

CHAPTER: LIGHT – REFLECTION AND REFRACTION

1. What does $m = +1$ stand for?
2. What do you understand by rectilinear propagation of light?
3. Convex mirror is preferred as a rear-view mirror in automobiles. Give reason.
4. A coin appears to be raised when viewed obliquely as it is dipped in water. Give reason.
5. Half of a convex lens is covered with a black paper. Yet this lens produces a complete image, why?
6. An object 4 cm high is kept 20 cm in front of a mirror, which forms its real and inverted image of same size at the same point. Identify (a) the mirror (b) the focal length of the mirror
7. Identify the type of mirror or lens used in the following situations:
having mirror, rear view mirror in automobiles, Magnifying glass, rectification of myopia, rectification of hypermetropia.
8. How can you differentiate between plane, convex and concave mirror without touching them?
9. Draw ray diagrams for all cases of concave and convex mirror/lens.
10. State Snell's law of refraction.
11. What do you understand by refractive index?
12. What is lateral displacement?
13. Printed letters appear diminished when viewed through a lens. What is the nature of lens?
14. Give two uses of convex lens.
(a) Used as an objective lens for telescope. (b) Used in cinema projectors
15. Give two uses of concave lens.
(a) For correcting myopia (b) Used as an eye lens for Galilean telescope
16. Give two uses of concave mirror
 - a. They are used in Shaving mirrors.
 - b. They are used as a reflector to concentrate sunlight.
 - c. They are used as reflectors in search lights, torches, in car headlights, table lamps, etc
17. Give two uses of convex mirror.
 - a. Used as a reflector for street light bulbs, because it diverges rays of light over large areas.
 - b. They are used in shops such as in jewelry shops to check theft. .
 - c. They are used to bring view of corners which are not directly accessible.
 - d. They are used as rear-view mirrors in automobiles.
18. Explain why a tank filled completely with water appears shallow.
19. State the rules for drawing images in mirror/lens.
20. State sign conventions for image formation by mirror/lens.
21. Define 1 dioptre.
22. No matter how far you stand from a spherical mirror, your image appears always erect. What is the kind of spherical mirror?
23. Explain why a stamp placed under a rectangular glass slab appears raised.
24. What is the focal length of a plane mirror?
25. When light undergoes refraction, what happens to its frequency?
26. A concave mirror is placed in water. Will there be change in its focal length?
27. A concave mirror is placed in water. Will there be change in its focal length? (no)
28. A convex lens is placed in water. Will there be change in its focal length? (yes, it will be less)
29. Differentiate between real and virtual image.
30. What is the magnification produced by plane mirror?
31. What is the cause of refraction of light?
32. State two laws of reflection.
33. State two laws of refraction.
34. What is the SI unit of power of lens?
35. Write mirror and lens formula.

CHAPTER: HUMAN EYE AND COLOURFUL WORLD

1. What is the main function of ciliary muscles?
2. What is Accommodation? How does a normal eye achieve accommodation?
3. What do you mean by near point and far point of eye? Give their values for normal eye.
4. What is the function of iris?
5. What is the role of retina?
6. What is dispersion?
7. Define scattering.
8. When two prism, one up and one down in contact, receives white light, what colour of light will emerge out?
9. Explain least distance of distinct vision.
10. What is presbyopia? How will you correct it?
11. Why do star twinkle, while planet doesn't?
12. Why the sky does appear blue in earth but dark to an astronaut?
13. A student has difficulty reading the blackboard while sitting in the last row. What could be the defect the child is suffering from? How it can be corrected?
14. Why is a normal eye not able to see clearly the object placed closer than 25 cm?
15. Why does the sun appear reddish early in the morning?
16. Explain the formation of rainbow.
17. Why can't we see clearly when we enter a dimly lit room from bright sunlight?
18. What do you understand by the term spectrum?
19. What is Tyndall effect?
20. Why is red light used as danger signal?
21. Why an object does appear to flicker when viewed through smoke above chulah?
22. What is myopia? Give its causes? Draw ray diagram to explain its correction.
23. What is hypermetropia? Give its causes? Draw ray diagram to explain its correction.
24. Explain the cause of advanced sunrise and delayed sunset.
25. What is VIBGYOR?

CHAPTER: ELECTRICITY

1. The length of a wire is doubled. How is its resistivity affected?
2. A wire of $2\ \Omega$ is bent to form a circle. What is the resistance between two diametrically opposite ends?
3. Light from a bathroom bulb gets dimmer for a moment when geyser is switched on, why?
4. Ammeter burns when connected in parallel, why?
5. Conductors of electric heating devices such as toasters and electric heaters are made of alloys rather than pure metals. Why?
6. Series arrangement is not used for household circuits. Why?
7. State Ohm's law. Draw a circuit diagram to verify Ohm's law.
8. Let the resistance of an electrical component remains constant while potential difference across the two ends of the component decreases to half its former value. What change will occur in the current through it?
9. What are SI unit and commercial unit of electrical energy? Give relation between them.
10. What is short circuiting and overloading in a given electric circuit?
11. What is earthing? What is the colour of earth wire? Why is it necessary to earth metallic appliances?
12. What is fuse?
13. Why is a voltmeter connected in parallel?
14. Define Electric current? What is its SI unit?
15. What do you understand by the term electric potential?
16. What is potential difference?
17. Define open circuit and closed circuit.
18. Define electric resistance. What are the factors on which the resistance of a material depends?

