

21U115

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Name:

Reg.No:

FIRST SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS - UG)

(Regular/Supplementary/Improvement)

CC19U PHY1 C01/CC20U 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* questions. Each question carries 2 marks.

1. Give the relation between elastic constants?
2. Write down the expression for the time period of a torsion pendulum and explain the symbols
3. Give any two everyday examples involving surface tension.
4. Why tiny liquid drops are spherical in shape while larger drops are more flattened?
5. Define viscous force.
6. How does the viscosity of a gas depend on its pressure?
7. Define the following 1. open system, 2. closed system, 3. isolated system with examples.
8. Explain quasistatic process.
9. Give any two statements of second law of thermodynamics.
10. Mention the name of thermodynamic process involved in Carnot engine.
11. Define the term entropy. Give its unit.
12. Give Clausius Clapeyron equation. Explain the terms.

(Ceiling: 20 Marks)

Part B (Short essay questions - Paragraph)

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

13. Derive the expression for the work done in the case of shearing strain.
14. What is meant by bending moment? Derive the expression for the same.

15. Two liquid drops of same radius are falling through air with a terminal velocity of 10cm/sec. If these two drops merge to form a single drop, what would be resultant terminal velocity?
16. Derive the expression for work done during isothermal process.
17. Derive Mayer's relation from first law of thermodynamics.
18. Calculate the change in entropy when 1litre of water at 27 degree celsius is heated to 77 degree celsius.
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. The question carries 10 marks.

20. Derive an expression for the rate of flow of a liquid through a capillary tube.
21. State and prove Carnot's theorem. Give different statements of second law of thermodynamics.

(1 × 10 = 10 Marks)
