**Experts' Institute**
8-D, Kutchery Road Prayagraj. Ph:9415368884

**JAVA** Comp. Applications

**Python** Robotics & AI

## ST. JOSEPH'S COLLEGE, PRAYAGRAJ
### FINAL EXAMINATION 2024-25
### PHYSICS

TIME: 2 Hours       CLASS – IX       MM: 80

### SECTION – A [40 Marks]
(Attempt **all** questions from this Section)

**Q 1) Choose the correct answers to the questions from the given option.(Do not copy the question write the correct answer only)** [15]

1. The graph between the length and the time period of a simple pendulum is a straight line when it is plotted between
   (a) $l$ and $T$      (b) $l$ and $T^2$      (c) $l^2$ and $T$      (d) $l$ and $T^{-2}$      (e) None of these

2. Stone dropped from the height h reaches the ground and time t the height of the stone at time t/2 is..
   (a) $\dfrac{h}{2}$      (b) $\dfrac{h}{4}$      (c) $\dfrac{h}{6}$      (d) $\dfrac{3h}{4}$      (e) None of these

3. A baseballer Strikes the ball so hard that he completes two runs given the mass of the ball is 2 kg and the velocity possessed by the ball after impact is 200 cm per second find the momentum offered by the batsman.
   (a) 40 kg m/s      (b) 400 kg m/s      (c) 4 kg m/s      (d) 0.4 kg m/s   (e) None of these.

4. Pressure at the free surface of a lake is P1 and at a point below the free surfaces P2 how are these related.
   (a) $P1 > P2$      (b) $P1 < P2$      (c) $P1 = P2$      (e) None of these.

5. For a body floating in a vertical position, its centre of buoyancy.
   (a) Lies below the centre of gravity of the body.
   (b) Lies above the centre gravity of the body
   (c) Coincides with the center gravity of the body.
   (d) None of these.

6. When an object gains thermal energy the molecule of the substance.
   (a) Begin to move faster
   (b) Loose energy
   (c) Become heavier
   (d) Become lighter
   (e) None of these

7. Sonar is a technique used to.
   (a) Detect the submarine inside sea.
   (b) Determine the size of blue whale
   (c) Detect impurities present in sea water
   (d) Detect the depth of seabed
   (e) None of these

8. Sound in air propagates in form of.
   (a) Longitudinal wave
   (b) Transverse wave
   (c) Both Longitudinal and Transverse waves
   (d) Neither Longitudinal nor Transverse waves

9. If the radius of curvature of a mirror is 10cm. its focal length is
   (a) 5 cm      (b) 20 cm      (c) 10 cm      (d) 15 cm      (e) None of these

10. A ray of light incident on a plane mirror and the Angle of reflection $50°$ calculate the total angle between the incident ray and the reflected ray.
    (a) $25°$      (b) $50°$      (c) $100°$      (d) $75°$      (e) None of these.

11. A ray of light when incident on the pole of the mirror reflects back
    (a) Along the same path
    (b) Obeying laws of reflection
    (c) Parallel to principal axis
    (d) None of these

12. When a circular magnet is cut across its diameter
    (a) The poles get separated
    (b) The poles get divided
    (c) The poles are unaffected
    (d) None of these.

13. Which of the following statement is not true for an electromagnet?
    (a) It is made of soft iron

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(b) It can be demagnetized easily.

(c) The polarity cannot be reversed.

(d) The magnetic field strength can be changed by adjusting the magnetic field of current.

(e) None of these.

14. Assertion (A): A freely suspended magnet always aligns itself in the north-south direction.

Reason (R): The earth behaves as a huge bar magnet with its magnetic north pole near the geographic south pole and vice versa

(i) If both Assertion & Reason are true & the Reason is a correct explanation of the Assertion.

(ii) If both Assertion and Reason are true but Reason is not a correct explanation of the Assertion.

(iii) If Assertion is true but the Reason is false.

(iv) If Assertion & Reason both are false.

15. Assertion: Sound would travel faster on a hot summer day than on a cold winter day.

Reason: Velocity of sound is directly proportional to the square of its absolute temperature.

(i) If both Assertion & Reason are true & the Reason is a correct explanation of the Assertion.

(ii) If both Assertion and Reason are true but Reason is not a correct explanation of the Assertion.

(iii) If Assertion is true but the Reason is false.

(iv) If Assertion & Reason both are false.

