

# Physics ICSE

## Mock Paper 1 (2026)

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 particle of mass  $m$  is executing a uniform circular motion on a path of radius  $r$ . If  $p$  is the magnitude of its linear momentum, then what is the radial force acting on the particle? [1]

a)  $\frac{p}{m}$

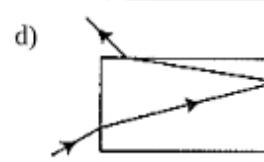
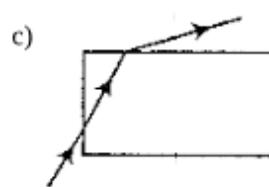
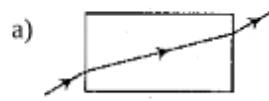
b)  $\frac{p^2}{mr}$

c)  $\frac{r_m}{p^2}$

d)  $\frac{r}{p}$

- (b) A ray of light is incident on one side of a rectangular glass block. Its path is plotted through the block and out through another side. [1]

Which path is not possible?



- (c) One electron volt is equal to: [1]

a)  $1.6 \times 10^{-10} \text{ J}$

b)  $6.1 \times 10^{-19} \text{ J}$

c)  $1.6 \times 10^{-17} \text{ J}$

d)  $1.6 \times 10^{-19} \text{ J}$

- (d) When a nucleus in an atom undergoes a radioactive decay, then the electronic energy levels of the atom. [1]

- a) do not change for any type of radioactivity

- b) change for  $\alpha$ -radioactivity but not for others

- c) change for  $\beta$ -radioactivity but not for others      d) change for  $\alpha$  and  $\beta$ -radioactivity but not for  $\gamma$ -radioactivity
- (e) **Assertion (A):** A duster lying on the table is an example of static equilibrium. [1]
- Reason (R):** When a body remains in the same state of motion under the influence of several forces then the body is in static equilibrium.
- 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) The electromagnetic wave associated with high energy is: [1]
- a) infrared ray      b) gamma ray  
c) X-ray      d) ultraviolet ray
- (g) A man stands in between two cliffs, such that he is at a distance of 133.6 m from nearer cliff. He fires a gun and hears first echo after 0.8 s and second echo after 1.8 s. Calculate: (i) speed of sound (ii) distance between two cliffs. [1]
- a) 434.2 m      b) 234.2 m  
c) 334.2 m      d) 134.2 m
- (h) Sound waves of wavelength  $\lambda$  travelling in a medium with a speed of  $v$  m/s enter another medium, where its speed is  $2v$  m/s. What will be the wavelength sound waves in the second medium? [1]
- a)  $3\lambda$       b)  $\lambda$   
c)  $4\lambda$       d)  $2\lambda$
- (i) I. The resistors  $R_1$  and  $R_2$  have not been correctly connected in parallel.  
II. The voltmeter has not been correctly connected in the circuit.  
III. The ammeter and the key have not been correctly connected in the circuit. [1]
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- Out of these three, the actual fault in this circuit is/are
- a) Only II      b) Both II and III  
c) Only I      d) Both I and II
- (j) Which is the incorrect statement? In a step down transformer [1]
- a) number of turns in primary are more than the secondary coil.      b) the primary coil is thicker as compared to secondary coil.  
c) the primary coil is thinner as compared to the secondary coil.      d) the primary coil is more heavily insulated as compared to secondary coil.

(k) A pulley system has a VR = 5. If the efficiency of the system is 80%, find its MA. [1]

- a) 3
- b) 1
- c) 4
- d) 2

(l) 50 g of a hot solid of specific heat capacity  $0.25 \text{ Jg}^{-1}\text{C}^{-1}$  and at  $100^\circ\text{C}$  is placed in 80 g of cold water, when the temperature of cold water rises by  $3^\circ\text{C}$ . Find the initial temperature of cold water. [1]

- a)  $26.36^\circ\text{C}$
- b)  $36.36^\circ\text{C}$
- c)  $16.36^\circ\text{C}$
- d)  $6.36^\circ\text{C}$

(m) The SI unit of specific latent heat is: [1]

- a) cal  $\text{g}^{-1}$
- b)  $\text{Jg}^{-1}$
- c)  $\text{J kg}^{-1}$
- d)  $\text{J kg}^{-1} \text{ K}^{-1}$

(n) The most visible colour of visible spectrum is: [1]

- a) red
- b) orange
- c) blue
- d) green

(o) A lens forms an inverted image of an object equal to its own size. The object is: [1]

