

20U113

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Name: .....

Reg.No: .....

**FIRST SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2020**

(CBCSS - UG)

(Regular/Supplementary/Improvement)

**CC19U PHY1 C01 - PROPERTIES OF MATTER AND THERMODYNAMICS**

(Physics - Complementary Course )

(2019 Admission onwards)

Time : 2.00 Hours

Maximum : 60 Marks

Credit : 2

**Part A** (Short answer questions)

Answer *all* question. Each question carries 2 marks.

1. What is Poissons Ratio?
2. Define surface tension? What is its dimension?
3. How does temperature affects the viscosity of liquid ?
4. Write down the expression for Poiseuille's equation ? Identify the terms in the equation.
5. Explain the concept of terminal velocity?
6. How does the viscosity of a gas depeneds on its pressure?
7. What is meant by thermodynamic equilibrium
8. What is meant by cyclic process.
9. Give expressions for work done during isothermal and isochoric process.
10. Give expressions for different forms of adiabatic equation.
11. Explain the concept entropy and disorder.
12. Give Clausius Clapeyorn equation. Explain the terms.

**(Ceiling: 20 Marks)**

**Part B** (Short essay questions)

Answer *all* question. Each question carries 5 marks.

13. Explain different types of Modulii of elasticity?

14. The time period of oscillation of a torsion pendulum is 2 seconds. If the length of the wire taken is doubled and radius taken is halved, of the material, what is the new time period?
15. Write a note on effect of electrostatic pressure on a bubble.
16. Explain Carnot engine. Give expression for efficiency of Carnot engine.
17. Efficiency of a Carnot's cycle changes from  $1/6$  to  $1/3$  when source temperature is raised by 100K. Calculate the temperature of the sink
18. Calculate the change in entropy of 5Kg water at 100 degree Celsius when changes into vapour.
19. Write the definition of entropy. Prove that the entropy remains constant in a reversible process.

**(Ceiling: 30 Marks)**

**Part C (Essay questions)**

Answer any *one* question. Each question carries 10 marks.

20. Derive the expression for the depression at the free end of heavy cantilever loaded at free end.
21. Explain Carnot engine and its working. Derive the equation for efficiency of Carnot engine.

**(1 × 10 = 10 Marks)**

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