



BRAIN INTERNATIONAL SCHOOL

SESSION 2024-25

CLASS: X

REVISION SHEET

SUBJECT: PHYSICS

CHAPTER 9: LIGHT

1. Rays from Sun converge at a point 15 cm in front of a concave mirror. Where an object should be placed so that size of its image is equal to the size of the object?
 - (a) 15 cm in front of the mirror
 - (b) 30 cm in front of the mirror
 - (c) between 15 cm and 30 cm in front of the mirror
 - (d) more than 30 cm in front of the mirror
2. Which of the following statements is true?
 - (a) A convex lens has 4 dioptre powers having a focal length 0.25 m
 - (b) A convex lens has -4 dioptre powers having a focal length 0.25 m
 - (c) A concave lens has 4 dioptre powers having a focal length 0.25 m
 - (d) A concave lens has -4 dioptre powers having a focal length 0.25 m
3. Under which of the following conditions a concave mirror can form an image larger than the actual object?
 - (a) When the object is kept at a distance equal to its radius of curvature
 - (b) When object is kept at a distance less than its focal length
 - (c) When object is placed between the focus and centre of curvature
 - (d) When object is kept at a distance greater than its radius of curvature
4. A 10 mm long awl pin is placed vertically in front of a concave mirror. A 5 mm long image of the awl pin is formed at 30 cm in front of the mirror. The focal length of this mirror is
 - (a) -30 cm
 - (b) -20 cm
 - (c) -40 cm
 - (d) -60 cm
5. Which of the following can make a parallel beam of light when light from a point source is incident on it?
 - (a) Concave mirror as well as convex lens
 - (b) Convex mirror as well as concave lens
 - (c) Two plane mirrors placed at 90° to each other
 - (d) Concave mirror as well as concave lens

For questions, two statements are given-one labelled Assertion (A) and the other labelled Reason (R).

Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below

- (i) Both A and R is true and R is correct explanation of the assertion.
- (ii) Both A and R is true but R is not the correct explanation of the assertion.
- (iii) A is true but R is false.
- (iv) A is false but R is true.

- 6. Assertion (A):** The centre of curvature is not a part of the mirror. It lies outside its reflecting surface.
Reason (R): The reflecting surface of a spherical mirror forms a part of a sphere. This sphere has a centre.
- 7. Assertion (A):** A ray passing through the centre of curvature of a concave mirror after reflection is reflected back along the same path.
Reason (R): The incident rays fall on the mirror along the normal to the reflecting surface.
- 8. Assertion (A):** Light does not travel in the same direction in all the media.
Reason (R): The speed of light does not change as it enters from one transparent medium to another.
- 9. Assertion (A):** The emergent ray is parallel to the direction of the incident ray.
Reason (R): The extent of bending of the ray of light at the opposite parallel faces (air- glass interface and glass-air interface) of the rectangular glass slab is equal and opposite.
- 10. Assertion (A):** A ray of light travelling from a rarer medium to a denser medium slows down and bends away from the normal. When it travels from a denser medium to a rarer medium, it speeds up and bends towards the normal.
Reason (R): The speed of light is higher in a rarer medium than a denser medium.
- 11. Assertion (A):** For observing traffic at back, the driver mirror is convex mirror.
Reason (R): A convex mirror has much larger field of view than a plane mirror.
- 12. Assertion(A) :** When the object moves with a velocity 2 m/s, its image in the plane mirror moves with a velocity of 4 m/s.
Reason (R) : The image formed by a plane mirror is as far behind the mirror as the object is in front of it.

13. Read the following and answer any four questions from 13 (i) to 13 (v)

A compound microscope consists of a metal tube fitted with two convex lenses at the two ends. These lenses are called the objective lens (the lens directed towards the object) and the eyepiece (the lens directed toward the eye). Both the lenses are small in size, but the cross section of the objective lens is less than that of the eyepiece. The objective lens has a short focal length. The focal length of the eyepiece is more than that of the objective lens. The metal tube is mounted on a stand. The principle axes of the objective lens and the eyepiece are along the same line. The distance between the object and the objective lens can be changed with a screw. It is possible to change the distance between the objective lens and the eyepiece.

Working:

The object to be observed is illuminated and placed in front of the objective lens, slightly beyond the focal length of the objective lens. Its real, inverted and enlarged image is formed by the objective lens on the other side. This intermediate image lies within the focal length of the eyepiece. It serves as an object for the eyepiece. The eyepiece works as a simple microscope. The final image is virtual, highly enlarged and inverted with respect to the original object. It can be formed at the minimum distance of distinct vision from the eyepiece. The final image is observed by keeping the eye close to the eyepiece.

Use: This microscope is used to observe blood cells, microorganisms, etc.

