No. of Printed Pages : **2**

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B.Sc. I Semester Degree Examination, March/April - 2023

PHYSICS

DSC 1 : Mechanics & Properties of Matter

(NEP)

Time : 2 Hours | Maximum Marks : 60

Note : *(i) Answer **all** the sections.*

(ii) Non-Programmed Scientific Calculators are Allowed.

SECTION - A

1. Answer the following Sub-Questions, each sub-question carries **one** mark. **10x1=10**

(a) Define Inertial frame of Reference.

(b) What is Fictitious force ?

(c) What is In-elastic Collision ?

(d) Give an example for law of Conservation of Energy.

(e) What is Rigid Body ?

(f) Define moment of Inertia.

(g) Define young's modulous of a material.

(h) State Hook's Law.

(i) Define Terminal Velocity.

(j) Define Surface Tension.

SECTION - B

Answer **any four** of the following questions, each carries **five** marks. **4x5=20**

2. Show that length is invariant under Galilian Transformation Equations. **5**

3. State and prove perpendicular axis Theorem. **5**

4. Derive Relation between momentum and Torque. **5**

5. Distinguish between Streamline and Turbulant flow. **5**

6. Give the necessary Theory of Flywheel. **5**

7. Explain stress-strain diagram. **5**

P.T.O.

SECTION - C

Answer **any three** of the following questions, each question carries **ten** marks. **3x10=30**

8. With neat Diagram explain Michelson and Morely Experiment and its negative results. **10**

9. Derive loss of Kinetic energy of collision of two particles stick together. **10**

10. (a) Derive expression for moment of Inertia of circular disk about an axis passing through its centre. **7+3**

(b) A flywheel of mass 548 kg and Diameter 2.2 m takes 591 Revolutions per minute. Find the moment of Inertia of a fly wheel.

11. (a) Derive Expression for young's modulus of a material by using Uniform Binding method. **7+3**

(b) A bar of length 0.9 m, Breadth 0.252 m and depth 0.0617 m has Depression of 0.3 cm when load of 1400×10^{-3} kg is applied. Find the young's modulous of the given Uniform Binding material given $g = 9.8$ m/s^2.

12. (a) Derive expression for Co-efficient of viscosity of a liquid by poiseuile's method. **8+2**

(b) Surface Tension of Soap Solution of 2.5×10^{-3} N/m, find the Excess Pressure inside a soap bubble of Diameter 1×10^{-2} m.

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