ICSE 2026 EXAMINATION
Sample Question Paper - 2
Physics

Time Allowed: 2 hours **Maximum Marks: 80**

General Instructions:

1. Answers to this Paper must be written on the paper provided separately.
2. You will not be allowed to write during first 15 minutes. This time is to be spent in reading the question paper.
3. The time given at the head of this Paper is the time allowed for writing the answers.
4. Section A is compulsory. Attempt any four questions from Section B.
5. The intended marks for questions or parts of questions are given in brackets [ ].

Section A

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

(a) A force of 50 N produces a moment of force of 10 Nm in a rigid body. Calculate the perpendicular distance between the point of application of force and the turning point is 45 cm. **[1]**

a) 1.5 m b) 0.2 m

c) 0.1 m d) 0.8 m

(b) If two convex lenses are in contact with each other. **[1]**

a) the converging power decreases b) the diverging power decreases

c) the diverging power increases d) the converging power increases

(c) A compressed spring is held near a small toy car of mass 0.15 kg. On the release of the spring, the toy car moves forward with a velocity of 10 ms^{-1}. Find the potential energy of the spring. **[1]**

a) 9.5 J b) 14.0 J

c) 11.0 J d) 7.5 J

(d) Which of the following radiation gets deflected most in electric or magnetic field? **[1]**

a) X-rays b) γ-radiation

c) α-particles d) β-particles

(e) **Assertion (A):** When a force acts on a stationary rigid body which is free to move and if body starts moving in straight path in direction of applied force, then it is said to be linear motion. **[1]**
Reason (R): If free body is acted upon by two unequal forces in opposite direction, but not in one line, the effect is that the body will possess rotational motion only.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

(f) When an equilateral prism is in minimum deviation position the angle of incidence is: **[1]**

a) equal to the angle of emergence

b) not equal to the angle of emergence

c) smaller than the angle of emergence

d) greater than the angle of emergence

(g) Which is not the condition for the formation of echoes? **[1]**

a) The intensity of sound should be sufficient so that it could be heard after reflection.

b) The temperature of air should be above 20°C.

c) The wavelength of sound should be less than the height of the reflecting body.

d) Minimum distance between the source of sound and reflecting body should be 17 m.

(h) An enemy plane is at a distance of 300 km from a radar. In how much time the radar will be able to detect the plane? Take velocity of radiowaves as 3×10^8 ms^{-1}. **[1]**

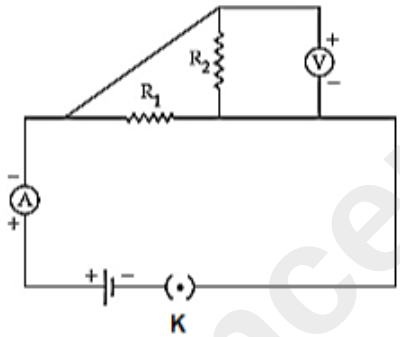
a) 5×10^{-3} s

b) 2×10^{-3} s

c) 4×10^{-3} s

d) 3×10^{-3} s

(i) For the given circuit, name the components which are connected in parallel. **[1]**



a) Both R_1 and R_2

b) Both R_1 and V

c) Both R_2 and V

d) R_1, R_2 and V

(j) By reversing the direction of current in an electromagnet, the magnetic field produced by it **[1]**

a) increases in strength

b) gets reversed in direction

c) remains unchanged in strength and direction

d) decreases in strength

(k) A pulley system has MA = 4. If a load of 10 kgf is pulley by a distance of 2 m in 10 s, calculate the power developed by the effort. **[1]**

a) 25 W

b) 15 W

c) 20 W

d) 4.9 W

(l) The amount of heat energy required to melt a given mass of a substance at its melting point without any rise in temperature is called: **[1]**

a) latent heat of fusion

b) heat capacity

c) sp. latent heat of fusion

d) sp. heat capacity

(m) 272 calories of heat is required to heat 0.02 kg of a metal of specific heat capacity 170 cal $kg^{-1}C^{-1}$ to a temperature T. If the initial temperature of the metal is 20^oC, calculate the final temperature T. **[1]**

a) 25^oC b) 90^oC

c) 100^oC d) 75^oC

(n) A concave lens always forms: **[1]**

a) real, inverted and enlarged image b) virtual, erect and diminished image

c) virtual, inverted and enlarged image d) virtual, erect and enlarged image

(o) The point on the principal axis of a convex lens, such that rays of light starting from it on passing through the lens, move parallel to the principal axis is called: **[1]**

a) second focal point b) first focal point

c) optical centre d) aperture of lens

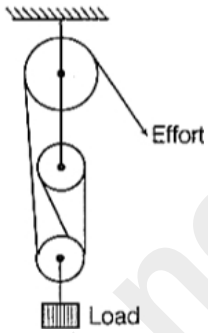
2. **Answer the following questions:** **[15]**