- a) between  $2F_1$  and  $F_1$
- b) beyond infinity and  $2F_1$
- c) in between  $F_1$  and optical centre
- d) at  $2F_1$

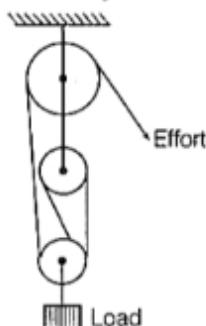
2. Answer the following questions: [15]

(a) i. Considering that simple physical balance can work as an ideal lever, what can be said about its mechanical advantage? [1]

ii. Name a machine which can be used to [1]

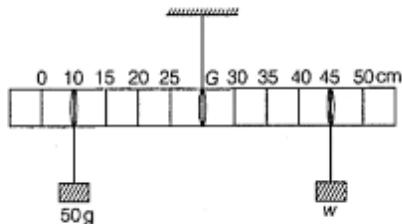
- i. Multiply force.
- ii. Change the direction of force applied.

iii. 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]



(b) A half meter ruler is suspended by a thread from the mid-point of the ruler as shown in the figure. It balances horizontally when a 50 g and an unknown weight was suspended respectively, from 10 cm [2]

and the 45 cm mark. Calculate the magnitude of weight w.

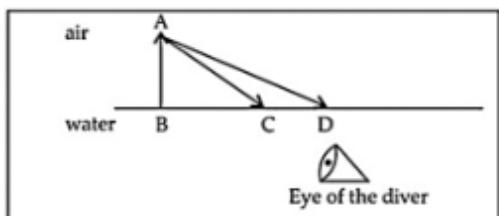


- (c) What is a lever? State its principle. [2]
- (d) A man can open a nut by applying a force of 150 N by using a lever handle of length 0.4 m. What should be the length of the handle, if he is able to open it by applying a force of 60 N? [2]
- (e) The power of a motor pump is 5 kW. How much water per minute the pump can raise to a height of 20 m? (Take,  $g = 10 \text{ ms}^{-2}$ ) [2]
- (f) An electric kettle is rated at 230 V, 1000 W.  
a. What is the resistance of its element when in use?  
b. What is the safe value of current that can pass through its element? [2]
- (g) A radar sends a signal to an aeroplane at a distance 4.5 km away with a speed of  $3 \times 10^8 \text{ ms}^{-1}$ . After how long is the signal received back from the aeroplane? [2]
3. Answer the following questions; [10]
- (a) An electromagnetic wave has a frequency of 500 MHz and a wavelength of 60 cm. Calculate velocity. [2]
- (b) How does earthing prevent electrical shock? [2]
- (c) Draw a labelled diagram of a three pin socket. [2]
- (d) 50 g of metal piece at 27°C requires 2400 J of heat energy so as to attain a temperature of 327°C, calculate the specific heat capacity of the metal. [2]
- (e) i. Why is a nuclear fusion reaction called a thermo nuclear reaction?  
ii. Complete the reaction:  
$${}_{\frac{3}{2}}^{\text{He}} + {}_{\frac{1}{1}}^{\text{H}} \rightarrow {}_{\frac{4}{2}}^{\text{He}} + \text{_____} + \text{Energy.}$$

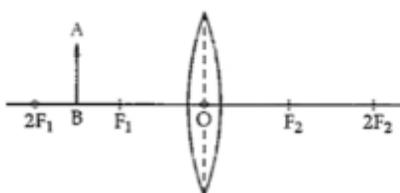
### Section B

Attempt any 4 questions

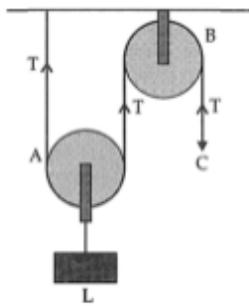
4. Answer the following questions: [10]
- (a) If an obliquely incident light ray bends at the surface due to change in speed, when passing from one medium to another. While the ray does not bend when it is incident normally.  
State with the reason, whether the ray will have the different speed in the other medium. [3]
- (b) State in brief, the meaning of each of the following [3]  
i. The heat capacity of body is  $50 \text{ J}^{\circ}\text{C}^{-1}$ .  
ii. The specific latent heat of fusion of ice is  $336000 \text{ J kg}^{-1}$ .  
iii. The specific heat capacity of copper is  $0.4 \text{ J g}^{-1} \text{ }^{\circ}\text{C}^{-1}$ .
- (c) A student wants to burn a piece of paper using a convex lens in day light, rather than using match stick or any direct flame. Will he be able to, if yes justify your answer with a ray diagram? [4]
5. Answer the following questions: [10]
- (a) A diver in water looks obliquely at an object AB in air. [3]



