Sample Paper 7

ICSE Class X 2023-24

Physics

Science Paper - 1

Time: 2 Hours **Max. Marks: 80**

General Instructions:

1. Answer to this Paper must be written on the paper provided separately.
2. You will not be allowed to write during 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.
5. Section A is compulsory. Attempt any four questions from Section B.
6. The intended marks for questions or parts of questions are given in brackets [ ].

SECTION - A

(Attempt all questions from this Section.)

QUESTION 1.

Choose the correct answers to the questions from the given options. [15]

(Do not copy the questions, write the correct answer only.)

(i) A body is acted upon by two unequal and opposite forces along different lines of action of force. The body will have

(a) only rectilinear motion
(b) only rotatory motion
(c) only translatory motion
(d) both (a) and (b)

(ii) In a photovoltaic cell, ... energy converts to ..... energy.

(a) light, wind
(b) thermal, kinetic
(c) light, electrical
(d) heat, chemical

(iii) A pump motor is used to deliver water at a certain rate from a given pipe. To obtain twice as much water from the same pipe in the same time, the power of the pump has to be increased to

(a) 4 times
(b) 2 times
(c) 16 times
(d) 8 times

(iv) Which of the following radiation is most penetrating ?

(a) α-particles
(b) β-particles
(c) X-rays
(d) γ -radiation

(v) **Assertion :** The product of resistivity and conductivity of a conductor depends on the material of the conductor.
Reason : Because each of resistivity and conductivity depends on the material of the conductor.
(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion (A) is false but reason (R) is true.

(vi) The image when obtained from a concave lens of focal length f is magnified up to n times the size of the object. What is the distance of the object from the lens ?
(a) $\left(1-\frac{1}{n}\right)f$ (b) $\left(1+\frac{1}{n}\right)f$
(c) $\left(\frac{1-n}{n}\right)f$ (d) $\left(\frac{1+n}{n}\right)f$

(vii) SONAR is a technique used to .....
(a) detect the impurities present in sea water (b) detect the depth of sea bed
(c) detect the submarine inside sea (d) determine the size of blue whale

(viii) A tuning fork has a frequency of 212 Hz. It will produce resonance in a wooden board of frequency
(a) 212 Hz (b) 448 Hz
(c) 106 Hz (d) 318 Hz

(ix) An electric heater of power 1000 W, draws a current of 5.0 A. Calculate the line voltage.
(a) 800 V (b) 380 V
(c) 560 V (d) 200 V

(x) A switch in a circuit is always connected in the :
(a) neutral wire (b) earth wire
(c) live wire (d) either (a) or (b)

(xi) The graph plotted for potential difference (V)against current (I) for ohmic resistors is
(a) a curve passing through the origin (b) a straight line not passing through origin
(c) a straight line passing through origin (d) a circle centred at the origin

(xii) The specific heat capacity of a substance :
(a) changes with rise or fall in temperature.
(b) is a constant quantity for a given substance.
(c) changes with the mass of given substance.
(d) changes with the area or volume of substance.

(xiii) Heat energy is given to 80 g of alcohol (sp. heat capacity 2200 $\mathrm{J\,kg^{-1}K^{-1}}$) when its temperature rises by 20 K. If the same heat energy is given to 200 g of mercury of specific heat capacity 140 $\mathrm{J\,kg^{-1}K^{-1}}$, what is the rise in temperature.

(a) 152.7 K (b) 125.7 K
(c) 215.7 K (d) 251.7 K

(xiv) Optical fibre works on the principle of

(a) total internal reflection (b) optical transmission
(c) satellite signals (d) internet mobile towers

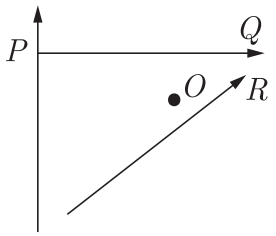
(xv) The angle of deviation is maximum for ..... when the dispersion of polychromatic light takes place

(a) green (b) blue
(c) violet (d) red

QUESTION 2.

