

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

MID SEMESTER EXAMINATION-2015

B.Tech 2<sup>nd</sup> Semester

COURSE CODE: 10B11CE211

MAX. MARKS: 30

COURSE NAME: Engineering Mechanics

COURSE CREDITS: 4

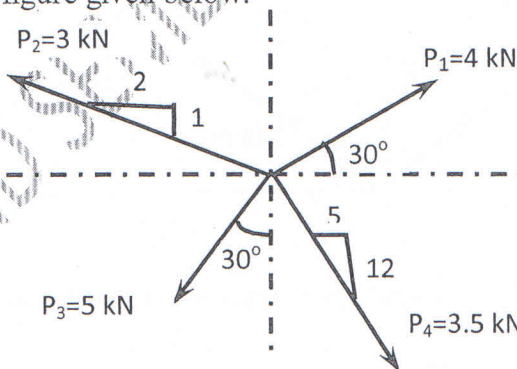
MAX. TIME: 2 HRS

*Note: All questions are compulsory.***Section A****(Marks: 1x6 = 6)**

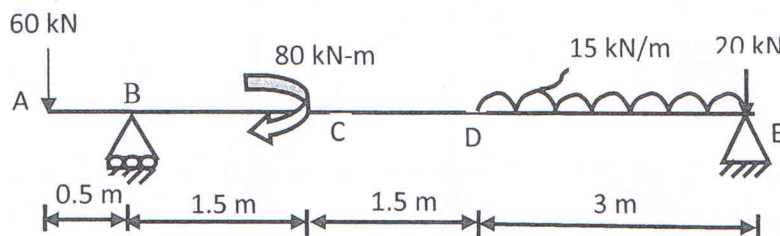
1. Clearly differentiate between (a) Coplanar and non-coplanar forces (b) Collinear and Non-Collinear forces.
2. Explain how moment of a force can be represented graphically?
3. Explain difference between moment and couple with an illustrative example.
4. Explain behavior of simply supported and fixed beam.
5. Explain composition and resolution of forces.
6. Illustrate the equations of equilibrium for planar and space structure.

**Section B****(Marks: 3x3=9)**

1. Differentiate among perfect, deficient and redundant pin jointed frame with example.
2. Determine the magnitude of the resultant of the four forces acting on the body as shown in the figure given below.



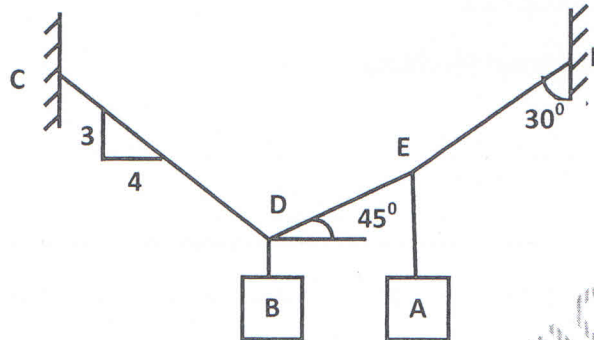
3. Determine the support reactions for the loaded beam as shown in figure.



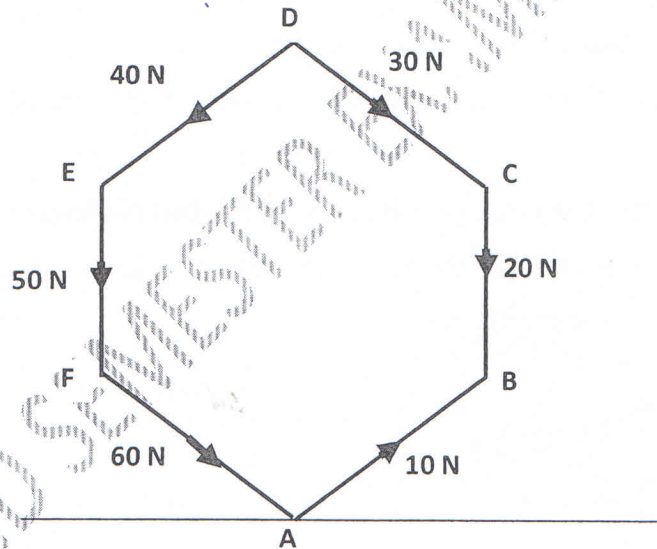
**Section C**

(Marks: 5x3= 15)

1. If a cylinder *A* weighs 20 kN, find the weight *B* and force in each chord so that system is in equilibrium.



2. A regular hexagon *ABCDEF* of side 3 m in length is subjected to forces 10,20,30,40,50 and 60 N along the sides *AB, CB, DC, DE, EF* and *FA* respectively as shown in figure given below. Make calculation for the sum of moments at point *A*.



3. Determine the forces in each member of truss shown in figure and tabulate member forces.