**Q 2) (i)** Complete the following by choosing the correct answer from the bracket. **[6]**

(a) ................. [Attraction/Repulsion/Convergence] is a surer test magnetism.

(b) An open circuit is a path of ...................[Infinite/zero/less] resistance.

(c) The object distance is always considered as ..................... [Positive/Negative/Zero] in a concave mirror.

(d) An Ambulance siren is heard.............. [Louder/smaller/fainter] as it approaches towards us.

(e) In a trial room...................... [Zero / Two / Infinite] images are seen as the mirrors are ..........................
[parallel to/ perpendicular to/ intersecting] each other.

(i) Show with the aid of a diagram how a wire is wound on a U-shaped piece of soft iron in order to make it and electromagnet.Complete the circuit diagram and label the poles of the electromagnet. **[2]**

(ii) State two properties of the medium on which the speed of sound in it depends. **[2]**

**Q 3)**

(a) In which medium the speed of sound is more: humid air or Dry air? Give reason to your answer. **[2]**

(b) Write the condition required for a circuit to be a closed circuit. **[2]**

(c) 'The resistance of a wire is 1 ohm'. Explain the meaning of this statement. **[2]**

(d) Can two magnetic field lines intersect each other? Give reason to your Answer. **[2]**

(e) State two advantages of an electromagnet over a permanent magnet. **[2]**

(f) A sound wave of wavelength 80cm travels 884m in 2.6 seconds. Calculate the velocity of the sound wave. **[2]**

(g) Draw a neat labeled diagram of an electric circuit showing Ammeter, Voltmeter, cell, key, rheostat and bulb. **[3]**

**SECTION – B [40 Marks]**
(Attempt **Any Four** questions from this Section)

**Q 4) (i)** The figure shows magnetic field lines. In the magnetic field, points X, Y, Z are marked. Identify the points where the field is maximum and minimum. Give a reason to justify the same. **[3]**
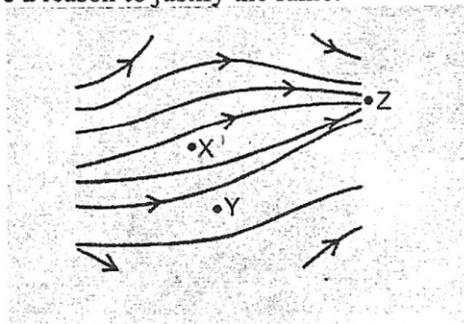


(ii) State three evidences of the existence of earth's magnetic field. **[3]**

(iii) Write four Properties of Magnetic field lines. **[4]**

**Q 5) (i)** Write three factors which do not affect the speed of sound in Gas. **[3]**

(ii) (a) Write the difference between Infrasonic and Supersonic. **[2]**

(b) A source of wave produces 40 crests and 40 Troughs in 0.4s. What is the frequency of the wave? **[1]**

(iii) A wave has a amplitude equal to 8cm and the wavelength of 2 m. The frequency of the wave is 150Hz.

(a) Draw the graph of the wave representing displacement and distance. [2]

(b) Calculate its velocity. [2]

**Q 6) (i)** Write the Three factors affecting the resistance of a conductor. [3]

(ii) State Ohm's law. A bulb draws current 1.5 A at 6.0 V. Find the resistance of a filament of bulb while glowing. [3]

(iii) State one difference between each of the following. [4]

(a) Primary cell and Secondary cell

(b) Conductor and Insulator

**Q 7) (i)** Draw a ray diagram and write the properties of an image when object is kept at centre of curvature. [3]

(ii) An object is placed at a distance of 15 cm in front of a convex mirror of radius of curvature 10 cm. [3]

(a) Where will the image form?

(b) Find the magnification m.

(c) What will be the nature of image?

(iii) (a) Write the two characteristics of the image formed by a plane mirror. [2]

(b) Write two uses of plane mirror. [2]

**Q 8) (i)** A glass bottle completely filled with water and tightly closed at room temperature is likely to burst when kept in the freezer of a refrigerator. Explain. [3]

(ii) A car travels with a uniform velocity of 25 m/s for 5s. The brakes are then applied and the car is uniformly retarded and comes to rest in further 10 s, Find: (a) the distance which the car travels before the brakes are applied, (b) the retardation and (c) the distance travelled by the car after applying the brakes. [3]

(iii) (a) Name two factors on which the time period of a simple pendulum does not depend. [2]

(b) Compare the time period of two simple pendulums of length 1m and 16m at a place. [2]