(a) i. Name a machine which can be used to **[1]**

i. Multiply force.

ii. Change the direction of force applied.

ii. Diagram given in below is representing a pulley system having a velocity ratio 3 and an efficiency of 80%. Calculate the mechanical advantage and efficiency. **[1]**



iii. If a machine is used to lift a load of 50 N such that resistance due to friction and movable part of machine is 15 N, then the total lifted load is 65 N, i.e., (50 + 15) N. If the displacement is caused through 2 m, then find actual and useful output. **[1]**

(b) i. Give one example of pure rotational motion. **[2]**

ii. Comment on the movement of particles on the axis of rotation in pure rotational motion.

(c) In a single movable pulley system a load of 300 kgf is lifted by an effort of 200 kgf. Find the percentage efficiency of system. **[2]**

(d) Write the differences between centripetal and centrifugal force. **[2]**

(e) If a satellite revolves around the earth in a circular orbit, the amount of work done by the satellite is zero. Justify the statement. **[2]**

(f) What are the factors on which resistance of a conductor depends? **[2]**

(g) How does the change in frequency and amplitude affect a musical sound? **[2]**

3. **Answer the following questions;** **[10]**

(a) i. What is the relation between the refractive index of water with respect to air ($_a\mu_w$) and the refractive index of air with respect to water($_w\mu_a$). **[2]**

ii. If the refractive index of water with respect to air (${}_a\mu_w$) is $\frac{5}{3}$.
Calculate the refractive index of air with respect to water (${}_w\mu_a$).

(b) How many protons will constitute a charge of 1 C? **[2]**

(c) A current of 150 mA flows through a circuit for 2 min. Find the amount of charge that flows through the circuit. **[2]**

(d) 40 g of water at 60°C is poured into a vessel containing 50 g of water at 20°C. The final temperature recorded is 30°C. Calculate the thermal capacity of the vessel. (Take specific heat capacity of water as 4.2 $Jg^{-1}\,°C^{-1}$) **[2]**

(e) State any two properties of α radiation. **[2]**

Section B

Attempt any 4 questions

4. **Answer the following questions:** **[10]**

(a) Give one use of each of the electromagnetic radiations given below: **[3]**

i. Microwave,
ii. Ultraviolet radiation,
iii. Infrared radiation,

(b) The melting point of naphthalene is 80°C and the room temperature is 30°C. A sample of liquid naphthalene at 100°C is cooled down to the room temperature. Draw a temperature time graph to represent this cooling. In the graph, mark the region which corresponds to the freezing process. **[3]**

(c) What is meant by scattering of light? Mention the factor on which it depends. Explain why **[4]**

i. the colour of the clear sky is blue and
ii. for astronauts sky appears darker?

5. **Answer the following questions:** **[10]**

(a) i. If a monochromatic beam of light, undergoes minimum deviation through an equiangular prism, how does the beam pass through the prism, with respect to its base? **[3]**
ii. If white light is used in the same way as in (i) above, what change is expected in the emergent beam?

(b) i. State the laws of refraction of light. **[3]**
ii. Write a relation between the angle of incidence (i), angle of emergence (e), angle of prism (A) and the angle of deviation (δ) for a ray of light passing through an equilateral prism.

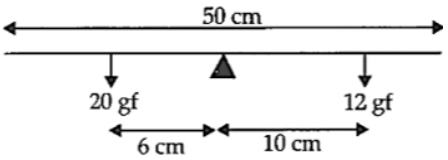
(c) i. In which manner, does the angle of deviation produced by a prism change with increase in the angle of incidence? With the help of a suitable diagram, show the variation in the angle of deviation with the angle of incidence at the prism surface. **[4]**
ii. Using the curve in part (i) above, how do you infer that for a given prism, the angle of minimum deviation D_{min} is unique for the given light?

