**Printing Page(s) : 1** **Paper Code :DSC-103**

**Roll No.**

**B.Sc. (PCM)-3**

**1st Year Examination, Academic Batch 2017-18**

**Physics-1(Mechanics)**

*Time : 3 Hours ]* *[ Max. Marks : 100*

***Note**. Attempt any **five** questions. Each questions carry equal marks.*

Q. 1 Explain scalar and vector quantities. Explain the laws involved in addition and subtraction of Vectors.

Q. 2 (a) What are kepler's laws of planetary motion?
(b) Derive an expression for vector triple product?

Q. 3 Derive an expression for the kinetic energy of a body rotating about an axis. Hence define the M.I. of the body.

Q. 4 A uniform beam is clamped horizontally at one end and loaded at the other. Calculate the depression at the free end.

Q. 5 Drive Poisenseuile's formula for the viscosity of a liquid flowing through a narrow tube.

Q.6. (a) Define the divergence of a vector field and find an expression for it.
(b) Find M.I. of annular disc of mass M, inner radius R1 and outer radius R2: (i) about an axis passing through its centre and perpendicular to its plane (ii) about a diameter and (iii) about the tangent in its plane.

Q.7. (a) Describe with necessary theory, the rotation viscometer method of determining the coefficient of viscosity of fluid.
(b) Obtain an expression for the relativistic law of addition of velocities.

Q.8. (a) Two S.H.M.'s are imposed on a particle in same direction with same time period. Obtain the expressions for the resultant amplitude and phase.