



PHYSICS

BOOKS - ICSE MODEL PAPER

SAMPLE PAPER 2022

Section I

1. Write the relation between S.I. unit and C.G.S. unit of force.



Watch Video Solution

2. Classify the following into contact and non contact forces:

1. Tension 2. Friction 3. Gravitational force 4. Magnetic force.



[Watch Video Solution](#)

3. Classify the following into levers as class I, class II or class III:

(a) a door

(b) a catapult

(c) claw hammer

(d) a wheel barrow

(e) a fishing rod.

(f) sugar tongs.



[Watch Video Solution](#)

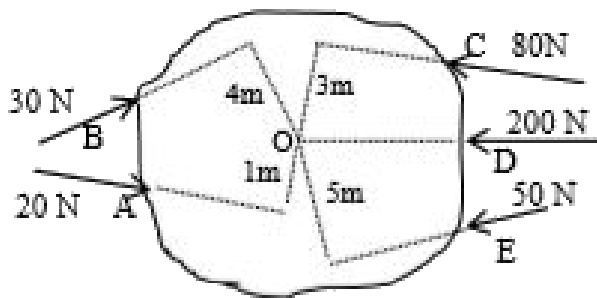
4. Where is the centre of gravity of the following objects situated?

1. Ring
2. Rhombus
3. Scalene triangle
4. Cylinder.



Watch Video Solution

5. Calculate the resultant torque from the following diagram:



Watch Video Solution

6. A uniform metre scale is in equilibrium position. Calculate the mass of the ruler.



[Watch Video Solution](#)

7. When a ray of light passes from air to glass, for what angle of incidence, the ray will not be deviated?



[Watch Video Solution](#)

8. Name the lens that always forms a virtual and erect image.



Watch Video Solution

9. A coin at the bottom of a trough containing water to a depth of 15 cm appears to be 3.75 cm raised above from the bottom. Calculate the refractive index of water.



Watch Video Solution

10. Draw a ray diagram to illustrate how a ray of light incident obliquely on one face of a rectangular glass slab of uniform thickness emerges.



Watch Video Solution

11. What are the factors on which the following characteristics of a musical note depends? 1. intensity 2. timbre.



Watch Video Solution

12. How does a trawler man catch fish in deep water?



Watch Video Solution

13. On what factors does the resistance of a conductor depend ?



Watch Video Solution

14. Name the material used for making a fuse wire. Give a reason.



Watch Video Solution

15. Name the material used for making connection wires. Give a reason for your answer.



Watch Video Solution

16. Name the material used for filament of an electric bulb,



Watch Video Solution

17. Name the material used for: Heating element of an electric toaster.



Watch Video Solution

18. Give the harmful effects of global warming on lakes and oceans found frozen during winter.



Watch Video Solution

19. Calculate the wavelength of an electromagnetic wave of frequency 15 MHz.



Watch Video Solution

20. State the function of a transformer.



Watch Video Solution

21. State two uses of a cathode ray tube.



Watch Video Solution

22. Show by equations, the effect on the proton number Z and mass number A of the

parent nucleus brought about by the two types of radioactive decay.



[Watch Video Solution](#)

23. State one industrial use of α , β , and γ radiation.



[Watch Video Solution](#)

Section II

1. An engine can pump 30,000 L of water to a vertical height of 45 m in 10 min. Calculate the work done by the machine and the power.

(Density of water =

10^3 kg/m^3 , $1000 \text{ L} = 1 \text{ m}^3$, $g = 9.8 \text{ m/s}^{-2}$)



[Watch Video Solution](#)

2. Renewable sources of energy must be encouraged to meet growing demands of

energy. Give suggestions to support your answer.



[Watch Video Solution](#)

3. A pulley system has a velocity ratio 5. Draw a neat labelled diagram of the pulley system to lift a load by applying the effort in a convenient direction. Mark the tension in your diagram.

If the efficiency of the system is 80% find its mechanical advantage.



