BOYS' HIGH SCHOOL AND COLLEGE
SECOND TERM EXAMINATION (2024-25)
CLASS - IX
PHYSICS

Estd. 1861

MM:80   **(Two hours paper)**

SECTION A (40 marks)
(Attempt all questions from this section)

Question 1

Choose the correct answer to the questions from the given options: [15]

i)   1 joule = _____ erg
         a) 10^6 b) 10^5
         c) 10^7 d) 10^9

ii)   Geothermal energy is the energy possessed by _____
         a) Tides   b) Wind
         c) Biomass   d) Rocks

iii)   A charge of 0.5 C passes through a cross-section of a conductor in 5 seconds. The current flowing in the conductor is _____
         a) 10 A   b) 1 A
         c) 0.1 A   d) 0.01 A

iv)   A _____ is a device by which resistance in a circuit can be varied.
         a) Key   b) Rheostat
         c) Voltmeter   d) Inductor

v)   The surest test of magnetism is _____
         a) Repulsion   b) Attraction
         c) Induction   d) None of these

vi)   The slope of velocity-time graph gives _____
         a) Displacement   b) Speed
         c) Distance   d) Acceleration

vii)   The speed of sound in air at 0° C is nearly _____
         a) 1450 m/s   b) 330 m/s
         c) 5100 m/s   d) 450 m/s

viii)   An electric cell is used to _____
         a) measure current in the ciruit   b) provide current in the circuit
         c) limit current in the circuit   d) prevent current in the circuit

ix)   A magnetic pole induces _____ polarity on the near end and a _____ polarity on the farther end of the iron bar.
         a) opposite, opposite   b) opposite, similar
         c) similar, similar   d) similar, opposite

x)   The image formed by a plane mirror is _____
         a) erect and diminished   b) erect and enlarged
         c) inverted and of same size   d) erect and of same size

xi)   Which of the following is *not* the unit of heat?
         a) torr   b) calorie
         c) erg   d) joule

xii)   The sound of frequency less than 20 Hz is called _____
         a) supersonic   b) infrasonic
         c) ultrasonic   d) ultrasound

xiii)   On increasing the resistance in a circuit, the current in it _____
         a) decreases   b) increases
         c) remains unchanged   d) none of the above

xiv)   An electromagnet is a temporary strong magnet made from _____
         a) Steel   b) Soft iron
         c) Aluminium   d) Copper

xv)   The time period of a simple pendulum depends on _____
         a) Amplitude of oscillation   b) Mass of the bob
         c) Length of the pendulum   d) Material of the bob

Question 2

(i)   (a) What do you understand by the term electric current?   [3]
         (b) State the S.I unit of electric current.
         (c) If n electrons flow through a cross-section of a conductor in time t. If charge on an electron is e, write an expression for the current in the conductor.

(ii) a) Define heat and write its S.I unit. [2]
    b) Explain anomalous expansion of water.
(iii) A body initially at rest starts moving with a constant acceleration of 0.5 m/s² and travels a distance of 25 m. Find its final velocity. [2]
(iv) *Derive* the relation between wave velocity (v), frequency (f) and wavelength (λ). [2]
(v) Write any two properties of magnetic lines of force. [2]
(vi) Write two uses of solar cells. [2]
(vii) A force of 100 N acts on a body of mass 25 kg. Find the acceleration produced. [2]

Question 3
(i) Define the term Neutral points. [2]
(ii) A charge of 25 C is moved into an electric field from infinity, when the work done at point A is 200 J and at point B is 500 J. Calculate the potential difference between points A and B. [2]
(iii) Write the characteristics and the position of the image formed when the object is placed at the centre of curvature of a concave mirror. [2]
(iv) A wave pulse of frequency 200 Hz on a string moves with a velocity of 160 m/s. Calculate the wavelength of the wave. [2]
(v) A cell is connected to a bulb which develops a potential difference of 12 V across it. The current in the circuit is measured to be 2 A. Find the resistance offered by the filament of the bulb to the flow of current. [2]

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SECTION B (40 marks)

(Attempt any **four** questions from this section)

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Question 4
(i) a) What do you mean by Global warming? [1]
    b) Write any two effects of Global warming. [2]
(ii) What do you understand by the following terms [3]
    a) Potential difference
    b) Open circuits
    c) Galvanometer
(iii) How do the following factors affect the speed of sound in air: [4]
    a) Temperature
    b) Humidity
    c) Pressure
    d) Direction of wind

Question 5
(i) Differentiate between primary and secondary cells. [3]
(ii) Write three methods of enhancing the collection of solar energy [3]
(iii) The following table represents the velocity of a car at different instants of time.

v (m/s)	10	15	20	20	30	15
t (s)	0	5	10	15	20	25

    a) Draw the velocity-time graph on a graph sheet. [2]
    b) find the acceleration of the car between 0 to 10 seconds. [1]
    c) find the displacement of the car from 10 to 15 seconds. [1]

Question 6
(i) With the help of a diagram define the following terms related to a bar magnet [3]
    a) Magnetic pole
    b) Effective length of magnet
    c) Magnetic equator
(ii) Write atleast three advantages of using biogas as a fuel. [3]
(iii) In the circuit given below:
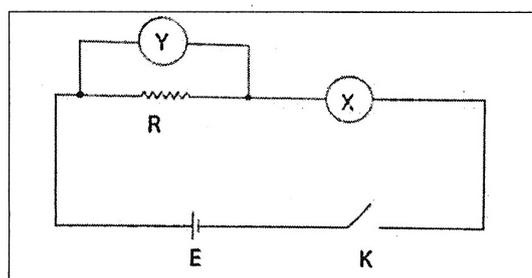
    a) Name the parts *X* and *Y* [2]

b) State the function of Y [1]
c) What is the use of part K in the circuit? [1]

Question 7

(i)   State three characteristics of the medium necessary for the propagation of sound waves.
[3]
(ii)   a) Define electrical resistance. [3]
        b) Write the SI unit of resistance.
        c) Draw the symbol representing variable resistor.
(iii)   a) Write two uses of electromagnet. [2]
        b) State two ways through which the strength of an electromagnet can be increased. [2]

Question 8

(i)   a) What are semiconductors? [3]
        b) Give any two examples of semiconductors.
        c) What do you understand by doping?
(ii)   Differentiate between temporary and permanent magnets. [3]
(iii)   The wavelength of the vibrations produced on the surface of wave is 0.05 m. If the velocity of wave
        is 25 m/s, calculate: [4]
        a) Frequency of the wave
        b) Time period

Question 9

(i)   Differentiate between light waves and sound waves. [3]
(ii)   Write atleast three properties of a bar magnet. [3]
(iii)   Figure given below shows a concave mirror with its pole at P, focus F and centre of curvature C.
        a) Complete the ray diagram when the object is placed between pole and focus [2]
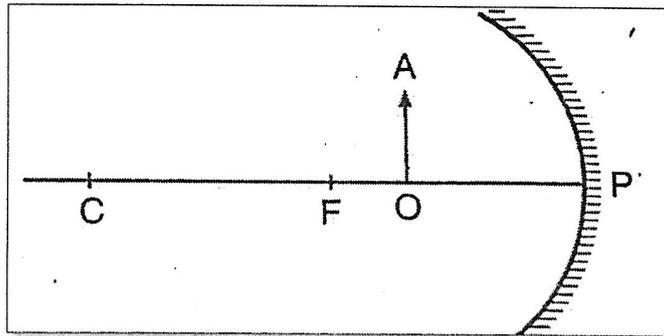
b) Write the characteristics of the image formed [1]
c) Write the position of the image formed. [1]

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