

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS- 2026

B.Tech-IV Semester (CE)

COURSE CODE (CREDITS): 25B11CE414 (4)

MAX MARKS: 25

COURSE NAME: Mechanics of Solids

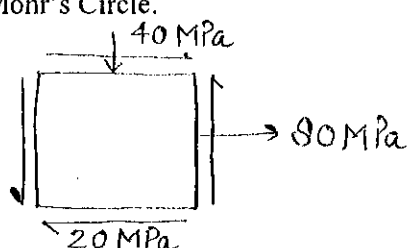
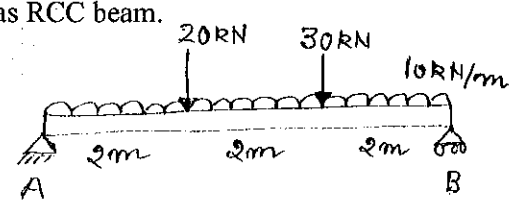
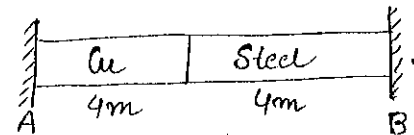
COURSE INSTRUCTOR: Mr. Chandra Pal Gautam

MAX. TIME: 1 Hour 30 Min

*Note: (a) All questions are compulsory.*

*(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems*

*(c) Use of calculator is allowed*

Q.No	Question	CO	Marks
Q1	(i) Define principle stress and principle plane. Also mention the significance for the same (ii) Discuss the importance of Shear Force and Bending Moment Diagram	CO-2	2+2 = 4
Q2	For a given material, Poisson's ratio is 0.4 and elastic constant is $2 \times 10^5$ MPa. Find the value of Bulk Modulus and Shear Modulus.	CO-1	2
Q3	For the given state of stress, if the element is rotated by $30^\circ$ in anticlockwise direction, find (i) New normal and shear stress (ii) Principle Stress (iii) Principle Plane (iv) Maximum Shear Stress. Solve the problem by using standard formula and Mohr's Circle. 	CO-3	8
Q4	For the given beam, draw Shear Force and Bending Moment diagram. Also draw the bending pattern of beam and pattern of reinforcement assuming beam as RCC beam. 	CO-3	6
Q5	Find the support reaction for the given beam, if the temperature of both the beams is raised by $30^\circ\text{C}$ . Take $E_{\text{Steel}} = 2 \times 10^5 \text{ N/mm}^2$ , $E_{\text{Cu}} = 1 \times 10^5 \text{ N/mm}^2$ , $\alpha_{\text{Steel}} = 1.2 \times 10^{-5}/^\circ\text{C}$ , $\alpha_{\text{Cu}} = 1.5 \times 10^{-5}/^\circ\text{C}$ 	CO-2	5