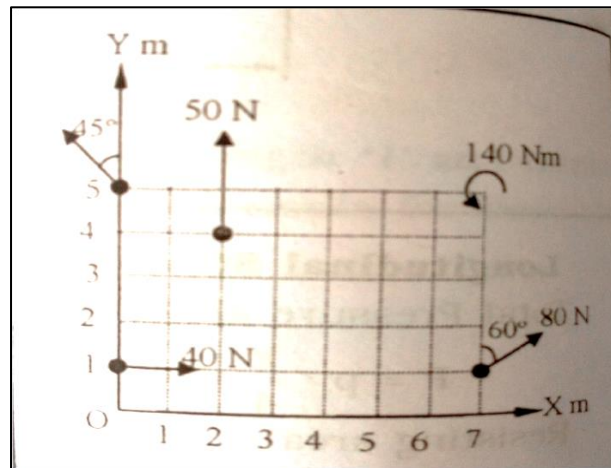


MECHANICS OF SOLIDS

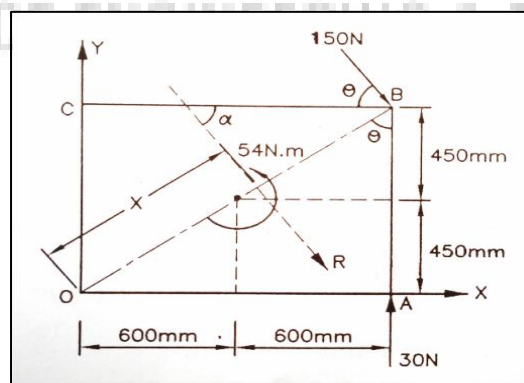
ASSIGNMENT:1

1. What do you mean by mechanics? Classify mechanics.
2. What is the difference between:
 - a. Statics and Dynamics
 - b. Kinetics and Kinematics
 - c. Scalar and Vector Quantities
 - d. Fundamental and Derived Units
3. Derive equation for magnitude and direction of resultant for a system of two coplanar concurrent forces using law of parallelogram of forces.
4. Explain with figure, law of triangles of forces.
5. Explain Law of Transmissibility of Forces.
6. Explain Law of Polygon of Forces.
7. State and explain the following Law.
 - a. Newton's 1st law of motion.
 - b. Newton's 2nd law of motion.
 - c. Newton's 3rd law of motion.
 - d. Newton's gravitational law of attraction
8. Reduce the following S.I. units to Units indicated.
100Mpa to kN/mm²
10⁹ kg to Gg
2000 μm to mm
20 Gg to kN (Take 1 Kg = 10N)
2x10⁵ Mpa to kN/m²
10⁻⁹ Gg to Kg
10⁵ N.m to kJ

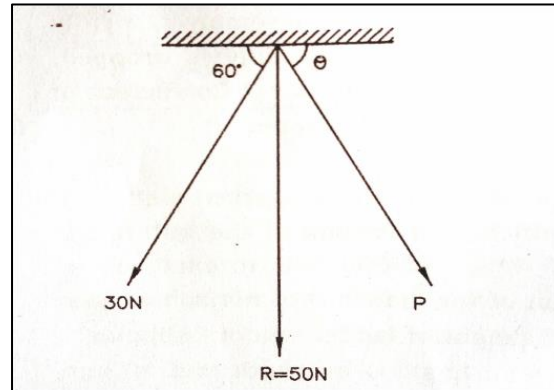
9. A system of four forces shown in figure has resultant 50N along X-axis .Determine magnitude & inclination of unknown force P.



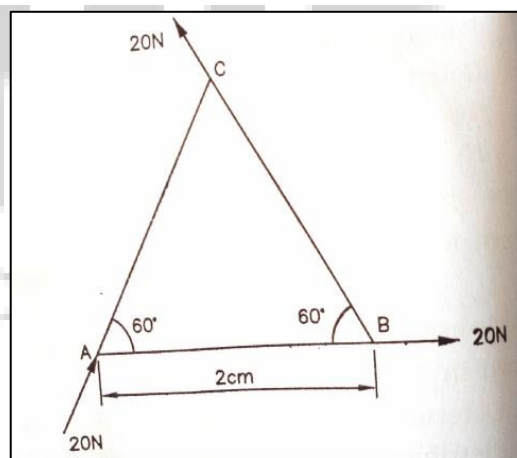
10. For the system of forces on a lamina OABC is shown in figure. Find magnitude & direction of the resultant force. Also locate the resultant either showing perpendicular distance from point 'O'.



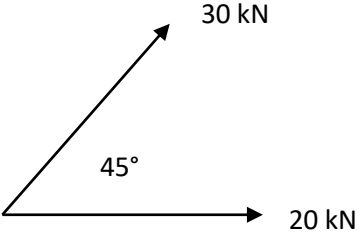
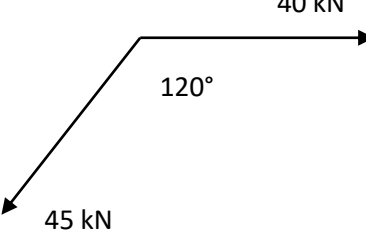
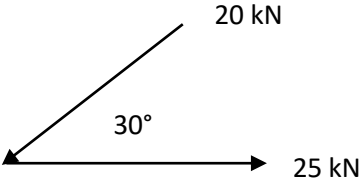
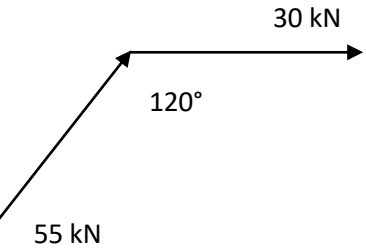
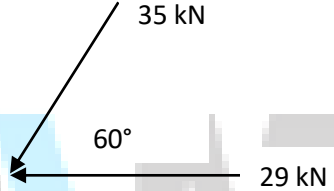
11. Resultant forces of a system of two forces is directed vertically downwards .The magnitude of the resultant force R is 50N. One of the force of the system has magnitude of 30N & is inclined at an angle of 60° with horizontal as shown in figure. Determine the magnitude P and direction θ of the second force.



12. Three forces are acting on an equilateral triangular plate as shown in figure .Determine the magnitude, direction and position of the resultant force.



13. Find Magnitude and direction for following system of two forces using law of parallelogram of forces analytically and using law of triangle of forces graphically. Observe that the values of magnitude and direction must be same with a minor difference of not more than 2 to 3 percent.

1		4	
2		5	
3		6	