JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- FEB-2023

COURSE CODE(CREDITS): 18B11CE415 (3) MAX. MARKS: 15

COURSE NAME: MECHANICS OF SOLIDS

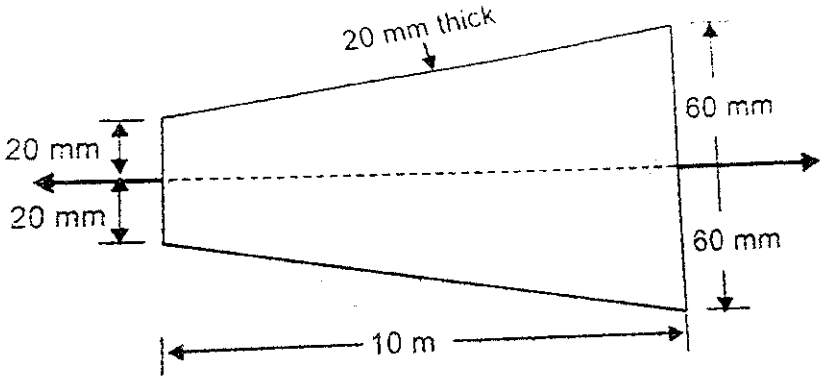
COURSE INSTRUCTORS: Mr. CHANDRAPAL GAUTAM MAX. TIME: 1 Hour

Note: *All questions are compulsory. Marks are indicated against each question in square brackets.*

Q1. Draw stress strain diagram of mild steel in tension and mention different zones in diagram and briefly explain characteristics of each zone. *CO-1, CO-2* **[3 Marks]**

Q2. Define resilience and creep of a material and mention their uses. *CO-1* **[2 Marks]**

Q3. Compute the total elongation caused by an axial load of 100 kN applied to a flat bar 20 mm thick, tapering from a width of 120 mm to 40 mm in a length of 10 m as shown in figure below. Assume E = 200 GPa. *CO-1, CO-2* **[5 Marks]**



Q4. The steel rod ABC is attached to a rigid support and is unstressed at a temperature of 25^0C. Temperature of both the portion is increased to 150^0C. Knowing $\alpha = 11.7 \times 10^{-6}/^0$C, E = 200 GPa. Find stress in both the portion of rod and deflection of point C.

CO-1, CO-2 **[5 Marks]**