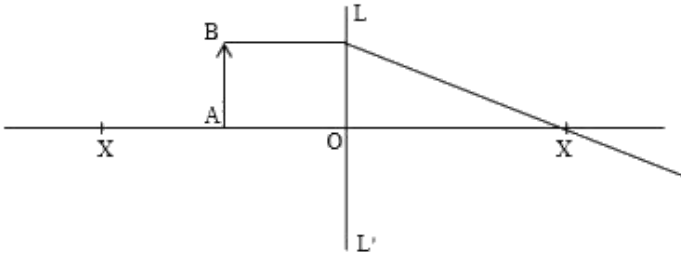
[Watch Video Solution](#)

4. A pulley system has a velocity ratio 5. Draw a neat labelled diagram of the pulley system to lift a load by applying the effort in a convenient direction. Mark the tension in your diagram.

If a load of 10 kgf is pulled up by a distance of 2 m in 10 s, calculate the power developed by the effort (given $g = 10 \text{ m s}^{-2}$).



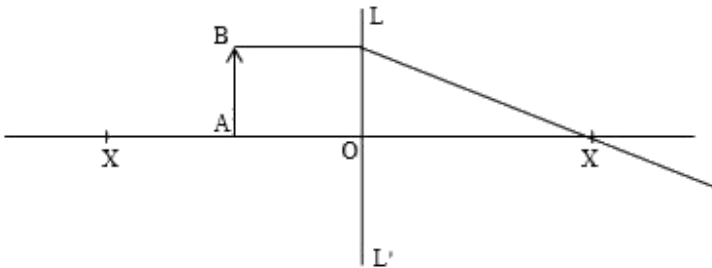
[Watch Video Solution](#)



5.

Copy and complete the ray diagram to show the formation of the image of the object AB

 **Watch Video Solution**

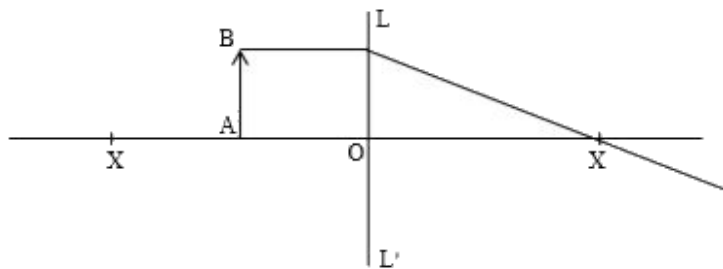


6.

Name the lens LL'.



Watch Video Solution



7.

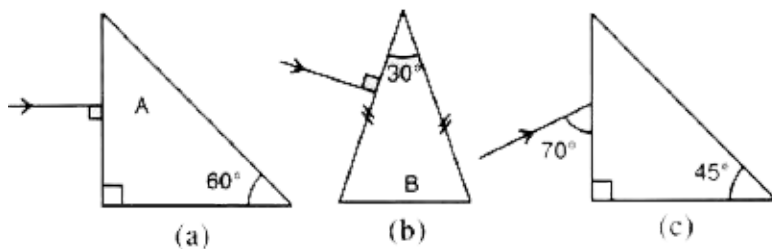
Name a device in which this principle is used.



Watch Video Solution

8. Figure below shows a light ray of green colour incident on the prisms A,B and C. in each case, draw the path of the ray of light as

it enters and emergest out of the prism. Mark the angle wherever necessary.

