

D 32383

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Name.....

Reg. No.....

**FIRST SEMESTER (CBCSS—UG) DEGREE EXAMINATION
NOVEMBER 2022**

Physics/Applied Physics

PHY 1C 01—PROPERTIES OF MATTER AND THERMODYNAMICS

(2019—2022 Admissions)

Time : Two Hours

Maximum : 60 Marks

*The symbols used in this question paper have their usual meanings.***Section A (Short Answer Type)**

*Answer **all** questions in two **or** three sentences.
Each correct answer carries a maximum of 2 marks.*

1. Explain elasticity.
2. State Hooks Law.
3. What is Poisson's ratio ?
4. What is a Cantilever ?
5. What are thermodynamic co-ordinates ?
6. Explain I section girders.
7. What is angle of contact ?
8. What is Viscosity ?
9. Why small drops are spherical in shape ?
10. What is meant by efficiency of a heat engine ?
11. State Clausius statement of second law of thermodynamics.
12. State Clausius-Clapyron equation.

(Ceiling 20)

Turn over

Section B (Paragraph/Problem Type)

Answer **all** questions in **a paragraph** of about **half a page to full page**.

Each correct answer carries a maximum of 5 marks.

13. Write notes on 1) Brownian motion ? 2) Viscosity of gases.
14. Derive the relation connecting moduli of elasticity and Poisson's ratio.
15. Derive the expression for the couple required to twist a cylinder through an angle θ .
16. A rod of rectangular cross section having breadth 2 cm and thickness 1 cm is bent in the form of an arc of radius 10 m. If Young's modulus is 10^{10}N/m^2 , find (a) Stress and strain on convex surface, (b) Bending moment.
17. Describe Stoke's method of determination of co-efficient of viscosity.
18. Find the change in internal energy of a gas if its volume increases from 3.5 to 4.2 litre at a constant pressure of atmosphere on giving 320 J of heat.
19. Entropy is a point (state) function and not a path function. Explain. How is entropy change calculated?

(Ceiling 30)

Section C (Essays)

Answer in about **two pages**, any **one** question.

Answer carries 10 marks.

20. What is bending moment ? Derive an expression for bending moment.
21. Calculate the work done by a hydrostatic system in isothermal, adiabatic, isochoric and isobaric processes.

(1 × 10 = 10 marks)