SESSIONAL EXAM 2022
SEMESTER 3
PAPER – PHY-HG/RC-3016

MARKS: 30 TIME: 1 HOUR 15 MIN

Q1. Answer any 7 questions: 1X7=7

1. What are Open system and Closed system in Thermodynamics?
2. What is Thermodynamic Equilibrium?
3. What is Internal Energy of a system?
4. Define Specific heat capacity of a gas.
5. What is a cyclic process?
6. What are extensive and intensive variables?
7. Define compressibility and expansion coefficient.
8. State the 2nd law of thermodynamics.
9. What is a reversible process?
10. State the 3rd law of thermodynamics.

Q2. Answer any 5 questions: 2X5=10

1. State the first law of thermodynamics and write its differential form.
2. What are isothermal and isochoric processes?
3. What happens when heat is applied in case of a cyclic process.
4. What is a heat engine? Define its various components.
5. State the Carnot theorem.
6. What is Entropy? Write its mathematical formulation.
7. Explain the TdS diagram for Carnot cycle.

Q3. Answer any 1 question: 1X3=3

1. State and Prove the Zeroth law of thermodynamics.
2. Derive the work done during an isothermal process.
3. Is the efficiency of a Carnot engine 100%? Explain why.

Q4. Answer any 2 questions: 2X5=10

1. Define C_P and C_V. Prove that $C_P - C_V = R$
2. Explain the Carnot cycle and find out its efficiency
3. Derive the work done during an adiabatic process.
4. State and Prove the Carnot's theorem.