Physics Exam Question Paper - 2

Grade: VII
Duration: 2 hours
Maximum Marks: 80

Instructions:

- You will not be allowed to write during the first 15 minutes. Use this time to read the question paper.
- The time given at the head of this Paper is the time allowed for writing the answers.
- Attempt all questions in Section A. Attempt as instructed in Section B.
- The intended marks for questions are given in brackets **[ ]**.

SECTION A (Objective & Short Answer)

Q1. Choose the correct answers from the given options: [10]

1. The SI unit of force is:
   (i) Newton (ii) Joule (iii) Pascal (iv) Watt
2. Which of the following materials has the highest thermal conductivity?
   (i) Glass (ii) Copper (iii) Wood (iv) Rubber
3. The resistance of a wire depends on:
   (i) Length of the wire (ii) Thickness of the wire (iii) Material of the wire (iv) All of the above
4. The image formed by a convex mirror is always:
   (i) Virtual and inverted (ii) Real and inverted (iii) Virtual and upright (iv) Real and upright
5. Which of the following phenomena is responsible for the twinkling of stars?
   (i) Reflection (ii) Refraction (iii) Dispersion (iv) Diffraction
6. What happens when an object is placed at the center of curvature of a concave mirror?
   (i) No image is formed (ii) The image is real and of the same size as the object (iii) The image is virtual and larger (iv) The image is real and diminished
7. Which of the following factors affects the speed of sound?
   (i) Temperature of the medium (ii) Humidity (iii) Nature of the medium (iv) All of the above

8. A positively charged rod is brought near a neutral conductor. What happens?
   (i) The conductor remains neutral (ii) The near end of the conductor acquires a negative charge (iii) The near end acquires a positive charge (iv) The conductor gets uniformly charged
9. Which of the following devices converts electrical energy into mechanical energy?
   (i) Generator (ii) Motor (iii) Transformer (iv) Battery
10. The first law of thermodynamics is based on the principle of:
    (i) Conservation of mass (ii) Conservation of momentum (iii) Conservation of energy (iv) Conservation of temperature

Q2. Fill in the blanks with appropriate terms: [5]

1. A __ is a device that measures the potential difference across a component.
2. The density of an object is defined as its __ per unit volume.
3. The rate of change of velocity of an object is called __.
4. In an electrical circuit, the unit of resistance is __.
5. The phenomenon responsible for the blue color of the sky is __.

Q3. State whether the following statements are True or False: [5]

1. A concave lens always forms a real image.
2. Resistance in a circuit increases when a wire is made longer and thinner.
3. The boiling point of a liquid decreases with an increase in atmospheric pressure.
4. An electric motor converts mechanical energy into electrical energy.
5. The image formed by a plane mirror is laterally inverted.

Q4. Name the following: [5]

1. The scientist who discovered electromagnetic induction.
2. The physical quantity that remains unchanged in uniform circular motion.
3. The SI unit of pressure.
4. The process by which heat is transferred in a vacuum.
5. The part of the human eye that controls the amount of light entering it.

Q5. Match the following: [5]

Column A	Column B
Unit of work	Pascal / Joule
Speed of light in vacuum	3×10^8 m/s / 3×10^6 m/s
Device used to measure current	Ammeter / Barometer
Law of inertia	Newton's First Law / Newton's Third Law
Process of heat transfer through a liquid	Conduction / Convection

SECTION B (Descriptive & Numerical)

Q6. Answer all the following questions: [10]

1. Define work and write its SI unit.
2. Explain the concept of atmospheric pressure with an example.
3. Why is the sky blue during the day but appears reddish at sunrise and sunset?
4. State and explain Ohm's law.
5. Differentiate between concave and convex lenses.
6. Convert 45°C into Kelvin and Fahrenheit.
7. Define power and derive its formula in terms of voltage and current.

Q7. Distinguish between the following: [10]

1. Mass and Weight
2. Series and Parallel circuits
3. AC and DC current
4. Renewable and Non-renewable energy sources
5. Evaporation and Boiling

Q8. Solve the following numerical problems: [20]

1. **(a)** A force of 50 N is applied to move an object by 5 m. Calculate the work done.
   (b) A block of mass 2 kg is accelerated at 3 m/s². Find the force acting on it.
2. **(a)** Define acceleration and write its formula.
   (b) A car moving with an initial speed of 10 m/s accelerates uniformly at 2 m/s² for 5

seconds. Find the final speed.

3. **(a)** Explain the process of electromagnetic induction with an experiment.
   (b) A resistor of 5Ω is connected to a 10V battery. Find the current flowing through the circuit.
4. **(a)** A lens has a focal length of 20 cm. Find the power of the lens.
   (b) Convert 100 J of energy into calories. (1 calorie = 4.18 J)

End of the Question Paper