Time : 2.00 Hours
Maximum Marks : 80

**PHYSICS**
**ICSE**
**Sample Question Papers**

# Self Assessment Paper 1

**General Instructions :**

1. *Answers to this Paper must be written on the paper provided separately*
2. *You will not be allowed to write during the first 15 minutes*
3. *This time is to be spent in reading the Question Paper*
4. *The Time given at the head of this Paper is the time allowed for writing the answers.*

***Section A** is compulsory. Attempt any four questions from **Section B.***

*The intended marks for questions or parts of questions are given in brackets [].*



## SECTION 'A' (40 Marks)

*Attempt all questions from this section.*

**1. (a)** Name the factors affecting the turning effect of a body. **[2]**

**(b) (i)** Draw a graph between displacement and the time for a body executing free vibrations. **[2]**
**(ii)** Where can a body execute free vibrations?

**(c)** Name any two electromagnetic waves, which have a frequency higher than that of violet light. State one use of each. **[2]**

**(d)** State the energy changes in the following cases while in use: **[2]**
**(i)** An electric iron.
**(ii)** A ceiling fan.

**(e)** Why is a jack screw provided with a long arm? **[2]**

**2. (a)** Copy and complete the following table. **[2]**

| Type of lens | Position of object | Nature of the image | Size of the image |
|---|---|---|---|
| Convex | At F | | |
| Concave | At infinity | | |

**(b)** The ratio of amplitude of two waves is 3 : 4. What is the ratio of their **[2]**
**(i)** Loudness?
**(ii)** Frequencies?

**(c)** State Snell's law of refraction of light. **[2]**

**(d)** Two bulbs are marked 100 W, 220 V and 60 W, 110 V. Calculate the ratio of their resistances. **[2]**

AI **(e)** State the position of the object in front of a converging lens if: **[2]**
**(i)** It produces a real and same size image of the object.
**(ii)** It is used as a magnifying lens.

**3. (a)** **(i)** A ray of light passes from water to air, How does the speed of light change ? **[2]**

**(ii)** Which colour of light travels fastest in any medium except air ?

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

**(c)** A wire of uniform thickness with a resistance of 27 Ω is cut into three equal pieces and they are joined in parallel. Find the resistance of the parallel combination. **[2]**

**(d)** Calculate the quantity of heat produced in a 20 Ω resistor carrying 2.5 A current in 5 minutes. **[2]**

AI **(e)** A solid of mass 50 g at 150°C is placed in 100 g of water at 11°C, when the final temperature recorded is 20°C. Find the specific heat capacity of the solid. **[2]**

(Specific heat capacity of water = 4.2 J/g°C)

**4. (a)** You have three resistors of values 2 Ω, 3 Ω and 5 Ω. How will you join them so that the total resistance is more than 7 Ω ? **[2]**

**(i)** Draw a diagram for the arrangement.

**(ii)** Calculate the equivalent resistance.

**(b)** Explain, why one feels ice cream at 0°C colder than water at 0°C ? **[2]**

AI **(c)** How is the refractive index of a material related to : **[2]**

**(i)** Real and apparent depth ?

**(ii)** Velocity of light in vacuum or air and the velocity of light in a given medium ?

**(d)** A Boy weighing 40 kg climbs up a stair of 30 steps each 20 cm high in 4 minutes and a girl weighing 30 kg does the same in 3 minutes. Compare : **[2]**

**(i)** The work done by them.

**(ii)** The power developed by them.

**(e)** **(i)** Name the high energetic invisible electromagnetic waves which help in the study of the structure of crystals. **[2]**

**(ii)** State an additional use of the waves mentioned in part (i).



## SECTION 'B'

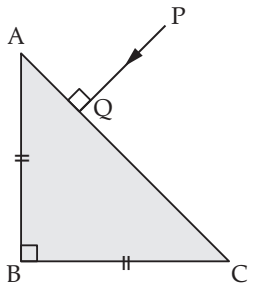
**(40 Marks)**

*Attempt any four questions from this section.*

**5. (a)** **(i)** What is an echo? **[3]**

**(ii)** State two conditions for an echo to take place.

**(b)** A ray of light PQ is incident normally on the hypotenuse of a right angled prism ABC as shown in the diagram. **[3]**




**(i)** Copy the diagram and complete the path of the ray PQ till it emerges from the prism.

**(ii)** What is the value of the angle of deviation of the ray?

**(iii)** Name an instrument where this action of the prism is used.

**(c)** Two resistors of 4 Ω and 6 Ω are connected in parallel to a cell to draw 0.5 A current from the cell. **[4]**

**(i)** Draw a labelled circuit diagram showing the above arrangement.

**(ii)** Calculate the current in each resistor.

AI **6. (a)** A lens produces a virtual image between the object and the lens. **[3]**

**(i)** Name the lens.

**(ii)** Draw a ray diagram to show the formation of this image.

**(b) (i)** State Ohm's law

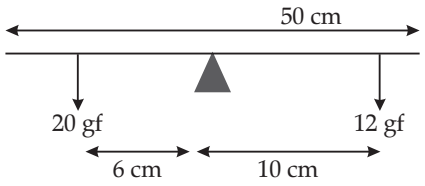
**(ii)** A metal wire of resistance 6 Ω is stretched so that its length increased to twice of original length. Calculate its new resistance **[3]**

**(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).

**7. (a)** A half meter 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 is in equilibrium?

**(iii)** If the direction of 20 kgf force is reversed. What is the magnitude of the resultant moment of the forces on the rod?

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

**(i)** Microwave,

**(ii)** Ultraviolet radiation,

**(iii)** Infrared radiation,

**(c) (i)** The current rating of fuse is 10 A', Explain the statement.

**(ii)** Answer the following : (1) Name the three wires of the cable.
(2) To which wire should the metallic case of appliance is connected.
(3) Color code of neutral wire.

**8. (a)** Calculate the quantity of heat that will be produced in a coil of resistance 75 Ω if a current of 2 A is passed through it for 2 min. **[3]**

**(b)** A pulley system has a velocity ratio of 4 and an efficiency of 90%. calculate: **[3]**

**(i)** The mechanical advantage of the system.

**(ii)** The effort required to raise a load of 300 N by the system.

AI **(c) (i)** Name the radiations which are absorbed by greenhouse gases in the earth's atmosphere. **[4]**

**(ii)** A radiation X is focused by a particular device on the bulb of a thermometer and mercury in the thermometer shows a rapid increase. Name the radiation X.

**(iii)** Name two factors on which the heat energy liberated by a body depends.

**9. (a) (i)** What is the principle of method of mixtures? **[3]**

**(ii)** Name the law on which this principle is based.

**(b)** Draw a diagram to show the energy changes in an oscillating simple pendulum. Indicate in your diagram how the total mechanical energy in it remains constant during the oscillation. **[3]**

**(c)** An object is placed at a distance of 12 cm from a convex lens of focal length 8 cm. Find: **[4]**

**(i)** The position of the image.

**(ii)** Nature of the image.

**10.** **(a)** State the factors affecting the resistance of a conductor. **[3]**

**(b)** **(i)** Mention two important precautions that should be taken while handling radioactive materials : **[3]**

**(ii)** State one use of radio–isotopes.

**(c)** It is observed that : **[4]**

**(i)** alpha particles and beta particles are deflected by an electric or magnetic field.

**(ii)** gamma rays are not deflected by either an electric or a magnetic field.

Explain these observations.

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