SSR DEGREE COLLEGE (AUTONOMOUS) NIZAMABAD
PHYSICS – II
UG SEMESTER – II
Thermal Physics
IMPORTANT QUESTIONS

SHORT QUESTIONS

1. State the postulates of kinetic theory of gases.
2. Explain first law of thermodynamics and its limitations
3. Define thermodynamic potentials. What is their significance.
4. Describe Kapitza method for liquefaction of Helium.
5. Distinguish between isothermal and adiabatic processes.
6. State and explain the first law of Thermodynamics.
7. Calculate the value of rms speed for Hydrogen molecule at 4727°°C.
8. Derive an expression for the difference of two specific heats.
9. Describe how Helium can be liquefied by Kapitza's method.
10. What is mean free path? Derive an expression for it.
11. State and explain second law of thermodynamics.
12. Calculate the change in entropy When 10gm of ice ato°C changes into steam at 100°°C [Latent heat of ice=80calgm^{-1}, Specific heat of water=1calgm^{-1} Latent heat of steam =540 calgm^{-1}].
13. What are thermodynamic potentials? Write expressions.

LONG QUESTIONS

1. Define and explain the term mean free path. Derive an expression for viscosity of a gas in terms of mean free path of its molecules.
2. What is T-S diagram? Find the expression for efficiency of a reversible Carnot's engine with the help of T-S diagram.
3. Explain the Joule-Kelvin effect, Derive expression for Joule-Kelvin co-efficient for an ideal gas and for a Vander wall's gas.
4. Write the Maxwell's law of distribution of molecular speeds in a gas and obtain expressions for the average speed, root-mean square speed and most probable speed in terms of gas parameters.
5. What is Entropy - Temperature diagram? Obtain the equation η = 1 -를 for acarnot engine from T - S diagram
6. Obtain Maxwel's thermodynamic equations using the thermodynamic potentials.
7. What is adiabatic demagnetization? How is the principle used in producing? low temperatures?
8. Explain Planck's postulates of radiation. Derive an expression for Planck's black body radiation.
9. Explain the construction and working of disappearing filament optical pyrometer with neat diagram.
10. Give the postulates of kinetic theory of gases, Derive an expression for the viscosity of a gas on the basis of kinetic theory.

11. What is T-S diagram? Find the expression for efficiency of a reversible Carnot's engine with the help of T-S diagram.
12. Explain the Joule-Kelvin effect. Derive expression for Joule-Kelvin co-efficient for an ideal gas and for a Vander wall's gas.
13. Define refrigeration? Explain the principle of working of a vapour compression machine.