

ICSE Class 10 Physics Sample Papers 2013

General Instructions:

- This paper is of total 80 marks.
- It consists of two sections .
- Section A: All questions from 1-4 to be answered.
- Section B: All questions from 5-8 to be answered.
- Marks are allotted to each question.

SECTION-1(40 marks)

Question 1

(a) If 'm' is the mass of the body, 'v' its velocity and 'p' the momentum then write a relationship between change in momentum, mass and velocity of the body when

i) v is almost equal to c, the velocity of light.

ii) v is very, very less as compared to c, the velocity of light. [2 Marks]

(b) What is the energy conversions that take place in the following when they are working.

(i) Electric toaster

(ii) Microphone [2 Marks]

(c) Which physical quantity does the electron volt measure? How is it related to SI unit of this quantity? [2 Marks]

(d) Two energies A and B of equal mass are kept at heights 20m and 30m respectively. Calculate the ratio of their potential energies. [2 Marks]

(e) State the amount of work done by an object when it moves in a circular path for one complete rotation. Give a reason to justify your answer. [2 Marks]

Question 2

(a) What is the SI unit of energy? How is the electron volt (eV) related to it? [2 Marks]

(b) A body of mass 5 kg is moving with a velocity of 10 m/s. What will be the ratio of its initial kinetic energy and final kinetic energy, if the mass of the body is doubled and its velocity is halved. [2 Marks]

(c) State the amount of work done by an object when it moves in a circular path for one complete rotation. Give reason to justify your answer. [2 Marks]

(d) State the law of conservation of energy. [2 Marks]

(e) Which class of levers has a mechanical advantage always greater than one? Which change can be brought about in this lever to increase its mechanical advantage? [2 Marks]

Question 3

(a) 40 g of water at 60 degree centigrade is poured into a vessel containing 50 g of water at 20 deg centi. The final temperature recorded is 30 deg centigrade. Calculate the thermal capacity of the vessel (SH of water = 4.2j/g/c) [2 Marks]

(b) Why do pieces of ice added to a drink cool it much faster than ice cold water? [2 Marks]

(c) Mention two factors on which the resistance of a wire depends. [2 Marks]

(d) Give two important precautions that should be taken while handling radioactive materials. [2 Marks]

(e) Mention two properties of a metal that make it a good thermionic emitter. [2 Marks]

Question 4

(a) A ray of light strikes the surface of a rectangular glass block such that the angle of incidence is

(i) 0 degree

(ii) 42 degree.

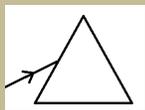
Sketch a diagram to show the path taken by the ray in each case as it passes through the glass block and emerges from it. [2 Marks]

(b) State the condition required for total internal reflection. [2 Marks]

(c) Draw a labelled ray diagram to illustrate

(a) Critical Angle

(b) Total internal reflection, for a ray of light moving from one medium to another. [2 Marks]



A Prism

(d) Refer the following figure and answer the given questions.

(i) Copy the diagram and complete it to show the path of the refracted ray and the emergent ray.

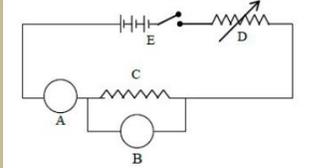
(ii) How are the angle of incidence and angle of emergence related to each other in this position of the prism. [2 Marks]

(e) State Snell's law of refraction of light. [2 Marks]

Section II(40 marks)

Question 5

(a) Refer the following circuit diagram and answer the given questions. [4 Marks]



Circuit Diagram

The diagram shows an electrical circuit used for the verification of ohm's law. Label A,B,C,D and E. Draw a sketch to show how the value of current varies for different values of voltage across C.

(b) Answer the given questions- [3 Marks]

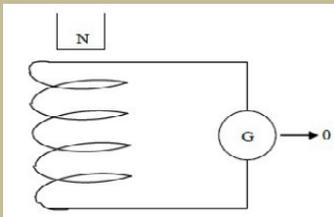
- What is meant by earthing of an electrical appliance? Why is it essential?
- What will be the effect on the working of an electric bell if instead of a DC, an AC is used?

(c) Answer the following questions- [3 Marks]

- State two factors on which the strength of an induced current depends.
- When a solenoid that is carrying current is freely suspended, it comes to rest along a particular direction. Why does this happen?

Question 6

(a) What will you observe from the figure when- [4 Marks]



Coil with magnet

- the magnet is dropped into the coil.
- the number of turns of the coil is increased?
- What will be the direction of current flowing through the coil when the magnet is dropped in?
- State the law which explains this observation.

(b) A block and tackle pulley system has a velocity ratio 3.[3 Marks]

- Draw a labelled diagram of this system. Indicate clearly the points of application and the directions of

the load and effort.

(ii) Why should the lower block of this pulley system be of negligible weight?

(c) Why scissors for cutting cloth may have blades much longer than the handles;but shears for cutting metals have short blades and long blades. [3 Marks]

Question-7

(a) What is the cause of twinkling of star? [3 Marks]

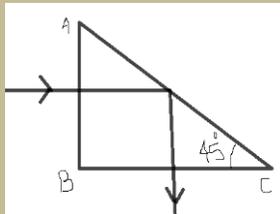


Figure 1

(b) (i) Observe the given figure 1 and answer the questions:. [4 Marks]

A ray of light passes through a right angled prism as shown in the figure.State the angles of incidence at the faces AC and BC.

ii) Define Critical angle

(c) Observe the given figure 2 and answer the questions [3 Marks]

PQ Pr are two light rays emerging from the object P as as shown in the figure:

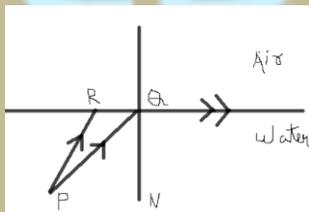


Figure 2

(i) What is the special name give to the angle of incidence (PQN) of ray PQ.

(ii) Copy the ray diagram and complete it to show the position of the image of the object P when seen obliquely from above.

(iii) Name the phenomenon that occurs if the angle of incidence(PQN)is increased still further.

Question-8

(a) Answer the given questions: [4 Marks]

i)What happens to the atomic number of an element when it emits:1) An alpha particle 2) A beta particle

(ii) Explain why alpha and beta particles are deflected in an electric or a magnetic field but gamma rays are not deflected in such a field.

(b) Give example in support of answer for the following questions. [3 Marks]

i) Define work function of a metal.

(ii) State two factors on which the rate of therm-ions depend.

(c) Give example in support of answer for the following questions. [3 Marks]

i) Define Radioactivity.

ii) A radioactive substance is oxidized. What change would you expect to take place in the nature of its radioactivity? Give a suitable reason.



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