WORKSHEET 2

CHAPTER 4 – REFLECTION OF LIGHT

A. Tick (✓) the correct option.

1. The centre of sphere of which the spherical mirror forms a part.
   a. Centre of curvature b. Focus c. Pole d. Vertex
2. The focus of concave mirror is
   a. real b. virtual c. undefined d. at the pole.
3. A converging mirror is known as
   a. convex b. concave c. plane d. cylindrical.
4. The relation between focus and radius of curvature is
   a. $\frac{f}{2} + 1 = f$ b. $R + 2 = f$ c. $f = \frac{R}{2}$ d. $f = 2R$.
5. Type of image that can be obtained on a screen.
   a. Virtual b. Real c. Diverging d. Converging.

B. Fill in the blanks.

1. If the focal length of a mirror is 15 cm. The type of mirror is _____
2. _____ is used to make periscope.
3. Heights or distances measured above and perpendicular to the principal axis are taken as _____
4. Nature of image is not affected by the position of object in a _____
5. Rays of light parallel to principal axis meet at _____ after reflection from a concave mirror.

C. State whether the given statements are true or false.

1. The incident ray, reflected ray and the normal at the point of incidence, all lie in the same plane.
2. The image which cannot be formed on a screen is called virtual image.
3. Convex mirrors are used as rear-view mirrors.
4. Heights or distances measure below and perpendicular to the principal axis are taken as positive.
5. The image is real and inverted if magnification is positive.

D. Match the following.

1. Magnification of a mirror	half of radius of curvature
2. Magnification of a lens	plane mirror
3. Used in reflectors	$\frac{v}{u}$
4. Focal length	$\frac{-v}{u}$
5. Lateral inversion	concave mirror

Name: ..... Teacher's signature: .....

Class: ..... X ..... Date: .....

E. Answer the following questions.

Very Short Answer Questions

1. Define regular reflection of light.
2. State the first law of reflection.

Short Answer Questions

1. Define lateral inversion.
2. What are the characteristics of image formed by a plane mirror?

Long Answer Questions

1. Find the nature of image formed when an object is placed at a distance of 10 cm from a convex mirror of focal length 4 cm.
2. What is the nature of image formed by a concave mirror when object is between F and C.

ANSWERS

WORKSHEET 2

A. Tick (✓) the correct option.

1. a
2. a
3. b
4. c
5. b

B. Fill in the blanks.

1. convex mirror
2. Plane mirror
3. positive
4. convex mirror
5. focus

C. State whether the given statements are true or false.

1. T
2. T
3. T
4. F
5. F

D. Match the following.

1. Magnification of a mirror	$\frac{-v}{u}$
2. Magnification of a lens	$\frac{v}{u}$
3. Used in reflectors	concave mirror
4. Focal length	half of radius of curvature
5. Lateral inversion	plane mirror

E. Answer the following questions.

Very Short Answer Questions

1. The phenomenon due to which a parallel beam of light on striking a smooth, highly polished surface, bounces back from it as parallel beam of light in some other direction.
2. The angle of incidence ($\angle i$) is equal to angle of reflection ($\angle r$).

Short Answer Questions

1. The phenomenon due to which the left of object becomes right of image and vice versa, is called lateral inversion.
2. Characteristics of image formed by a plane mirror are:
   - virtual and erect
   - same size as the object
   - laterally inverted
   - The image is as far behind the mirror as the object is in front of it.

Long Answer Questions

1. $u = -10$ cm

   $f = 4$ cm

   $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$

   $\frac{1}{4} = \frac{1}{v} + \frac{1}{-10}$

   $\frac{1}{v} = \frac{1}{4} + \frac{1}{10} = \frac{5+2}{20} = \frac{7}{20}$

   $v = \frac{20}{7}$ cm

   Since the image is formed behind the convex mirror, its nature will be virtual and erect.

2. The nature of image formed by a concave mirror when object is between F and C is
   - formed beyond centre of curvature
   - real and inverted
   - bigger than the object (magnified).