Exercise Questions

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1. Fill in the blanks:
(a) An image that cannot be obtained on a screen is called _____.
(b) Image formed by a convex _____ is always virtual and smaller in size.
(c) An image formed by a _____ mirror 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.

Solution:

(a) An image that cannot be obtained on a screen is called **virtual image**.
(b) Image formed by a convex **mirror** is always virtual and smaller in size.
(c) An image formed by a **plane** mirror is always of the same size as that of the object.
(d) An image which can be obtained on a screen is called a **real** 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. (T/F)
(b) A concave lens always form a virtual image. (T/F)
(c) We can obtain a real, enlarged and inverted image by a concave mirror. (T/F)
(d) A real image cannot be obtained on a screen. (T/F)
(e) A concave mirror always form a real image. (T/F)

Solution:

a) False
b) True
c) True
d) False
e) False

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 spread over a large area.
(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 in size than the object.

Solution:

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	(ii) Can form an image of objects spread over a large area.
(c) A convex lens	(i) Used as a magnifying glass
(d) A concave mirror	(iii) Used by dentists to see an enlarged image of teeth.
(e) A concave lens	(vi) The image is erect and smaller in size than the object.

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

Solution:

Characteristics of the image formed by a plane mirror are as follows:

- Image distance and object distance are equal
- Size of object and image are equal
- The image formed is erect and virtual
- Images are laterally inverted

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.

Solution:

A, H, I, M, O, T, U, V, W, X, Y alphabets form images in a plane mirror exactly like the letter itself because these alphabets are laterally symmetric.

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

Solution:

Ther image that cannot be obtained on a screen is called virtual image. The image formed by a plane mirror is virtual.

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

Solution:

Convex Lens	Concave Lens
Thick in the middle and thin at the edge	Thin in the middle and thick at the edge
Image formed is virtual	Image formed is real

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

Solution:

Concave mirrors are used in the headlight of cars and scooters.

Convex mirrors are used as side-view mirrors in vehicles.

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

Solution:

The **concave mirror** can form a real image.

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

Solution:

A **convex mirror** form a virtual image.

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

Solution:

The answer is (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

Solution:

The answer is (iii) 6 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

Solution:

The answer is (iii) 4 m/s