#### Ch-15-Light

1. Fill in the blanks:

(a) An image that cannot be obtained on a screen is called a virtual \_\_\_\_\_\_

(b) Image formed by a convex \_\_\_\_\_\_ is always virtual and smaller in size.

(c) An image formed by \_\_\_\_\_\_ is always of the same size as that of the object.

(d) An image which can be obtained on a screen is called a \_\_\_\_\_ image.

(e) An image formed by a concave \_\_\_\_\_ cannot be obtained on a screen. Answer:

(a) An image that cannot be obtained on a screen is called a virtual <u>image</u>.

(b) Image formed by a convex mirror is always virtual and smaller in size.

(c) An image formed by a <u>plane mirror</u> is always of the same size as that of the object.

(d) An image which can be obtained on a screen is called a <u>real</u> image.

(e) An image formed by a concave lens cannot be obtained on a screen.

2. Mark 'T' if the statement is true and 'F' if it is false:

(a) We can obtain an enlarged and erect image by a convex mirror.

- (b) A concave lens always forms a virtual image.
- (c) We can obtain a real, enlarged and inverted image by a concave mirror.

(d) A real image cannot be obtained on a screen.

(e) A concave mirror always forms a real image.

Answer:

- (a) We can obtain an enlarged and erect image by a convex mirror. (T)
- (b) A concave lens always forms a virtual image. (T)
- (c) We can obtain a real, enlarged and inverted image by a concave mirror. (T)
- (d) A real image cannot be obtained on a screen.



(F)

(e) A concave mirror always forms a real image.

3. Match the items given in Column I with one or more items of Column II.

Column I	Column II
(a) A plane mirror	(i) Used as a magnifying glass.
(b) A convex mirror	(ii) Can form image of objects
(c) A convex lens	(iii) Used by dentists to see enlarged image of teeth.
(d) A concave mirror	(iv) The image is always inverted and magnified.
(e) A concave lens	(v) The image is erect and of the same size as the object.
	(vi) The image is erect and smaller
Answer:	
Column I	Column II
(a) A plane mirror	(v) The image is erect and of the same size as the object.
(b) A convex mirror	(vi) The image is erect and smaller
(c) A convex lens	(i) Used as a magnifying glass.
(d) A concave mirror	(iii) Used by dentists to see enlarged image of teeth.
(e) A concave lens	(vi) The image is erect and smaller

#### 4. State the characteristics of the image formed by a plane mirror.

Answer :

1. An image formed by a plane mirror is erect and of the same size as the object.

2. The image formed by the plane mirror is at the same distance behind the mirror as the object is in front of it.

3. The sides of an image formed by a plane mirror gets interchanged. In the mirror the 'right' appears 'left' and the 'left' appears 'right'. This called lateral inversion.

4. Only sides are interchanged; the image does not appear upside down.



(F)

5. Find out the letters of English alphabet or any other language known to you in which the image formed in a plane mirror appears exactly like the letter itself. Discuss your findings.

Answer:

The image of following English Alphabet, formed in a plane mirror appears exactly like the letter itself:

A , H, I, M, O, T, U, V, W, X

# 6. What is a virtual image? Give one situation where a virtual image is formed.

Answer:

Virtual Image: An image which cannot be obtained on a screen is called a virtual image.

A virtual image can be formed by a plane mirror, convex mirror, concave mirror, convex lens and concave lens. Polished Metallic surface or liquid surface such as lakes or water bodies can also form a virtual image.

7. State two differences between a convex and a concave lens.

Answer:

Convex lens	Concave lens
Convex lenses are thicker in the middle	Concave lenses are thinner in the
than at the edges.	middle than at the edges.
A convex lens can forms real and inverted image. When the object is placed very close to the lens, the image formed is virtual, erect and magnified.	A concave lens always forms erect, virtual and smaller image than the object.
A convex lens can be used as a magnifying glass	A concave lens cannot be used as a magnifying glass
A convex lens converges (bends inward) the light generally falling on it	A concave lens diverges (bends outward) the light.

8. Give one use each of a concave and a convex mirror.

Answer:

Concave Mirror: It is used by dentists to see enlarged image of teeth.



Convex Mirror: It is used as view mirror in bus, cars or side mirrors in scooters. Convex mirrors can form images of objects spread over a large area. So, these help the drivers to see the traffic behind them.

### 9. Which type of mirror can form a real image?

Answer:

A concave mirror can form a real and inverted image. When the object is placed very close to the mirror, the image formed is virtual, erect and magnified.

# 10. Which type of lens forms always a virtual image?

Answer:

A concave lens always forms a virtual, erect, and smaller image than the object.

Choose the correct option in questions 11-13

11. A virtual image larger than the object can be produced by a

(i) concave lens (ii) concave mirror

(iii) convex mirror (iv) plane mirror

Answer: (ii) concave mirror

12. David is observing his image in a plane mirror. The distance between the mirror and his image is 4 m. If he moves 1 m towards the mirror, then the distance between David and his image will be

(i) 3 m (ii) 5 m

(iii) 6 m (iv) 8 m

Answer : (i) 3 m

13. The rear view mirror of a car is a plane mirror. A driver is reversing his car at a speed of 2 m/s. The driver sees in his rear view mirror the image of a truck parked behind his car. The speed at which the image of the truck appears to approach the driver will be

(i) 1 m/s (ii) 2 m/s

(iii) 4 m/s (iv) 8 m/s

Answer : (ii) 2 m/s