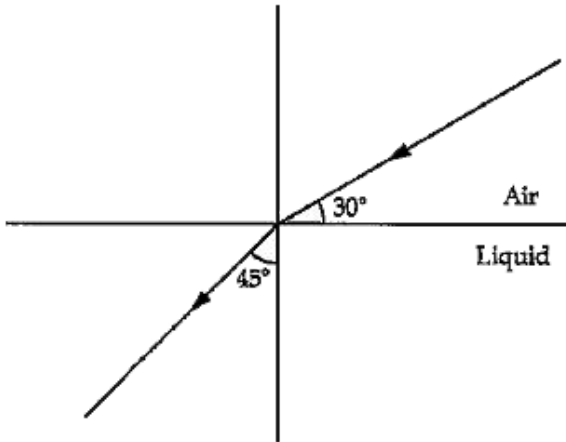


 [Watch Video Solution](#)

9. Name any four regions of electromagnetic spectrum in increasing order of frequency.

 [Watch Video Solution](#)

10. Calculate the refractive index of a liquid with respect to air applying Snell's law (use geometric construction).



 [Watch Video Solution](#)

11. Draw a displacement-distance graph for two waves A and B such that the amplitude of

wave A is three times that of wave B.



Watch Video Solution

12. Give one example of forced vibration.



Watch Video Solution

13. State two necessary conditions for hearing a distance echo.



Watch Video Solution

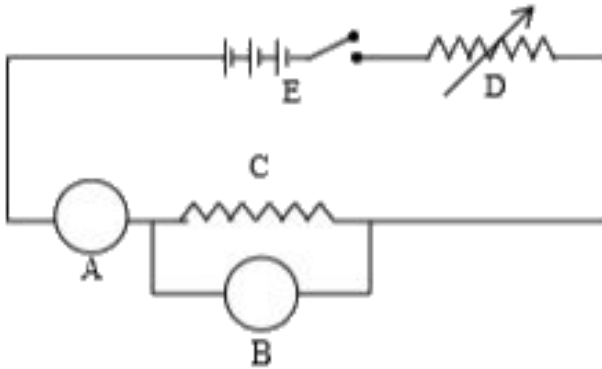
14. A man standing in front of a vertical cliff fires a gun. He hears the echo after 3.5 seconds. On moving closer to the cliff by 84 m, he hears the echo after 3 seconds. Calculate the distance of the cliff from the initial position of the man.



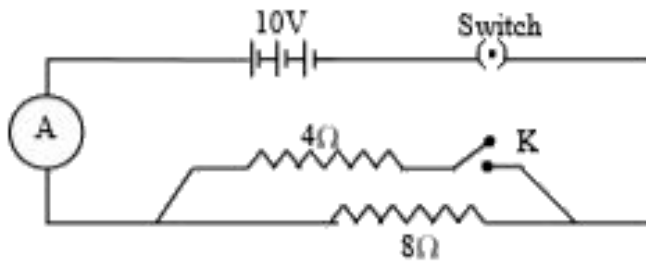
Watch Video Solution

15. 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.



Watch Video Solution



16.

Calculate the reading of A when

(i) K is closed.

(ii) K is open.



[Watch Video Solution](#)

17. In Mrs. Pinto's flat there are 6 bulbs of 100 W each, a heater of 2 kW and 5 fans of 50W each. If these are used everyday as shown

below, calculate the cost of energy consumption for a month of 30 days at the rate of Rs.3.50 per kW h.

6 bulbs of 100 W each used 8 h per day

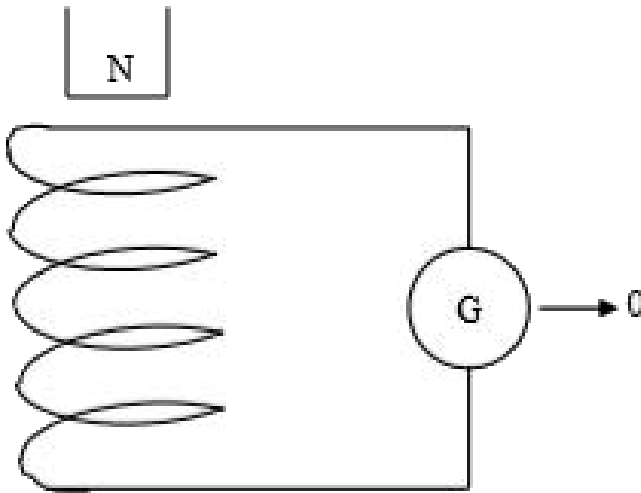
1 heater of 2 kW used half hour daily

5 fans of 50 W each are used 6 h everyday.



