



K21U 1545

Reg. No. : .....

Name : .....

V Semester B.Sc. Degree (CBCSS – Sup./Imp.)  
Examination, November 2021  
(2015-'18 Adms.)  
CORE COURSE IN PHYSICS  
5B07 PHY : Thermal Physics

Time : 3 Hours

Max. Marks : 40

SECTION – A

(Answer **all** questions. Very short answer type. **Each** carries 1 mark.)

1. Entropy of the system is \_\_\_\_\_ ideal reversible process.
2. The first law of thermodynamics introduced the concept of \_\_\_\_\_
3. Slope of adiabatic process is \_\_\_\_\_ than that of isothermal process in P-V diagram.
4. \_\_\_\_\_ Obey Maxwells Bolzman distribution laws.

SECTION – B

(Answer **any 7**. Short answer types. **Each** carries 2 marks.)

5. What is zeroth law of thermodynamics ?
6. Define internal energy, is the change in internal energy positive always ?
7. What is Mayers relation ?
8. What do you mean by cyclic process ?
9. State the postulates of kinetic theory of gases.
10. Briefly describe the working of diesel engine.

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K21U 1545



11. What is Gibbs free energy ?
12. Distinguish between enthalpy and entropy.
13. What is phase space co-ordinate ?
14. Define black body.

SECTION – C

(Answer **any 4**. Short essay/problems. **Each** carries **3** marks.)

15. Prove that entropy change in a carnot cycle is zero.
16. Derive the expression for isothermal work done.
17. Find the RMS speed of oxygen molecules at  $0^{\circ}\text{C}$ .
18. A Hot tea is taken inside a thermo flask, what about its temperature and heat ? What happen when it is shaken many times ? What is the sign internal energy change ?
19. 1 mole gas expands isothermally to twice the volume. find the change entropy.
20. Explain the working of refrigerator briefly.

SECTION – D

(Answer **any 2**. Long essay. **Each** carries **5** marks.)

21. What are different thermodynamic process, derive the expressions for work done.
  22. What is second law of thermodynamics, derive the equivalence between Kelvin-Plank and Clausius statement.
  23. Define theorem of equipartition of energy. Derive the expression for average, most probable and RMS speed of gases molecules.
  24. Explain the working of highest efficient engine between to temperature ( $T_1$  and  $T_2$ ). Derive the expression for its efficiency.
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