6. **Answer the following questions:** **[10]**

(a) A pulley system comprises two pulleys, one fixed and the other movable. **[3]**

i. Draw labelled diagram of the arrangement and show clearly the directions of all the forces acting on it.
ii. What change can be made in the movable pulley of this system to increase the mechanical advantage of the system?

(b) A half metre rod is pivoted at the centre with two weights of 20 gf and 12 gf suspended at a perpendicular distance of 6 cm and 10 cm from the pivot respectively as shown below. **[3]**

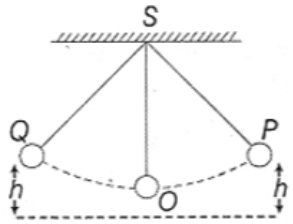


i. Which of the two forces acting on the rigid rod causes clockwise moment?

ii. Is the rod in equilibrium?

iii. The direction of 20 gf force is reversed. What is the magnitude of the resultant moment of the forces on the rod?

(c) Illustrate the law of conservation of energy by discussing the energy changes which occur when we draw a pendulum bob to one side and allow it to oscillate. Why does the bob eventually come to rest? What happens to its energy eventually? Is it a violation of the law of conservation of energy? **[4]**



7. **Answer the following questions:** **[10]**

(a) i. Sound made infront of a tall building, 18 m away, is repeated. Name the phenomenon and briefly explain it. **[3]**

ii. A tuning fork, held over an air column of a given length, produces a distinct audible sound. What did you call this phenomenon? How does it occur?

(b) An atomic nucleus A is composed of 84 protons and 128 neutrons. **[3]**

i. The nucleus A emits an alpha particle and is transformed into nucleus B. What is the composition of nucleus B?

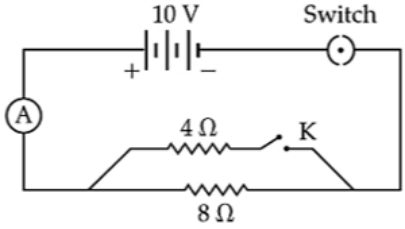
ii. The nucleus B emits a beta particle and is transformed into a nucleus C. What is the composition of nucleus C?

iii. Does the composition of nucleus C change if it emits gamma radiations?

(c) A man standing between two cliffs produces a sound and hears two successive echoes at intervals of 3 s and 4 s, respectively. Calculate the distance between the two cliffs. The speed of sound in the air is 330 ms^{-1} **[4]**

8. **Answer the following questions:** **[10]**

(a) Calculate the reading of A when **[3]**



i. K is closed.

ii. K is open.

(b) A nucleus ${}_{Z}X^{A}$ emits an alpha particle followed by γ-emission, there after it emits two β-particles to **[3]**

form X_3

i. Copy and complete the value of A and Z for X_3

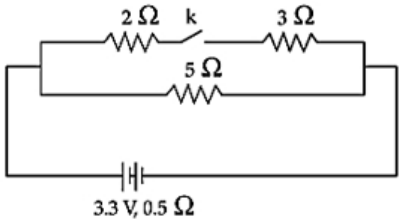
$$^{A}_{X}X \xrightarrow{-\alpha} X_1 \xrightarrow{-\gamma} X_2 \xrightarrow{-2\beta} X_3$$

ii. Out of α, β and γ radiation.

a. Which radiation is the most penetrating?

b. Which radiations are negatively charged?

(c) The diagram below shows a circuit with the key k open. **[4]**



Calculate:

i. The resistance of the circuit when the key k is open.

ii. The current drawn from the call when the key k is open.

iii. The resistance of the circuit when the key k is closed.

iv. The current drawn from the cell when the key k is closed.

9. **Answer the following questions:** **[10]**

(a) Two metallic blocks P and Q having masses in ratio 2 : 1 are supplied with the same amount of heat. **[3]**
If their temperatures rise by same degree, compare their specific heat capacities.

(b) i. Define calorimetry. **[3]**

ii. Name the material used for making a Calorimeter.

iii. Why is a Calorimeter made up of thin sheets of the above material answered in (ii)?

(c) i. What is the function of the split rings in a DC motor? **[4]**

ii. State two ways by which the magnetic field of a solenoid can be made stronger.

Solution

Section A

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

(i) **(b)** 0.2 m

Explanation:

F = 50 N

Moment of force = 10 Nm

$\perp$ distance = ?

Moment of force = F $\times$ $\perp$ dist.

10 = 50 $\times$ $\perp$ distance.

