

ICSE Class 10 Physics Important Questions

1. State Snell's law of refraction of light.
2. The refractive index of glass is 1.5 and that of water is 1.3. If the speed of light in water is $2.25 \times 10^8 \text{ms}^{-1}$, what is the speed of light in glass?
3. State the difference between music and noise.
4. The coolant in a chemical or nuclear plant (i.e. the liquid used to prevent different parts of a plant from getting too hot) should have high specific heat. Comment.
5. The refractive indices of four substances P, Q, R and S are 1.20, 1.36, 1.77 and 1.31, respectively. The speed of light is maximum in which substance?
6. Sound waves travel with a speed of about 330 m/s. What is the wavelength of sound whose frequency is 550 Hz?
7. If you want to hear a train approaching from far away, why is it more convenient to put your ear to the track?
8. How is skating possible on snow?
9. Can water be boiled without heating? If yes, explain how it is possible?
10. Explain the importance of using in a household electric circuit (1) a fuse and (2) an earthing wire.
11. An object is placed at a distance of 20 cm in front of the convex mirror of radius of curvature of 30 cm. Find the position and nature of the image.
12. How many electrons pass through a lamp in 2 minutes if the current is 300 mA? Given charge on electron is $1.6 \times 10^{-19} \text{C}$
13. A battery of emf 12 V and internal resistance 5Ω is connected to a resistor. If the current through the circuit is 0.3A, what is the resistance of the resistor? What is the terminal voltage of the battery when the circuit is closed?
14. Two resistors, R1 and R2, are first connected in series and then in parallel across the same source.
 - a. In which case is the current through the source greater?
 - b. In which case is the rate of conversion of electrical energy to heat energy greater?
15. Mention two factors on which the emf of a cell depends.

16. Write the conditions necessary for the formation of an echo.
17. A body of mass 5 kg initially at rest is subjected to a force of 20 N. What is the kinetic energy acquired by the body at the end of 10 s?
18. A bullet of mass 50 g moving with a velocity of 400ms^{-1} strikes a wall and goes out from the other side with a velocity of 100ms^{-1} . Calculate work done in passing through the wall.
19. Energy released by the fission of one atom is 200 MeV. Calculate the energy released in kWh when one gram of uranium undergoes fission.
20. Calculate the energy equivalent of 1 g of substance.
21. A ray of light passes from air to glass ($\mu=1.5$) at an angle of 30° . Calculate the angle of refraction. What is the speed of light in glass?
22. Find the critical angle of light going from paraffin oil to air. Given that the refractive index of paraffin oil with respect to air is 1.44.
23. Describe the difference between image formed by a convex lens and a concave lens.
24. State three differences between potential energy and kinetic energy.
25. Name five different forms of energy.
26. Identify the energy changes in the following:
 - a. Glowing electric bulb
 - b. Microphone
 - c. Photovoltaic cell
 - d. Electric cell
27. A body of mass 2 kg is thrown vertically upwards with an initial velocity of 20 m/s. What will be its potential energy at the end of 2 s?
28. A boy weighing 42 kg makes a high jump of 1.5 m
 - a. What is his kinetic energy at the highest point?
 - b. What is his potential energy at the highest point? ($g = 10\text{ m/s}^2$)
29. A resistor has a resistance of 176 ohm. How many of these resistors should be connected in parallel so that their combination draws a current of 5 amperes from a 220-volt supply line?
30. Calculate the power used in a 2-ohm resistor in each of the following circuits:
 - a. A 6-V battery in series with 1- Ω and 2- Ω resistors
 - b. A 4-V battery in parallel with 12- Ω and 2- Ω resistors