

# MODEL QUESTION PAPER - I

Time : 3 Hrs.

Max.marks : 75

Part - A

Marks : 5x2=10

**Note : i) Answer any five questions.**

**ii) All questions carry equal marks.**

1. Define : Conduction.
2. Define : Specific heat capacity of a gas at constant volume.
3. Define : Adiabatic change.
4. What are non-renewable sources?
5. What is active remote sensing?
6. Define : Conductivity.
7. State Joule's law of heating
8. What is rectification?

Part - B

Marks : 5x3=15

**Note : i) Answer any five questions.**

**ii) All questions carry equal marks.**

9. What are good conductors and poor conductors? Give an examples.
10. Write any three postulate kinetic theory of a gases.
11. What is isothermal change and adiabatic change?
12. Explain the temperature of inversion.
13. Write any three uses of Laser.
14. State laws of resistance.
15. State Kirchoff's law.
16. What is NAND-gate?

**Note :** i) Answer all questions from each divisions.

ii) All questions carry equal marks.

17. a) Write the properties of thermal radiation.
- b) Explain mean square velocity and root mean square velocity of gas molecules.
- c) Calculate the RMS velocity of carbon dioxide. Given density of carbon dioxide is  $1.977 \text{ Kg/m}^3$  at S.T.P.
18. a) A gas at 5 atmospheric pressure is suddenly compressed to half of its original volume. Calculate its final pressure ( $\gamma=1.4$ ).
- b) Explain with a neat diagram, Cascade process of liquefaction of oxygen.
- c) Explain solar energy and wind energy.
19. a) Derive the expression for the refractive index of the material of the prism using angle of minimum deviation.
- b) Explain spontaneous emission and stimulated emission.
- c) Explain the components of remote sensing.
20. a) A thin wire of diameter 0.9mm has a resistance of 0.8  $\Omega$ , if the length of the wire is 25m, calculate the resistivity of the material of the wire.
- b) Describe an experiment to determine the specific heat capacity of liquid using joules calorimeter.
- c) Explain how a galvanometer is converted into (i) an ammeter (ii) voltmeter
21. a) Explain the working of PN-Junction diode.
- b) Explain the working of PNP transistor as an amplifier in common emitter configuration, with a neat circuit diagram.
- c) Write a note on integrated circuits.