$\therefore \perp$ distance = $\frac{10}{50}$ = 0.2 m

(ii) **(d)** the converging power increases

Explanation:

If two convex lenses are in contact with each other, the equivalent focal length (f) and power of the combination (P) can be calculated as

$\frac{1}{f} = \frac{1}{f_1} + \frac{1}{f_2}$ and $P = P_1 + P_2$

It increases the sharpness of image and converging power.

(iii) **(d)** 7.5 J

Explanation:

Mass of car m = 0.15 kg

velocity v = 10 ms^{-1}

kinetic energy K.E. = $\frac{1}{2}$ mv^2

$\frac{1}{2} \times \frac{15}{100} \times 10 \times 10 = 7.5$ J

(iv) **(d)** β-particles

Explanation:

β-particles

(v) **(c)** A is true but R is false.

Explanation:

Linear motion is also known as translational motion. When force acting on stationary object makes it to move in a straight path then the body is said to have translational or linear motion.

And when a free body is acted upon by two unequal forces in opposite direction, but not in one line, then the body possesses both rotational as well as translational motion.

(vi) **(a)** equal to the angle of emergence

Explanation:

equal to the angle of emergence

(vii) **(d)** Minimum distance between the source of sound and reflecting body should be 17 m.

Explanation:

Minimum distance between the source of sound and reflecting body should be 17 m.

(viii) **(b)** 2×10^{-3} s

Explanation:

d = 300 t = ?

v = 3×10^8 ms^{-1}

t = $\frac{2d}{v} = \frac{2 \times 300 \times 1000 \text{ m}}{3 \times 10^8 \text{ ms}^{-1}}$ = 0.002 s = 2×10^{-3} s

(ix) **(d)** R_1, R_2 and V

Explanation:

For the given circuit diagram, the components R_1, R_2 and V are connected in parallel combination. Because terminals of the resistance and voltmeter are connected together.

(x) **(b)** gets reversed in direction

Explanation:

gets reversed in direction

(xi) **(d)** 4.9 W

Explanation:

Given, MA = 4, load = 10 kgf = 10 × 9.8 N

Distance = 2 m, time = 10 s

$\therefore$ Power = $\frac{\text{Work done}}{\text{Time taken}}$

MA = 4 = $\frac{\text{Load}}{\text{Effort}} = \frac{10\times9.8}{E}$

Effort = $\frac{10\times9.8}{4}$

Now, power = $\frac{\text{Work}}{\text{Time}} = \frac{F\times s}{t}$

$= \frac{10\times9.8}{4} \times \frac{2}{10} = \frac{49}{10}$ = 4.9 W

(xii) **(a)** latent heat of fusion

Explanation:

latent heat of fusion

(xiii) **(c)** 100°C

Explanation:

H = 272 calories

Mass of metal = 0.02 kg

C = 170 cal $kg^{-1}{}^{o}C^{-1}$

Rise in temp. Δt = (T - 20)

H = mc Δt

272 = $\frac{2}{100} \times 170$(T - 20)

T - 20 = $\frac{272\times10}{2\times17}$ = 80

T = 80 + 20 = 100°C

(xiv) **(b)** virtual, erect and diminished image

Explanation:

virtual, erect and diminished image

(xv) **(b)** first focal point

Explanation:

first focal point

2. Answer the following questions:

(i) i. i. Nut cracker.

ii. Handpump.

ii. Since, Mechanical Advantage,

MA = $\frac{\text{Load}}{\text{Effort}}$ = VR × η = 3 × $\frac{80}{100}$ = 2.4

or efficiency = $\frac{\text{load}}{2.4} = \frac{300}{2.4}$ = 125 N

iii. Actual output = total load × distance

= 65 N × 2 m = 130 J

and useful output = useful work × distance

= 50 N × 2 m = 100 J

(ii) i. Rotation of a potters wheel.

ii. The particles on the axis of rotation are stationary in pure rotational motion.

(iii)We know that, VR of single movable pulley = number of supporting segments of string = 2

MA of single movable pulley = $\frac{L}{E} = \frac{300}{200} = \frac{3}{2}$

Therefore, efficiency is $\eta = \frac{MA}{VR} = \frac{3}{2\times2} = \frac{3}{4}$

= 0.75 = 75.00%

(iv) Differences between centripetal force and centrifugal force are

Centripetal Force	Centrifugal Force
A force which acts on an object towards the centre of a circle to produce centripetal acceleration, so that the object moves in a circle is known as centripetal force.	A force which does not act on the object moving in the circle but it is equal and opposite force to centripetal force called centrifugal force.
It is a real force.	It is a fictitious force.

