SYSTEMS OF PARTICLES AND ROTATIONAL MOTION

***General Instructions*:** Answer all the questions. If you are unable to answer any question, go through the page number that is given against that particular question in the text book. You can find the answer.

Test Paper-I

MAX MARKS: 30 **TIME: 90Mts**

1	State and prove the law of conservation of linear momentum of a system of particles.	P149	3
2	Explain the law of conservation of linear momentum of a system of particles with examples.	P149	3
3	Define vector product of any two vectors. Give the rules for finding the vector product of two vectors. Give the expression to find the vector product of two vectors.	P151	3
4	Find the scalar and vector product of two vectors; a= $(3\hat{\imath}$ -$4\hat{\jmath}$ + $5\hat{k}$) and b=$(-2\hat{\imath}+\hat{\jmath}-3\hat{k})$	P152	3
5	Find the relationship between the linear velocity and angular velocity of a system of particles.	P153	3
6	Define angular acceleration of a system of particles. Give the dimensional formula of it. Also state whether it is a scalar o vector quantity.	P154	2
7	Explain with an example in case of rotational motion it is not the force alone, but how and where the force is applied is important in rotational motion.	P154	2
8	What is the rotational analogue of force in rotational motion? What is the dimensional formula for finding the same? How is it different from work even though the dimensional formula is same as that of work?	P155	3
9	Show that $\frac{dL}{dt} = \tau$	P156	2
10	State and prove law of conservation of angular momentum in rotational motion.	P157	2

11	Find the torque of a force $7i$^ + $3j$^$-5k$^ about the origin. The force acts on a particle whose position vector is i^$-j$^ + k^.	P157	2
12	Show that the angular momentum about any point of a single particle moving with constant velocity remains constant throughout the motion.	P158	2