The specific resistance of material is $1.6 \times 10^{-8}\ \Omega\text{m}$. What do you understand by this statement?
19. Will the current flow more easily through a thin wire or a thick wire of the same material, when connected to the same source? Why?
20. A piece of wire is redrawn by pulling it, until its length is tripled. Compare the new resistance of wire with the original resistance.
21. What are the advantages of connecting electrical devices in parallel with the battery instead of connecting them in series?
22. Wires used as leads of an electric oven are thicker than those used in the leads of table lamp. Explain.
23. The heating element of a room heater becomes red hot, but the lead wires remain cold.
24. Why is fuse wire protecting an electric circuit?
25. Two fuse wires A and B of same length are rated 15A and 5A. Which amongst the A and B will be thicker and why?
26. Define resistivity of a material.
27. Explain Joule's law of heating.
28. What is meant by saying that the potential difference between two points is 1 Volt?
29. What is the difference between kilowatt and kilowatt-hour?

CHAPTER: MAGNETIC EFFECTS OF ELECTRIC CURRENT

1. How can you show that the magnetic field exist around a wire through which a direct current is passing?
2. State the rule to determine the direction of magnetic field around a current carrying conductor.
3. On what factors does the force experienced by a conductor carrying current in a uniform magnetic field depend?
4. What are the factors affecting the strength of magnetic field at a point due to a straight conductor carrying current?
5. What are magnetic field lines. List all properties of magnetic field lines.
6. Why can't two magnetic field lines intersect?
7. What is the nature of magnetic field produced due to a circular loop carrying current?
8. What is solenoid? Draw the nature of magnetic field for a current carrying solenoid.
9. What is an electromagnet? Write its use.
10. What will happen when a current carrying conductor is placed in a perpendicular magnetic field?
11. What is the significance of Fleming's left hand rule?
12. What is the principle behind the working of a motor?
13. What is the frequency of AC in India?
14. What type of connection is used in electric circuits at home?
15. Name two characteristics of fuse wire. (low resistance and low melting point)
16. Name the composition of fuse wire. (alloy of copper and tin)
17. State Fleming's right hand rule.
18. What is the principle behind the working of a generator?
19. An electron beam is moving vertically upwards. If it passes through a magnetic field which is directed from south to north in a horizontal plane, then in which direction will the beam be deflected?
20. The magnetic force acts on a moving proton is towards north in a horizontal plane. If the proton is moving vertically upward, then what will be the direction of magnetic field?
21. Differentiate between DC and AC.
22. What are the advantages of AC over DC.
23. With the help of neat diagram describe how you can generate induced current in the circuit.
24. Draw and give the characteristics of magnetic field due to a circular coil carrying current.
25. Draw magnetic field lines around a bar magnet and write the characteristics of magnetic field lines.
26. The magnetic field in a given region is uniform. Draw a diagram to represent it.
27. When is the force experienced by a current carrying conductor placed in a magnetic field largest?
28. Why does a freely suspended magnetic needle points in north-south direction?
29. Imagine you are facing one end of a solenoid, such that the current flowing through it is in the clockwise direction. What kind of magnetic polarity is produced on the end facing you?
30. How does the strength of magnetic field at the centre of circular coil of wire depends on:
31. Define electromagnetic induction.
32. What do you understand by induced current?
33. Why fuse wire, always placed in live wire?
34. Name some sources of DC.
35. Which sources produce alternating current?

CHAPTER: SOURCES OF ENERGY

1. What is solar cell?
2. Name any two materials that are used for making solar cell.
3. What is a solar panel?
4. Why is the burning of firewood in traditional chulhas considered disadvantageous?
5. Why are we looking for alternate source of energy?
6. How is biomass used as fuel?
7. Why biogas is considered an ideal fuel for domestic use?
8. Give two examples of fossil fuels?
9. What is solar panel?
10. What are non-renewable sources of energy?
11. What is meant by anaerobic decomposition?
12. Write four characteristics of good source of energy.
13. Explain why fossil fuels are classified as non-renewable sources of energy.
14. How will the hydroenergy be affected, if there is no solar energy?
15. Explain the principle of working of a wind mill.
16. What are the disadvantages of fossil fuels?
17. Give two disadvantages of using cow dung cakes as domestic fuel. What would be a better way of using cow dung?
18. Describe the various steps involved in obtaining biogas.
19. Mention advantages and disadvantages of producing hydroelectricity by building dams on the rivers.
20. Draw and explain the working of box type solar cooker.
21. What prevent us in making use of solar cell panels to meet all our domestic needs of electricity?
22. What is OTE? Explain.
23. What is geothermal energy?
24. Differentiate between nuclear fission and fusion.
25. What is the source of sun's energy?