(v) If a satellite revolves around the earth in a circular orbit, the amount of work done by the satellite is zero. It is due to the fact that the force of gravity is directed towards the centre of circular path of the satellite, i.e., the earth and the displacement at all instant is along the tangent to the circular path or normal to the direction of force on the satellite.

$\because$ W = F $\times$ s cos 90°

$\Rightarrow$ W = F $\times$ s $\times$ 0 = 0

(vi) The resistance of a conductor depends on the following factors

i. Length of the wire (l).

Resistance is directly proportional to the length of wire, i.e., R $\propto$ l.

ii. Area of cross-section of wire

Resistance is inversely proportional to the area of cross-section i.e., R $\propto \frac{1}{A}$.

iii. Nature of wire i.e., the material of which the wire is made of. It also depends on temperature.

(vii) For a musical sound

i. increase in frequency means increase in its pitch.

ii. increase in its amplitude means increase in intensity or loudness.

3. Answer the following questions;

(i) i. They are inversely proportional.

$_a\mu_w = \frac{1}{_w\mu_a}$

ii. $_a\mu_w = \frac{1}{_w\mu_a} = \frac{1}{(\frac{5}{3})} = \frac{3}{5}$

(ii) We know that

Q = ne

where, Q = 1 C

e = 1.6 $\times$ 10^{-19} (charge on proton)

$\Rightarrow n = \frac{Q}{e} = \frac{1}{1.6\times10^{-19}}$

$\Rightarrow$ n = 6.25 $\times$ 10^{18} Protons

(iii) Given, current, I = 150 mA = 150 $\times$ 10^{-3} A

Time, t = 2 min = 2 $\times$ 60 = 120 s

Amount of charge, q = ?

We know that, q = I $\times$ t

$\Rightarrow$ q = 150 $\times$ 10^{-3} $\times$ 120

$\Rightarrow$ q = 18 C

So, 18 C of charge flows around the circuit.

(iv) As from principle of calorimetry,

Heat gained = Heat lost

So, Heat lost by hot water = Heat gained by cold water + Heat gained by vessel

$\Rightarrow$ 40 $\times$ 4.2 $\times$ 30 = 50 $\times$ 4.2 $\times$ 10 + (Heat capacity $\times$ 10)

$\Rightarrow$ Heat capacity = $\frac{(40\times4.2\times30)-(50\times4.2\times10)}{10}$

= 294 J/^oC

(v) i. They have high ionizing power and low penetrating power.

ii. They are positively charged particles and gets affected in the electric and magnetic field.

Section B

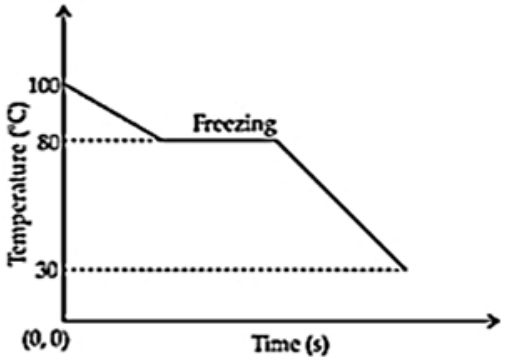
4. Answer the following questions:

(i) i. Microwaves are used for satellite communication and radar communication.

ii. Ultraviolet radiations are used for sterilizing purposes and detecting the purity of gems.

iii. Infrared radiations are used for photography at night in mist or fog.

(ii)



(iii)The reflection of light from an object in all directions is called scattering of light.

The intensity of scattered light depends on the size of scattering articles and colour or wavelength of light.

i.e., Scattering $\propto d^6$ (where, d = diameter of particle) and scattering $\propto \frac{1}{\lambda^4}$ (where, λ = wavelength of particle)

i. During the day time, the size of particles of the atmosphere is smaller than the wavelength of visible light. So, they are more effective in scattering the light of shorter wavelengths i.e., blue light.So sky appears blue in colour.

ii. As at greater heights, there is no atmosphere i.e., no particles and hence no scattering of light takes places in the space. Hence, for astronauts the sky appears dark.

