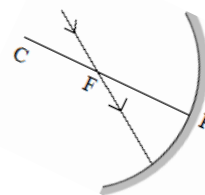


HIGHER ORDER THINKING SKILLS

Light – Reflection and Refraction

1. Can light travel through vacuum? If yes, with what speed?
2. A ray incident normally on a plane mirror, retraces its path on reflection. Why?
3. A concave mirror is used as a head mirror by ENT specialists. The same mirror can be used as a shaving mirror. Why?
4. How much time will light take to cross 2mm thick glass pane if refractive index of glass is $3/2$. (Ans 10^{-11} s)
5. Copy the figure and show the direction of the light ray after reflection.
6. The image formed by convex lens is always real. Is it true?
7. What is an optically denser medium? Does it possess greater mass density?

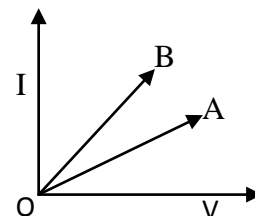


The Human eye and Colourful World

1. What is nature of eye lens? Is its focal length fixed?
2. What is meant by range of vision? What is its value for a person with normal vision?
3. Why cannot we read a printed page by holding it very close to our eyes?
4. Why has nature provided us with two eyes instead of one?
5. We can see a rainbow on a sunny day by looking at the sky through a water fountain. Why?
6. Why red colour is used for danger signal lights?
7. What are the functions of iris and ciliary muscles in human eye?

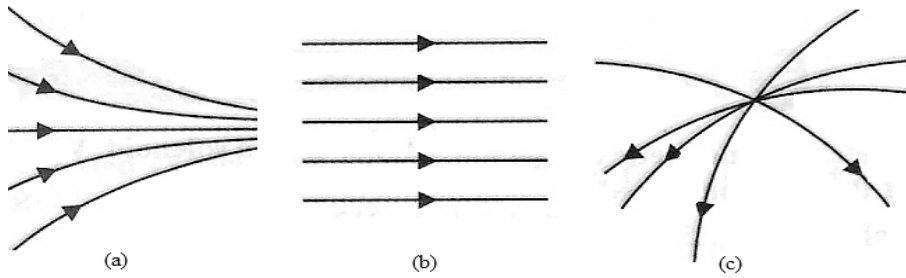
Electricity

1. What sets the electrons into motion in an electric circuit?
2. Graphs between electric current and potential difference across two conductors A and B are shown in the figure. Which of the two conductors has more resistance?
3. Two wires A and B are of equal lengths, different cross-sectional area and made of the same material.
 - (i) Name the property which is same for both the wires.
 - (ii) Name the property which is different for both the wires.
4. If the resistance of wire A is four times the resistance of wire B, calculate
 - (i) the ratio of the cross-sectional areas of the wires.
 - (ii) the ratio of the radii of the wires.
4. Two metallic wires A and B are connected in parallel. Wire A has length l and radius r , wire B has length $2l$ and radius $2r$. Compute the ratio of the total resistance of the parallel combination and resistance of wire A.
5. In household electric circuits, different appliances are connected in parallel to one another. Give reason.
6. Why is much less heat generated in long electric cables than in filaments of electric bulbs?
7. State which has higher resistance : a 50W or a 25W lamp and how many times?



Magnetic effect of electric current

1. What type of magnetic fields do the following magnetic field lines represents?



2. A current through a horizontal power line flows in east to west direction. What is the direction of magnetic field at a point directly below it and at a point directly above it?
3. What is the direction of magnetic field at the centre of a circular coil carrying current in (i) anticlockwise direction (ii) clockwise direction.
4. Why is the earth pin thicker and longer than the live and neutral pins?
5. A student performs an experiment to study the magnetic effect of current around a current carrying straight conductor. He reports that:
 - a. the direction of deflection of the north pole of a compass needle kept at a given point near the conductor remains unaffected even when the terminals of the battery sending the current in the wire are interchanged.
 - b. for a given battery current, the degree of deflection of a N-pole decreases when the compass is kept at a point farther away from the conductor.Which of the above observations is correct and why?
6. How is uniform magnetic field represented?
7. Where do we connect a fuse: with live wire or with neutral wire?

Sources of energy

1. Out of two solar cookers, one was covered by a plane glass and other was left open. Which of the two solar cookers will be more efficient and why?
2. A student has set up a solar cooker in a box by using a black painted aluminum sheet, a black cooking vessel, some glass wool, a glass sheet and a mirror plate. What is the role of each item used in the solar cooker?
3. Name two indirect ways of using solar energy.
4. What is the drawback of energy obtained from fusion?
5. What is the cause of ocean thermal energy?
6. What are the essential characteristics of good source of energy?
7. Solar energy can be harnessed directly as well as indirectly. Give two examples of each type.

*****Best Of Luck*****