ICSE Class X Physics Question Paper

SCIENCE

Paper I (Physics)

(One hour and a half)

Answer to this paper must be written on the paper provided separately.

You will NOT be allowed to write during the first 15 minutes.

This time is to be spent in reading the question paper.

The time given at the head of this paper is the time allowed for writing the answer.

Attempt all the questions from Section A and four questions from Section B.

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

There are 5 printed pages.

SECTION I (40 Marks)

Attempt all questions from this section

Question 1

a. Define gravitational unit of weight. **[2]**

b. State two points of distinction between single fixed and single movable pulley **[2]**

c. Can the light passing from air to water suffer total internal reflection? Why? **[2]**

d. State two points of distinction between loudness and intensity of sound. **[2]**

e. The power generating station electric power is generated at 11kV, however it is transmitted over long distance at 132kV. Explain. **[2]**

Question 2

a. State the energy transformation in an A.C generator and D.C motor. **[2]**

b. The following are examples of levers. State the class of levers to which each one belongs **[2]**

i) Scissors iii) Sugar tongs.

ii) Nut cracker iv) pliers.

c. Give two applications of total internal reflection. **[2]**

d. Why is calorimeter made of **thin** sheet of **copper**? **[2]**

e. State one application of convex lens when object is placed (i) at 2F and (ii) between F and 2F. **[2]**

Question 3

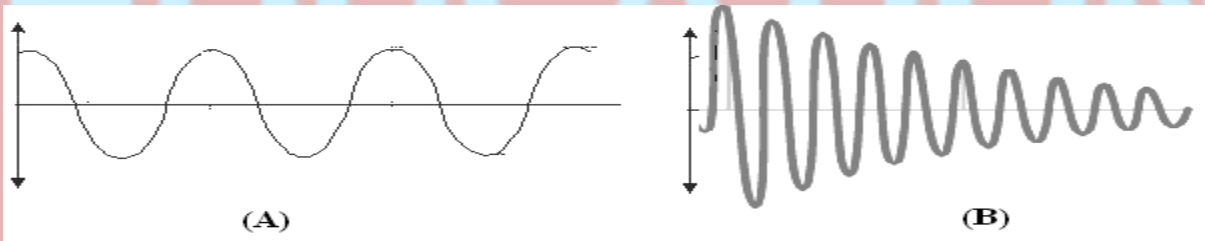
a. Give two points of difference between centripetal force and centrifugal force. **[2]**

b. What are the essential properties of a good thermionic emitter? **[2]**

c. Find the time taken by 500W heater to raise the temperature of 50kg of material of specific heat capacity 960 J $kg^{-1}K^{-1}$ from 18^0c to 38^0c. **[2]**

d. Why are the metal pins of the plug split in the middle?

e. The diagram below is a displacement – time graph of a vibrating body **[2]**



(i) Identify these vibrations and (ii) state one point of difference.

Question 4

a. State the factors on which the magnitude of force acting on a current carrying conductor placed in a magnetic field in a direction perpendicular to it depends. **[2]**

b. Show graphically relation between force and acceleration. **[2]**

c. Why is the base of a cooking pan made thick and heavy? **[2]**

d. Name the unit in which work function of a metal is generally expressed. How is it related to the S.I. unit joule? **[2]**

e. State the property used by bats to detect an obstacle. Give one necessary condition for it. **[2]**

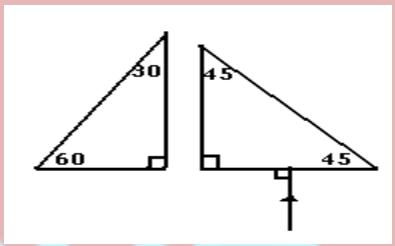
SECTION II (40 Marks)

Attempt any four questions from this section

Question 5

a. Copy the diagram and complete the path of the ray of the light in and out of the glass prism.

(the critical angle for glass is 42^0) **[3]**



b. Calculate the total resistance between A and B. **[3]**

c. A boy standing on the ground throws a ball straight up in the air. The ball attains a height 'h'.

if mass of the ball is m and acceleration of gravity is g, complete the following table. **[4]**

Position of the Ball (h)	Kinetic Energy K	Potential Energy U	Total Energy E
Ground 0	1.	2.	3.
Middle h/2	4.	5.	6.
Highest h	7.	8.	

Question 6

a. An object of height 4.0 cm is placed at a distance 24cm in front of a convex lens of focal length 8cm. Draw a ray diagram to find the position of the image. State the characteristics of the image. (use a graph paper) **[3]**

b. State the conversion of energy in the following examples

(i) Charging of a battery (ii) Thermo couple (iii) Photosynthesis. **[3]**

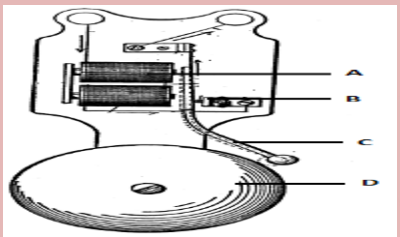
c. (i) A radioactive substance is oxidized. What changes would you expect to take place in the nature of radioactivity? Explain your answer. **[4]**

(ii) Uranium nucleus $^{238}U_{92}$ decays to lead nucleus $^{206}Pb_{82}$. How many beta particles are emitted?