5. Answer the following questions:

(i) i. If a monochromatic beam of light undergoes minimum deviation through an equiangular prism, then the angle of incidence i is equal to the angle of emergence e ($\angle i = \angle e$).

Hence, the refracted beam passes parallel to the base of the prism.

ii. If white light is used in the same way as in part (i), then dispersion of light takes place. We know that the angle of deviation depends on the wavelength of light.

The refractive index of a given transparent material decreases with the increase in a wavelength of light.

Consequently, the given prism deviates violet light more than the red light.

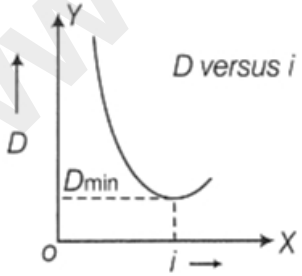
(ii) i. The laws of refraction are as:

a. The incident ray, the refracted ray and the normal at the point of incidence, all lie in the same plane.

b. The ratio of sine of angle of incidence to the sine of angle of refraction is a constant for a pair of media. This constant is known as refractive index i.e., $\mu = \frac{\sin i}{\sin r}$

ii. For a ray of light passing through an equilateral prism, $\angle i + \angle e = \angle A + \angle \delta$

(iii) i. Angle of deviation decreases with increase in incidence angle but upto a certain extent and then angle of deviation will increase again.



Here, it is shown graphically.

ii. Since, at the position of minimum deviation.

$D = D_{min} \Rightarrow i_1 = i_2 = i$

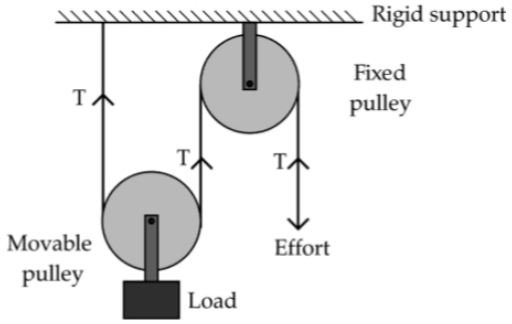
where, i_1 is the angle of incidence and i_2 is the angle of emergence.

Then, $D_{min} = 2i - A$

For a given prism and given colour of light, D_{min} is unique.

6. Answer the following questions:

(i)

i. 

ii. To increase the mechanical advantage of the system, we can reduce the friction between the string and the movable pulley. Also, we can take the movable pulley as light as possible.

(ii) i. 12 gf force will cause clockwise moment.

ii. Clockwise moment = $12 \times 10 = 120$ gf cm

Anti-clockwise moment = $20 \times 6 = 120$ gf cm

Yes, the rod is in equilibrium because the clockwise moments is equal to anti-clockwise moments (120 gf cm).

iii. On reversing the direction of the 20 gf, both the forces i.e. 20 gf and 12 gf will cause clockwise rotation of the rod. The rod will no longer be in equilibrium.

Resultant moment of forces = $W_1 \times l_1 + W_2 \times l_2$

$= 20 \times 6 + 12 \times 10$

$= 240$ gf cm

(iii) Let OS be the equilibrium position of the pendulum and it is displaced to a position P, where it is at rest. At extreme position P, the pendulum has potential energy (mgh). When the pendulum is released from position P, it begins to move towards position O.

The speed of the pendulum goes on increasing and its height decreases that means the potential energy is converting into kinetic energy.

At position O, whole of the potential energy of the pendulum gets converted into its kinetic energy.

Then, the pendulum swings to other side due to inertia of motion.

As the pendulum begins to move towards position Q, the speed of pendulum decreases and height increases which means kinetic energy gets converted back into potential energy. At point Q, whole of the kinetic energy is converted into potential energy.

Although the potential energy is converted into kinetic energy and vice-versa during the motion of the pendulum. But the total energy remains constant. When the pendulum oscillates in air, the air friction opposes its motion.

So, some part of kinetic energy of the pendulum is used to overcome this friction.

With the passage of time, energy of the pendulum goes on decreasing and finally becomes zero. The energy of the pendulum is transferred to the molecules of atmosphere. So, energy is converted from one form to another. So, no violation of law of conservation of energy takes place.

7. Answer the following questions:

(i) i. As we know that the minimum distance between source and reflector for an echo to be heard is 17 m and here the distance is 18 m. So the phenomena due to which sound is repeated is echo.

ii. We call the phenomenon as resonance. This occurs when the frequency of forced vibrations produced by the tuning fork is equal to the natural frequency of the air column.

