

19U606

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Name:

Reg.No:

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2022

(CBCSS - UG)

CC19U PHY6 B10 - THERMODYNAMICS

(Physics - Core Course)

(2019 Admission - Regular)

Time : 2.00 Hours

Maximum : 60 Marks

Credit : 3

Part A (Short answer questions)

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

1. What are macroscopic coordinates?
2. What is the principle of ideal gas thermometer?
3. State first law of thermodynamics.
4. Write down the properties of molar specific heat capacities of ideal gas.
5. Distinguish between internal and external combustion engines.
6. What is meant by equivalence of Kelvin - Planck and Clausius statement?
7. Distinguish between Reversible and Irreversible process.
8. Draw a TS diagram for a Carnot cycle.
9. When a system is said to undergo thermal irreversible process?
10. Write down the four Maxwells relationships.
11. Write down TdS equations and explain the symbols.
12. What is meant by First order phase transition?

(Ceiling: 20 Marks)

Part B (Short essay questions - Paragraph)

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

13. Distinguish between heat and work.
14. Define specific heat of a gas at a constant pressure and a constant volume. Explain why $C_p > C_v$ for a gas.

15. A Carnot engine whose efficiency is 10% is used as a refrigerator. Find the coefficient of performance.
16. Show that the ideal gas temperature and the thermodynamic temperature scale are numerically equal.
17. Derive an expression for the entropy of ideal gas in terms of temperature and volume.
18. Explain Throttling process. Show that Enthalpy remains constant during this process.
19. Explain the principle behind ice skating.

(Ceiling: 30 Marks)

Part C (Essay questions)

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

20. Explain how do you find ideal gas temperature using a constant volume gas thermometer.
21. Discuss the concept of entropy and obtain an equation of ideal gas.

(1 × 10 = 10 Marks)
