No. of Printed Pages : 2

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

DSC 1 : Mechanics & Properties of Matter

(NEP)

Time: 2 Hours

Maximum Marks: 60

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

> Non-Programmed Scientific Calculators are Allowed. (ii)

SECTION - A

- 1. Answer the following Sub-Questions, each sub-question carries one mark. 10x1=10
 - Define Inertial frame of Reference. (a)
 - (b) What is Fictitious force ?
 - What is In-elastic Collision ? (c)
 - Give an example for law of Conservation of Energy. (d)

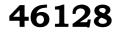
- What is Rigid Body ? (e)
- (f) Define moment of Inertia.
- Define young's modulous of a material. (g)

State Hook's Law. (h)

- Define Terminal Velocity. (i)
- Define Surface Tension. (i)

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
		Р.Т.О.



SECTION - C

Answer **any three** of the following questions, each question carries **ten** marks.

3x10=30

- 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.
- (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/s².
- 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.

- o 0 o -

#