and D. (6)



CE-4, BT