BACHELOR OF SCIENCE (CBCS-2018 COURSE)
F. Y. B. Sc. Sem-I :SUMMER- 2022
SUBJECT : PHYSICS : MECHANICS & PROPERTIES OF MATTER

Day : Saturday
Date : 2/7/2022

S-18292-2022

Time : 11:00 AM-02:00 PM
Max. Marks : 60

N.B.

1) All questions are **COMPULSORY**.
2) Figures to the **RIGHT** indicate **FULL** marks.
3) Draw neat diagrams **WHEREVER** necessary.

Q 1. Attempt any **Two** of the following. **(12)**

(a) Describe the Jaegers method used for measurement of the surface tension of water

(b) What is the compound pendulum? Derive the expression for the period of compound pendulum.

(c) A steel rod of circular cross section of radius 1 cm is clamped at one end and loaded at distance of 100 cm from the fixed end with 10 kg. Calculate depression of the loaded end.

Q 2. Attempt any **Two** of the following. **(12)**

(a) Discuss the difference between streamline flow and turbulent flow.

(b) Describe the method of measurement of rigidity by torsional oscillation.

(c) What do you mean by bending of beam? Obtain an expression for the bending moment.

Q 3. Attempt any **Two** of the following. **(12)**

(a) Describe how Ostwald's viscometer used to compare viscosity of two viscous liquids.

(b) Describe in detail the motion of particle under constant resistive force.

(c) Define surface tension and state the different factors affecting surface tension.

Q 4. Attempt any **Three** of the following. **(12)**

(a) State and explain Kepler's laws of planetary motion.

(b) Obtain an expression for torque per unit twist produced in elastic wire

(c) Define stress, strain and what is the relation between them?

(d) Explain the different types of forces in nature

Q 5. Attempt any **Four** of the following. **(12)**

(a) Differentiate between elasticity and plasticity.

(b) A bullet of 5 gm fired from gun attains a velocity of 500 cm/s in 20 sec. Calculate the force required to fire it.

(c) A blowing soap bubble creates additional surface area of 100 cm^2. Calculate work done (S. T. of soap bubble = 25 dyne/ cm)

(d) Define poisons ratio. State its limiting values.

(e) Derive the relation between surface tension and surface energy.

(f) Define angle of contact and explain its types.

* * * *