Question 7

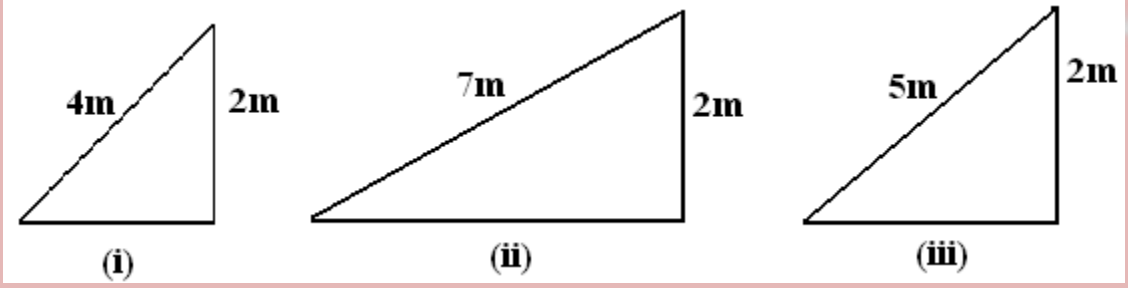
a. An electrical appliance is rated 1500W – 250V. This appliance is connected to 250V mains. Calculate (i) the current drawn (ii) the electrical energy consumed in 60hours (iii) the cost of electric energy consumed at a rate of Rs.2.50 per kWh. **[3]**

b. The diagram below of an electric bell, identify the component A, B, C and D explain the function of A. **[3]**



c. For a cylinder to be loaded in a warehouse at a height of 2m, which arrangement will you choose from the following diagrams? Explain. **[4]**

If the cylinder weighs 300N, what is the minimum effort that you need to apply?



Question 8

a. Define the physical quantity which has S.I unit kg m s^{-1}. State the conditions when the physical quantity takes value zero. **[3]**

b. Name any one part of spectrum which has frequency range more than visible wave and state its two uses. **[3]**

c. A visit to Juhu beach we see the kulfi wala and gola wala (ice slush vendor). They both use ice, one uses an ice and salt mixture and another press the crushed ice on a stick. Give scientific reasons. **[4]**

Question 9

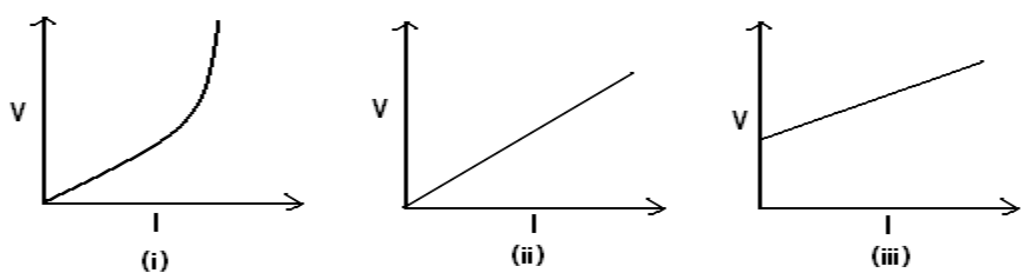
a. In both tree as well as ring system the appliance are connected parallel to each other. Explain. **[3]**

b. Scientist from ISRO recorded some radiations. Radiation A was detected with the help of quartz prism while radiation B was observed the affect photographic plates kept inside thick metal sheets. Identify the radiations and name their source. State one use of radiation A. **[3]**

c. A metal wire of resistance 10Ω is stretched to thrice its original length. The wire is broken into two equal parts. These parts are connected in parallel to each other and potential difference of 2V is applied to it. Calculate (i) resistance of each part of the wire (ii) Total resistance of the circuit and (iii) Current in each part of the wire. **[4]**

Question 10

a. Observe the following graphs and answer the questions **[3]**

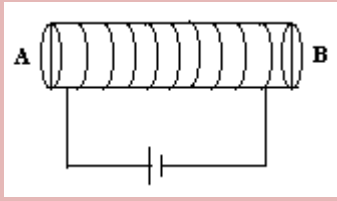


(i) Which graph/ graphs represents ohmic conductors.

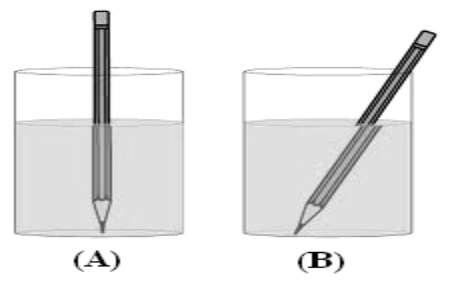
(ii) How do we calculate the resistance from the V – I graph?

(iii) Which other factors does the resistance depends? (any one)

b. How will you determine the polarity of the faces of the coil on the basis of direction of flow of current? And state the poles formed at A and B in given arrangement. **[3]**



c. Observe the following diagram and answer the questions given below. **[4]**



1. State the phenomenon involved.
2. State the causes for the above phenomenon.
3. What specific condition you observe in diagram A?