B.Sc DEGREE EXAMINATION, EVEN SEMESTER 2021
II Year IV Semester
Statics

Max.marks :25

Answer any **FIVE** questions $(5 \times 5 = 25)$ Marks

1. The magnitude of the resultant of two given forces of magnitudes P and Q is R. If Q is doubled then R is doubled. If Q is reversed then R is also doubled. Show that $P : Q : R = \sqrt{2} : \sqrt{3} : \sqrt{2}$:
2. A weight is supported on a smooth plane of inclination α by a string inclined to the horizon at an angle γ . If the slope of the plane be increased to β and the slope of the string be unaltered, the tension of the string is doubled. Prove that. $cot\alpha - 2cot\beta = tan\gamma$
3. State and Prove Varignons theorem.
4. ABCDEF is a regular hexagon. Forces P, 2P, 3P, 2P, 5P, 6P act along AB, BC, DC, ED, EF, AF. Show that the six forces are equivalent to a couple and find the moment of the couple.
5. Find the centre of gravity of the solid right circular cone of height h.
6. Find the resultant of two parallel forces acting on a rigid body.
7. D, E, F are the midpoints of the sides BC, CA, AB of a triangular lamina ABC. The lamina is folded across the line joining E, F and the vertex A is made to lie on the base BC. Show that the distance of the mass centre of the lamina in this position from BC, is three-fourths of the distance of the mass centre of the unfolded lamina from BC.