(ii) i. ${}_{82}B^{208}$ or 82 protons and 126 neutrons.

ii. ${}_{83}C^{208}$ or 83 protons and 125 neutrons.

iii. No.

(iii) Given, time taken from nearer cliff, $t_1 = 3$ seconds

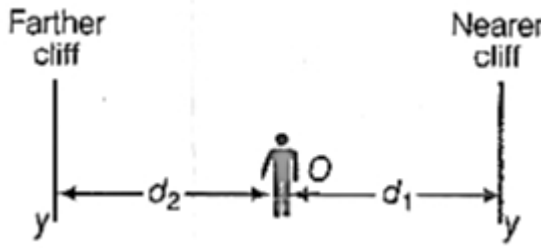
Time taken from farther cliff, $t_2 = 4$ seconds

Speed of sound in air, $v_a = 330$ m/s

Total distance, d =?

Distance between man and nearer cliff,

$d_1 = \frac{v_a \times t_1}{2} = \frac{330 \times 3}{2} = 495$ m



Distance between man and farther cliff,

$d_2 = \frac{v_a \times t_2}{2} = \frac{330 \times 4}{2} = 660$ m

Total distance between two cliffs,

$d = d_1 + d_2 = 495 + 660 = 1155$ m

8. Answer the following questions:

(i) i. When is R closed, 4 Ω and 8 Ω are in parallel.

Let the resistance of 4 Ω and 8 Ω in parallel be R

$\therefore \frac{1}{R} = \frac{1}{4} + \frac{1}{8}$

$\Rightarrow \frac{1}{R} = \frac{2+1}{8}$

$\Rightarrow \frac{1}{R} = \frac{3}{8}$

$\Rightarrow R = \frac{8}{3}\Omega$

Given V = 10 V

$\therefore I = \frac{V}{R} = 10 \times \frac{3}{8}$

$= \frac{30}{8} = \frac{15}{4}$ Amp

ii. When K is open R' = 8 Ω

$\therefore I = \frac{10}{8} = \frac{5}{4}$ Amp

(ii) i. ${}_{Z}X^{A} \xrightarrow{-\alpha({}_{2}He^{4})} {}_{Z-2}X_1^{A-4} \xrightarrow{{}_{0}\gamma^{0}} {}_{Z-2}X_2^{A-4} \xrightarrow{-2\beta({}_{-1}\beta^{0})} {}_{Z}X_3^{A-4}$

ii. a. The penetration power of γ is maximum.

b. As β is ${}_{-1}\beta^{0}$, these are negatively charged radiations.

(iii) i. R = 5 + 0.5 = 5.5 Ω

ii. $I = \frac{3.3}{5.5} = \frac{3}{5}$ = 0.6 A

iii. $R_1 = \frac{5 \times 5}{5+5} = 2.5$ Ω

R = 2.5 + 0.5 = 3 Ω

iv. $I = \frac{3.3}{3} = 1.1$ A

9. Answer the following questions:

(i) Consider a metallic block having mass 'm', specific heat capacity 'S', gains heat energy 'Q', after rising the temperature 'ΔT', then the relation among them is given by,

$\because Q = mS\Delta T$ ...(i)

For block P, Mass = 2m,

Specific heat capacity = S_p

Temperature = ΔT

For block Q, Mass = m

Specific heat capacity = S_Q

Temperature = ΔT

As per question, $Q_P = Q_Q$ ...(ii)

$\therefore$ from eqns. (i) and (ii), we get

$2m\ S_P\ \Delta T = m\ S_Q\ \Delta T$

$\Rightarrow 2S_P = S_Q$

$\Rightarrow S_P = \frac{1}{2}S_Q$

It means that specific heat capacity of block P is half of the capacity of block Q.

(ii) i. The measurenent of the quantity of heat is called calorimetry.

ii. Copper

iii. Specific heat capacity of copper is low and by making the vessel thin, its mass and heat capacity becomes low, therefore it takes a negligible amount of heat from the contents ta attain the temperature.

(iii) i. In DC motor, when the coil rotates, the split ring also rotates with the coil so that the current flow in the armature coil in such a way that it always keep on rotating in the same manner.

ii. Magnetic field of a solenoid can be increased by the following ways

a. the current in the solenoid.

b. the number of turns in the solenoid.