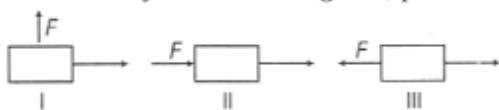
- i. Does the object appear taller, shorter or of the same size to the diver?
- ii. Show the path of two rays AC and AD starting from the tip of the object as it travels towards the diver in water and hence obtain the image of the object.
- (b) A lens forms an erect, magnified and virtual image of an object. [3]
- Name the lens.
  - Draw a labelled ray diagram to show the: image formation.
- (c) An object AB is placed between  $2F$  and  $F$  on the principal axis of a convex lens as shown in the diagram. [4]
- Copy the diagram and using these rays starting from point A, obtain the image of the object formed by the lens.



6. Answer the following questions: [10]
- (a) From the diagram given below, answer the questions that follow: [3]
- What kind of pulleys are A and B?
  - State the purpose of pulley B.
  - What effort has to be applied at C to just raise the load L = 20 kgf?  
(Neglect the weight of pulley A and friction).



- (b) A uniform half metre rule balances horizontally on a knife edge at 29 cm mark when a weight of 20 gf is suspended from one end. [3]
- Draw a diagram of the arrangement.
  - What is the weight of the half metre rule?
- (c) In each of the following a force, F is acting on an object of mass m. The direction of displacement is from West to East shown by the longer arrow. Observe the diagrams carefully and state whether the work done by the force is negative, positive or zero. [4]



7. Answer the following questions: [10]
- (a) Fig. (A) shows a trace of a sound wave which is produced by a particular tuning fork. [3]

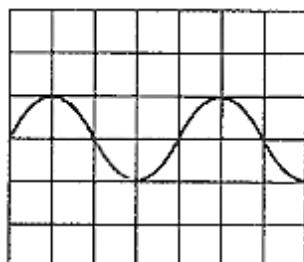
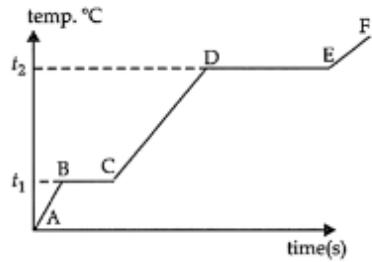


Fig. (A)

- Draw a trace of the sound wave which has a higher pitch than that shown in Fig. A.
  - Draw a trace of the sound wave which louder than that shown in Fig. A.
- (b) i. Differentiate between nuclear fusion and nuclear fission. [3]
- ii. State one safety precaution in the disposal of nuclear waste.
- (c) i. A person is tuning his radio set to a particular station. What is the person trying to do to tune it? [4]
- ii. Name the phenomenon involved, in tuning the radio set.
- iii. Define the phenomenon named by you in part (ii).
8. Answer the following questions: [10]
- (a) A metal wire has diameter of 0.25 mm and electrical resistivity of  $0.8 \times 10^{-8} \Omega\text{-m}$ . [3]
- What will be the length of this wire to make a resistance  $5 \Omega$ ?
  - How much will the resistance change, if the diameter of the wire is doubled?
- (b) A certain nucleus X has a mass number 14 and atomic number 6. The nucleus X changes to  ${}_{7}Y^{14}$  after [3] the loss of a particle.
- Name the particles emitted.
  - Represent this change in the form of an equation.
  - A radioactive substance is oxidised. What change would you expect to take place in the nature of its radioactivity? Give a reason for your answer.
- (c) In the figure below, the ammeter A reads 0.3 A. [4]
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- Calculate
- The total resistance of the circuit.
  - The value of R.
  - the current flowing through R.
9. Answer the following questions: [10]
- (a) i. Define heat capacity of a substance. [3]
- ii. Write the SI unit of heat capacity.
- iii. What is the relationship between heat capacity and specific heat capacity of a substance?
- (b) i. The diagram below shows the change of phases of a substance on a temperature vs time graph on [3] heating the substance at a constant rate.



- ii. Why is the slope of CD less than slope of AB?
- iii. What is the boiling and melting point of the substance?

(c)

- i. Draw a simple labelled diagram of a DC electric motor.
- ii. What is the function of the split rings in a DC motor?
- iii. State one advantage of AC over DC.

[4]