(i) Comment on the statement, "The mechanical advantage of a machine is greater than 1". [3]

(ii) P, Q and R are three coplanar forces which act as shown in the figure. [2]

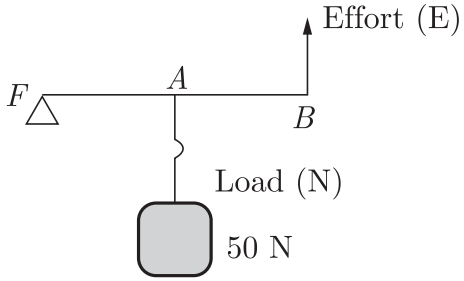


A point O lies in the same plane, $P = Q = R = 6\,\mathrm{N}$.

(a) Which force has the least moment about O?

(b) Which force has the greatest moment about O? Give a reason.

(iii) The diagram shows a lever in use [2]



(a) To which class of lever does it belong?

(b) If FA = 40 cm, AB = 60 cm, then find the mechanical advantage of the lever.

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

(v) What type of energy is stored in the spring of a watch? [2]

(vi) A 25 W and a 100 W bulb are joined in parallel and connected to the A.C. mains. Which bulb will glow brighter? [2]

(vii) A bucket kept under a running tap is getting filled with water. A person sitting at a distance is able to get an idea when the bucket is about to be filled. [2]
(a) What change takes place in the sound to give this idea ?
(b) What causes the change in the sound ?

QUESTION 3.

(i) A lens produces a virtual image between the object and the lens. [2]
(a) Name the lens.
(b) Draw a ray diagram to show the formation of this image.

(ii) (a) An electrical gadget can give an electric shock to its user under certain circumstances. Mention any two of these circumstances. [2]
(b) What preventive measure provided in a gadget can protect a person from an electric shock ?

(iii) Why is it more difficult to make a magnet move towards a coil which has large number of turns? [2]

(iv) What will be the final temperature when 150 g of ice at 0°C is mixed with 300 g of water at 50°C. Specific heat of water-1 cal/g/°C. Latent heat of fusion of ice = 80 cal/g. [2]

(v) In heavy nuclei, number of neutrons is greater than the number of protons. Why ? [2]

Continue on Next Page...

SECTION - B

(Attempt any four questions.)

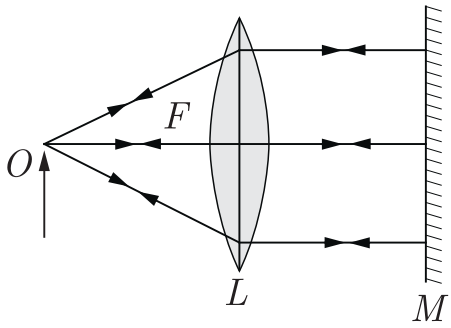
QUESTION 4.

(i) The ray diagram given below illustrates the experimental set up for the determination of the focal length of a converging lens using a plane mirror. [3]

(a) State the magnification of the image formed.

(b) Write two characteristics of the image formed.

(c) What is the name given to the distance between the object and optical centre of the lens in the given diagram ?



(ii) Describe the experiment by which composite character of white light was demonstrated by Newton. [3]

(iii) Ranbir claims to have obtained an image twice the size of the object with a concave lens. [4]

(a) Is he correct? Give a reason for your answer.

(b) A lens forms an erect, magnified and virtual image of an object.

(i) Name the lens.

(ii) Draw a labelled ray diagram to show the image formation.

(c) Define the power of a lens.

QUESTION 5.

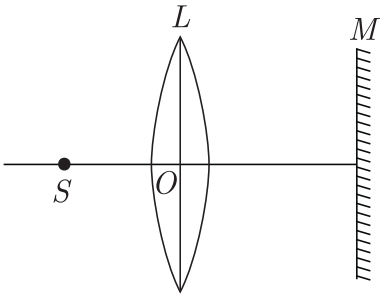
(i) A radio can tune in to any station in 7.5 MHz to 12 MHz band, what is the corresponding wavelength band ? [3]

(ii) Figure below shows a point source of light S, a convex lens L and a plane mirror M. The three are placed such that rays of light from S return to it after reflection from M. [3]

(a) What is the distance OS called ?

(b) To which point (left of S, on S or right of S) will the rays return if M is moved to the left and brought in contact with L?

