

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

MAKE UP EXAMINATION- APRIL-2018

B.Tech VIII and M.Tech II Semester

COURSE CODE: 12M1WCE211

MAX. MARKS: 25

COURSE NAME: Solid Mechanics in Structural Engineering

COURSE CREDITS: 03

MAX. TIME: 1.5 HRS

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

1. Discuss in detail Mohr's circles for the three dimensional state of stress.
2. Derive the differential equations of equilibrium.
3. Discuss the principal axes of strain and principal strains.
4. The following state of strain exists at a point P

$$[\epsilon_{ij}] = \begin{bmatrix} 0.02 & -0.04 & 0 \\ -0.04 & 0.06 & 0.02 \\ 0 & -0.02 & 0 \end{bmatrix}$$

In the direction PQ having direction cosines $n_x=0.6$, $n_y=0$ and $n_z=0.8$, Determine ϵ_{PQ} .

5. Derive displacement equations of equilibrium.