

athitesh
shukla

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST-1 EXAMINATION- FEBRUARY -2019

B.Tech VIII Semester and M.Tech II Semester

COURSE CODE: 12M1WCE211

MAX. MARKS: 15

COURSE NAME: Solid Mechanics in structural engineering

COURSE CREDITS: 03

MAX. TIME: 1 HRS

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

1. What is the condition of the state of pure shear. Discuss the Octahedral stresses.
2. A rectangular steel bar having a cross section 2 cm x 3 cm is subjected to a tensile force of 6000N. If the axes are chosen as per the direction cosines given. Determine the normal and shear stresses on a plane whose normal has the following direction cosines:
 - a) $n_x=n_y= 1/\sqrt{2}, n_z=0$
 - b) $n_x=0, n_y= n_z=1/\sqrt{2}$
 - c) $n_x=n_y= n_z= 1/\sqrt{3}$
3. Prove the equality of cross shears.
4. Discuss Mohr's circle for three dimensional state of stress.
5. Discuss the stress invariants.

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