GREENLAWNS SCHOOL, WORLI
Final Examination 2024
Physics

STD: IX **Marks: 80**
Date:12/02/2024 **Time: 2 hrs**

Section-1
(Attempt all questions from this section)

Question 1 Choose the correct answers to the questions from the given options. (Do not copy the question, write the correct answers only.) [15]

i. Calorie is the unit of:
a. Heat b. Work
c. Temperature d. Food

ii. Density of water is maximum at:
a. 0°C b. 100°C
c. 4°C d. 15°C

iii. For moving a body from rest or stopping a moving body, we need
a. Force b. Mass
c. Direction d. Time

iv. For an incident ray directed towards centre of curvature of a spherical mirror, the reflected ray:
a. Retraces its path b. Passes through the focus
c. Passes through the pole d. Becomes parallel to the principal axis

v. The correct statement is:
a. Sound and light both require medium for propagation.
b. Sound can travel in vacuum, but light cannot.
c. Sound needs a medium, but light does not need medium for its propagation.
d. Sound and light both can travel in vacuum.

vi. Sonar makes use of:
a. Infrasonic sound b. Ultrasound
c. Ordinary sound d. Light

vii. The rheostat is used in the circuit to:
a. increase the magnitude of current only
b. decrease the magnitude of current only
c. increase or decrease the magnitude of current
d. none of these

viii. When a bus suddenly starts, the standing passengers lean backwards in the bus. This is an example of:
a. Newton's first law b. Newton's second law
c. Newton's third law d. none of these

ix. The correct relation is:

a. 1J = 1C / 1V
b. 1J = 1V / 1C
c. 1J = 1C x 1V
d. 1J x 1C x 1V = 1

x. In a uniform magnetic field, the field lines are:

a. Curved
b. Parallel and equidistant straight lines
c. Parallel but non equally spaced straight lines
d. Nothing can be said

xi. The strength of an electromagnet can be increased by

a. Reversing the directions of current
b. Using alternating current of high frequency
c. Increasing the current in the coil
d. Decreasing the number of turns of the coil.

xii A pebble is thrown vertically upwards with a speed of 20 m/s. How high will it be after 2 s?(g = 10 m/s^2)

a. 10 m
b. 20
c. 15 m
d. 22 m

xiii. A car accelerates at a rate of 5m/s^2. Find the increase in its velocity in 2s.

a. 10m/s
b. 5m/s
c. 1m/s
c. 2.4m/s

xiv. If A and B are two objects with masses 10 kg and 30 kg respectively then:

a. A has more inertia than B
c. B has more inertia than A
d. A and B have the same inertia
d. none of the two have inertia

Question 2

a. Define
i. Neutral points and
ii. Electromagnet. **[2]**

b. You have learnt that plane and convex mirrors produce virtual images of the objects. Can we get real images under some circumstances? How? **[2]**

c. Why do astronauts communicate with each other through radio waves in space? **[2]**

d. Explain lateral inversion with help of diagram **[2]**

e. What will be the magnitude and direction of the reaction force acting on a coin of 10 g lying on the surface of the floor? Take g = 9.8 m/s2 **[2]**

f. A scooter initially at rest picks up a velocity of 20 m/s over a distance of 40 m. Calculate acceleration and time in which it attains the velocity of 20 m/s. **[3]**

Question 3

a. How do fishes survive in extreme cold weather even if temperature falls below 0 degree Celsius. **[2]**

b. State two properties of ultrasound that make it useful to us. **[2]**

c. State any two advantages of electromagnet over permanent magnets. **[2]**

d. A hunter fires a gun on a cliff. Sound of firing is heard 12.5 s after seeing the smoke by an observer 4 km away from the cliff. Calculate the speed of sound in the air. **[2]**

e. State whether the resistance of filament of bulb will decrease, remain unchanged or increase when it glows and why **[2]**

f. Why does an athlete run some distance before taking a jump? **[2]**

Section – B [40 Marks]

(Attempt any four questions)

Question 4

a. A conductor AB is joined to a cell with its end A at lower potential and the end B at a high potential i) state the direction of flow of electrons in it. ii) What will be the direction of flow of conventional current in the conductor **[2]**

b. Draw diagram of a U- Shaped electromagnet. **[2]**

c. Give any 3 points of difference between primary cell and secondary cell. **[3]**

d. Calculate the wavelength and time period of a sound wave whose frequency is 1100 Hz and speed is 330 m/s in a given medium. **[3]**

Question 5

a. If you place your ear close to an iron railing which is tapped at some distance away, you hear the sound twice. Explain why? **[2]**

b. What do you mean by induction precedes attraction. **[2]**

c. Write any 3 points of differences between Transverse waves and longitudinal waves. **[3]**

d. **i.** What is the purpose of galvanometer in an electric circuit? Draw its symbol.

ii. Convert 45°C into Fahrenheit. **[3]**

Question 6

a. Indicate on a graph how the density of water at (0^oC) changes when it is gradually heated up to 10^oC. **[2]**

b. The angle between the incident ray and the mirror is 30°.
What is the angle of incidence?
What is the total angle turned by the ray of light? **[2]**

c. What are the effects of changes in temperature and pressure on the velocity of sound? **[2]**

d. i. State and define the SI unit of Current, potential deference and Resistance.

Ii. The image of an object placed at a distance of 30 cm on principal axis of a concave mirror from its pole is formed on the object itself. Find the linear magnification of the mirror. **[4]**

Question 7.

a. You are given following three bars exactly similar in size and shape:
i. A permanent magnet
ii. A bar of soft iron
iii. A bar of non-magnetic substance.
Describe how you will identify each of the bars if only a piece of thread is Supplied to you as the extra piece of apparatus. **[3]**

b. State three factors on which the resistance of a wire depends. Explain how the resistance depends on the factors stated by you. **[3]**

c. An object is placed at 15 cm in front of a convex mirror of radius of curvature 10 cm.
(a). Where will be the image form?
(b) Find the magnification m
(c) What will be the nature of image. **[4]**

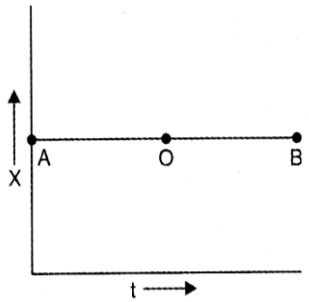
Question 8

a. Name the type of mirror used in the following situations:
(i) Headlights of a car
(ii) Side/rear view mirror of a vehicle. **[2]**

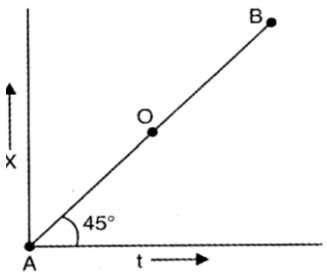
b. **i.** When the ray of light incident on a plan mirror, for what angle of incidence the ray will reflect back on same path
ii State laws of reflection **[2]**

c. Draw a ray diagram to show the formation of image of an object kept in front of a convex mirror. State characteristics of the image so formed. **[3]**

d. Write down the type of motion of a body during A-O-B in each of the following distance-time graphs: **[3]**



(a)



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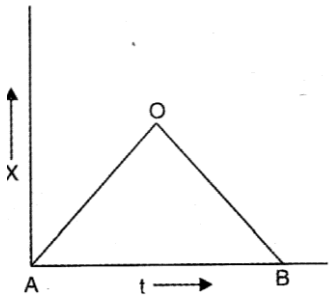

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