(i) Based on the paragraph, what kind of lenses need to make the compound microscope?

a) concave lenses

b) convex lenses

c) Bifocal lenses

d) Flat lenses

(ii) An object is placed before a concave lens. The image formed____

a) is always erect

b) may be erect or inverted

c) is always inverted

d) is always real

(iii) When a person uses a convex lens as a simple magnifying glass, the object must be placed at a distance.

a) less than one focal length

b) more than one focal length

c) less than twice the focal length

d) more than twice the focal length

(iv) If the powers of the lenses L_1 and L_2 are in the ratio of 1:4, what would be the ratio of the focal length of L_1 and L_2 ?

a) 2:1

b) 1:4

c) 4:1

d) 1:1

(v) An object is placed 12 cm from an eyepiece lens whose focal length is 10 cm. The image must be.

a) virtual and enlarged

b) virtual and reduced in size

c) real and reduced in size

d) real and enlarged

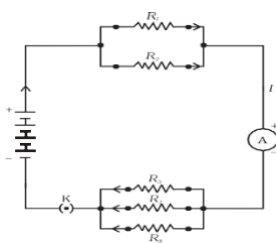
CH-10: THE HUMAN EYE AND THE COLOURFUL WORLD

1. When light enters the atmosphere, it strikes on extremely fine particles, which deflect the rays of light in all possible directions, this is due to
 - (a) reflection of light
 - (b) atmospheric refraction
 - (c) scattering of light
 - (d) dispersion of light
2. The phenomena of light involved in the formation of rainbow are
 - (a) refraction, reflection and dispersion.
 - (b) refraction, dispersion and internal reflection
 - (c) reflection, dispersion and internal reflection
 - (d) refraction, dispersion, scattering and total internal reflection.

- Define the term power of accommodation. Write the modification in the curvature of the eye lens which enables us to see the nearby objects clearly?
- State reasons for Myopia. With the help of ray diagrams, show the
 - image formation by a myopic eye, and
 - correction of myopia using an appropriate lens
- List two causes of hypermetropia.
 - Draw ray diagrams showing (i) a hypermetropic eye and (ii) its correction using suitable optical device.
- A student is unable to see clearly the words written on the black board placed at a distance of approximately 3 m from him. Name the defect of vision the boy is suffering from. State the possible causes of this defect and explain the method of correcting it.
- Draw a ray diagram to explain the term of angle of deviation.
- Draw labelled diagram to show (i) 'dispersion of a beam of white light and (ii) formation of a rainbow.
- The colour of clear sky from the earth appears blue but from the space it appears black. Why?
- Why is Tyndall effect shown by colloidal particles? State four instances of observing the Tyndall effect.

CH-12: ELECTRICITY

- How much work is done in moving a charge of 2 C across two points having a potential difference 12 V?
- Calculate the amount of work done to carry 4C from a point at 100 V to a point at 120 volt?
- How many electrons are flowing per second past a point in a circuit in which there is a current of 4A?
- Resistance of a given wire of length 'l' is 3Ω . The wire is stretched uniformly such that its length becomes $2l$. Find the new resistance of the stretched wire.
- Resistance of a given wire of length 'l' is 4Ω . The wire is stretched uniformly such that its length becomes $3l$. Find the new resistance of the stretched wire.
- A 6Ω resistance wire is doubled up by folding. Calculate the new resistance of the wire.
- Two wires of the same metal have the same area of cross section but their lengths in the ratio of 3: 1. What should be the ratio of current flowing through them respectively, when the same potential difference is applied across each of their length?
- If in Fig. $R_1 = 10\Omega$, $R_2 = 40\Omega$, $R_3 = 30\Omega$, $R_4 = 20\Omega$, $R_5 = 60\Omega$, and a 12 V battery is connected to the arrangement. Calculate (a) The total resistance in the circuit, and (b) the total current flowing in the circuit.



- A hot plate of an electric oven connected to a 220 V line has two resistance coils A and B, each of 24Ω resistance, which may be used separately, in series, or in parallel. What are the currents in the three cases?
- A copper wire has diameter 0.5 mm and resistivity of $1.6 \times 10^{-8}\Omega\text{ m}$. What will be the length of this wire to make its resistance 10Ω ? How much does the resistance change if the diameter is doubled?

CH-13: MAGNETIC EFFECTS OF ELECTRIC CURRENT

- What is the current rating of domestic circuits used for appliances like an electric bulb, tube light, and fans?

- (a) 15 A
- (b) 2 A
- (c) 5 A
- (d) 10 A

2. Which rule determines the direction of flow of current in the conductor?

- (a) Fleming's left-hand rule
- (b) Fleming's right-hand rule
- (c) Maxwell's right hand grip rule
- (d) Left hand thumb rule

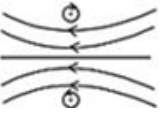



3. The current carrying device which produces a magnetic field similar to that of a bar magnet is:

- (a) A circular loop
- (b) A circular coil
- (c) A solenoid
- (d) A straight conductor

4. A toaster of 4 kW is running in an existing circuit 110 volt that has a stream ranking of 4 A. Find the stream of electrons drawn by the toaster.

- (a) 23.34 A
- (b) 36.36 A
- (c) 14.6 A
- (d) 9.06 A

5. The pattern of the magnetic field produced inside a current carrying solenoid is:

- (a) 
- (b) 
- (c) 
- (d) 

6. **Assertion (A):** In a conductor, free electrons keep on moving but no magnetic force acts on a conductor in a magnetic field.

Reason (R): Force on free electrons due to magnetic field always acts perpendicular to its direction of motion.

7. **Assertion (A):** A solenoid tends to expand, when a current passes through it.

Reason (R): Two straight parallel metallic wires carrying current in same direction attract each other.

8. Why do not two magnetic field lines intersect each other?

9. Why does a magnetic compass needle pointing North and South in the absence of a nearby magnet get deflected when a bar magnet or a current carrying loop is brought near it?

10. Draw magnetic field lines around a bar magnet? Give one point of difference between uniform and non - uniform magnetic field.