Watch Video Solution

18. From the diagram given below:



What will you observe when-

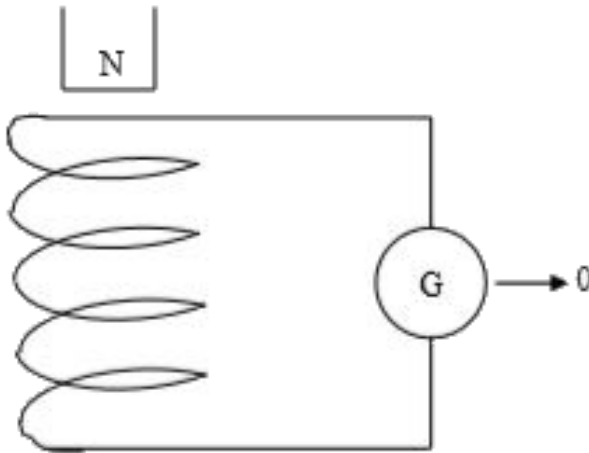
(1) the magnet is dropped into the coil.

(2) the number of turns of the coil is increased?



[Watch Video Solution](#)

19. From the diagram given below:

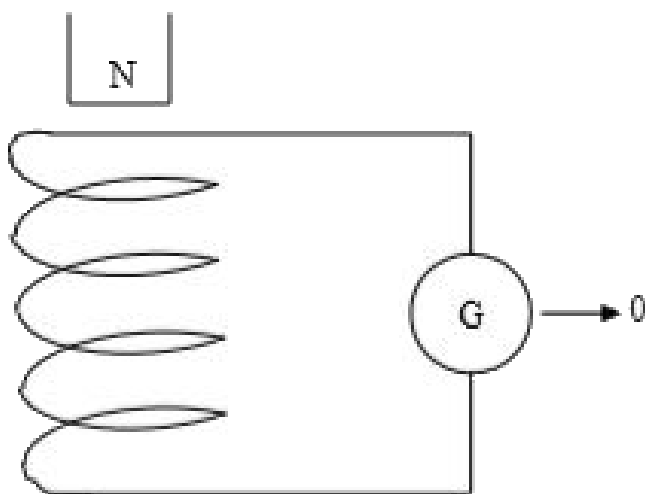


What will be the direction of current flowing through the coil when the magnet is dropped in? (Clockwise or anticlockwise).



Watch Video Solution

20. From the diagram given below:



State the law which explains this observation.



[Watch Video Solution](#)

21. Calculate the amount of heat given out while 400 g of water at $30^{\circ}C$ is

cooled and converted into ice at $-2^{\circ}C$.

Specific heat capacity of water = 4200 J/kg K

Specific heat capacity of ice = 2100 J/ kg K

Specific latent heat of fusion of ice = 33600 J/kg



[Watch Video Solution](#)

22. A mass m_1 of a substance of specific heat capacity c_1 at temperature t_1 is mixed with a mass m_2 of other substance of specific heat capacity c_2 at a lower temperature t_2 . Deduce

the expression for the temperature t of the mixture. State the assumption made, if any.



[Watch Video Solution](#)

23. Draw a labelled diagram of an alternating current generator. Write the function of its two main parts.



[Watch Video Solution](#)

24. Define work function of a metal.



[Watch Video Solution](#)

25. State two factors upon which the rate of emission of thermions depends.



[Watch Video Solution](#)

26. Define radioactivity. Name various radioactive elements.



[Watch Video Solution](#)

27. A radioactive substance is oxidised. What changes would you expect to take place in the nature of radioactivity ? Explain your answer.



Watch Video Solution

28. Radioactive materials as an alternative source of energy must be wisely used. Give reasons to justify this statement.



Watch Video Solution