

Light

Q1. 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.

- Sol:**
- (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.

Q2. 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 forms 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 screen. (T/F)
- (e) A concave mirror always forms a real image. (T/F)

Sol: 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. (F)
- (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 screen. (F)
- (e) A concave mirror always forms a real image. (F)

Q3. Match the items given in Column I with one or more item of Column II.

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|----------------------|--|
| (a) A plane mirror | (i) used as magnifying glass. |
| (b) A convex mirror | (ii) can form image of objects Spread over large area. |
| (c) A convex lens | (iii) used by dentist 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 than object. |
| | (vi) the image is erect and smaller in size than the object. |

Sol:

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

Q4. State the characteristic of the image formed by a plane mirror.

Sol: The characteristics of image formed by plane mirror are:

- (a) Plane mirror always forms virtual and erect image.
- (b) Size of image is same as the size of object.
- (c) Image distance from the mirror is same as the object distance from the mirror.
- (d) Image formed is laterally inverted.

Q5. Find out the letters of English alphabet or any other language known to you in which the image formed in plane mirror appears exactly like the letter itself. Discuss your findings.

Sol: The image of Letters of English alphabet A, H, I, M, O, T, U, V, W, X, Y are formed in plane mirror appears exactly like the letter itself.

Q6. What is a virtual image? Give one situation where a virtual image is formed.

Sol: The image that cannot be taken on a screen or wall is called virtual image. When an object is placed in front of plane mirror then formed image is virtual.

Q7. State the differences between convex and a concave lens.

Sol: Differences between convex lens and concave lens:

<i>convex lens</i>	<i>concave lens</i>
1. This lens can form both real and virtual image	1. This lens can form only virtual image.
2. This lens thick at middle and thin at the edges.	2. This lens thin at the middle and thick at the edges.
3. This lens forms enlarge, equal size and diminish image.	3. This lens always forms diminish image.

Q8. Give one use of a concave and a convex mirror.

Sol: Concave mirror – It is used by dentist to see finer edges of teeth.

Convex mirror – This lens is used in vehicles as rear view mirror to see behind the vehicles.

Q9. Which type of lens forms always a real image?

Sol: Convex lens forms always a real image.

Q10. Which type of lens forms always a virtual image?

Sol: Concave lens forms always a virtual image.

[Choose the correct option in questions]

Q11. A virtual image larger than the object can be produced by a

- (i) Concave lens
- (ii) Concave mirror
- (iii) Convex lens
- (iv) Plane mirror

Sol: (ii) Concave mirror

Q12. 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

Sol: (iii) 6 m

Q13. 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 the 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.

Sol: (iii) 4 m/s