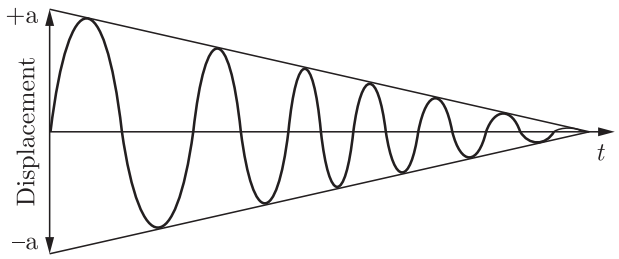
Continue on Next Page...



(iii) The diagram below shows the displacement-time graph for a vibrating body. [4]

(a) Name the type of vibrations produced by the vibrating body.

(b) Give one example of a body producing such vibrations.



(c) Why is the amplitude of the wave gradually decreasing ?

(d) What will happen to the vibrations of the body after sometime ?

QUESTION 6.

(i) Ram and Shyam went for a trek and during the journey they visited a garden. They suspended their bags to the two ropes hanging from P and Q on a wheel capable of rotating around O. Ram suspended his bag to the rope Q and Shyam suspended his bag from the rope P. [3]

The wheel remain in equilibrium.

(a) State with a reason who is carrying a heavier hag.

(b) Based on the principle of moments, write a mathematical relation that can be used to determine the weight (w) of Shyam's bag, given that the weight of Ram's bag is 10 kgf.

(ii) An effort of 10 N is applied at the free end of the string passing on a single movable pulley system with a load attached to it. The weight of the movable pulley is 3 N. The frictional forces are negligible. [3]

(a) Calculate the mass of the load being raised.

(b) On a diagram of the pulley system with strings, mark the direction of the forces, effort E, tension in the strings T and the load L.

(c) Calculate the tension T in anyone segment of the string.

(iii) Show that the total mechanical energy of a freely falling body remains conserved. [4]

QUESTION 7.

(i) A sound wave travelling in water has a wavelength 0.4 m. Is this wave audible in air ? (The speed of sound in water $= 1400\,\text{ms}^{-1}$) [3]

(ii) A nucleus ${}^{11}\text{Na}^{24}$ emits a beta particle to change into Magnesium (Mg). [3]

(a) Write the symbolic equation for the process.

(b) What are numbers 24 and 11 called ?

(c) What is the general name of ${}^{24}_{12}\text{Mg}$ with respect to ${}^{24}_{11}\text{Na}$?

(iii) A block and tackle system of pulleys has a velocity ratio 4. [4]

(a) Draw a labelled diagram of the system indicating clearly the points of application and directions of load and effort.

(b) What is the value of the mechanical advantage of the given pulley system if it is an ideal pulley system ?

QUESTION 8.

(i) (a) State Ohm's law. [3]

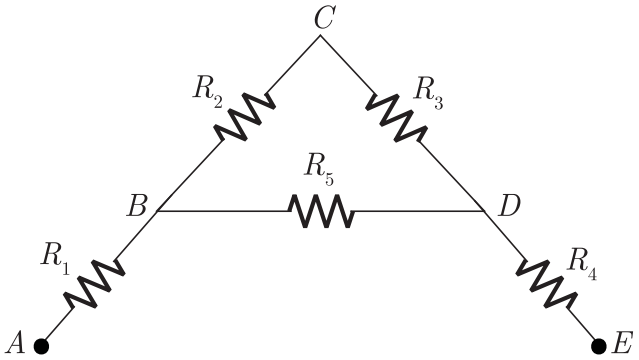
(b) A metal wire of resistance 6 Ω is stretched so that its length is increased to twice its original length. Calculate its new resistance.

(ii) (a) Describe a common use of X-rays. [3]

(b) State a precaution taken by those who work with X-rays.

(iii) A letter A consists of a uniform wire of resistance 1 ohm per cm, the sides of the letter are each 20 cm long and the cross piece in the middle is 10 cm long. Find the resistance of the letter between points (i) BD and (ii) AB. [4]

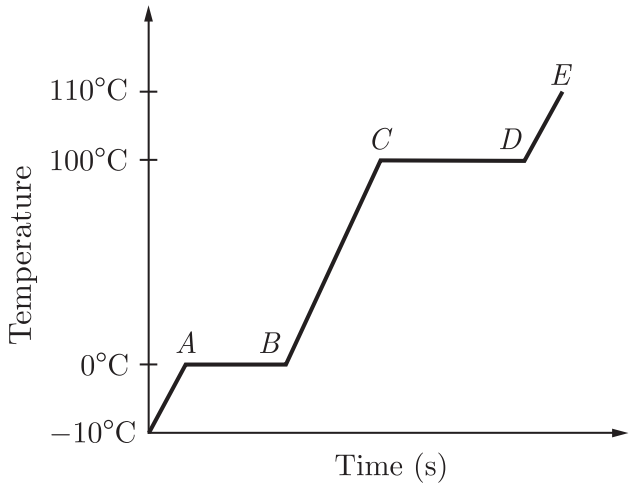
Continue on Next Page...



QUESTION 9.

(i) A metal of mass 250 g is heated to a temperature of 65°C. It is then placed in 50 g of water at 20°C. The final steady temperature of water becomes 25°C. Neglecting the heat taken by the container, calculate the specific heat capacity of the metal. [3]

(ii) A piece of ice is heated at a constant rate. The variation of temperature with heat input is shown in the graph below: [3]



(a) What are represented by AB and CD?
(b) What conclusion can you draw regarding the nature of ice from the above graph?

(iii) A house is fitted with 20 lamps of 60 W each 10 fans consuming 0.5 ampere and one electric kettle of resistance 110 ohm. If the energy is supplied at 220 volt and costs 25 paise per KWh, calculate the monthly bill for running these appliances for 6 hours daily. Take one month = 30 days. [4]

****

Pre Board Sample Papers Exam Feb 2024

ICSE Class 10th Physics

Click PDF Icon and Download Sample Papers 30 Sets

If you are not able to click papers, please see last page of this PDF

Physics Paper 1

Paper  Solution 

Physics Paper 2

Paper  Solution 

Physics Paper 3

Paper  Solution 

Physics Paper 4

Paper  Solution 

Physics Paper 5

Paper  Solution 

Physics Paper 6

Paper  Solution 

Physics Paper 7

Paper  Solution 

Physics Paper 8

Paper  Solution 

Download Chapterwise Previous 20 Years Exam Question Bank

Questions Worksheet and Solutions

Physics Paper 9

Paper  Solution 

Physics Paper 10

Paper  Solution 

Physics Paper 11

Paper  Solution 

Physics Paper 12

Paper  Solution 

Physics Paper 13

Paper  Solution 

Physics Paper 14

Paper  Solution 

Get all Subject Sample Papers

Click Below to Join our Whatsapp Channel

Join Whatsapp Channal

Physics Paper 15

Paper  Solution 

Physics Paper 16

Paper  Solution 

Physics Paper 17

Paper  Solution 

Physics Paper 18

Paper  Solution 

Physics Paper 19

Paper  Solution 

Physics Paper 20

Paper  Solution 

Add Whatsapp ChatBot Number

94142 43489

In your class Whatsapp group to get all subjects.

Sample papers will be sent in your class whatsapp group.

ICSE Pre Board Sample Papers

Class 10th Exam 2024

Click your subject and Download 20 Set Sample Papers

MATHS	PHSYICS
CHEMISTRY	BIOLOGY
HIS. & CIVICS	GEOGRAPHY
ENGLISH - I	ENGLISH - II
COMPUTER	हिंदी

File is not opening after click or touch ? What to do ?

If sample paper file is not opening after click or touch, it means links doesn't work in you mobile PDF opening app. It seems that your mobile has WPS office, in which links doesn't work.

Open this file in Google Drive only.

क्लिक/टच करने से फाइल नहीं खुल रहा है ? मैं क्या करूँ

अगर आपके क्लिक करने के बाद सैंपल पेपर फाइल नहीं खुल रहा है तो आपके PDF खोलने वाले एप्प में लिंक काम नहीं करते हैं | अगर आपके मोबाइल में WPS ऑफिस है तो उसमें भी फाइल नहीं खुलेगा |

आप इसे गूगल ड्राइव में खोलिये |

Get all Subject Sample Papers

Click Below to Join our Whatsapp Channel

Join Whatsapp Channal