

## Light (Part 1) - Quiz

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**Multiple Choice Questions: Choose the most appropriate answer.**

Q1. A Spherical mirror with its reflecting surface on the outside is a

- a. Plane mirror
- b. concave mirror
- c. convex mirror
- d. either concave or convex depending on which way you look at it.

Q2. If a concave mirror forms a real magnified image of an object, the object is located

- a. Between pole and focus
- b. between focus and centre of curvature
- c. beyond centre of curvature
- d. at centre of curvature.

Q3. At what position of the object does a convex lens act as a magnifying glass?

- a. between F and 2F
- b. between F and O
- c. beyond F
- d. beyond 2F

Q4. Band of which of these colours is not seen in a spectrum?

- a. green
- b. yellow
- c. purple

Q5. Which of the following shows lateral inversion?

- a. plane mirror
- b. convex mirror
- c. concave mirror
- d. all of these

Q6. The angle of incidence is the angle between

- a. the incident ray and the mirror
- b. the incident ray and the normal
- c. the reflected ray and the mirror
- d. the reflected ray and the normal

Q7. A rear view mirror in a car or motorcycle is a

- a. concave mirror
- b. convex mirror
- c. parabolic mirror
- d. any one of the above

Q8. An image which cannot be obtained on a screen is called a

- a. real image
- b. virtual image
- c. magnified image
- d. none of the above

Q9. While shaving, a man uses a

- a. concave mirror
- b. convex mirror
- c. concave lens
- d. convex lens

**Q10.** A plane mirror produces a

- a. virtual inverted image always
- b. real image always
- c. virtual or real image depending on the distance of the object from the mirror.
- d. virtual erect image always.

**Q11.** If an object is placed at a distance of 0.5 m in front of a plane mirror, the distance between the object and the image formed by the mirror will be

- a. 2m
- b. 1m
- c. 0.5m
- d. 0.25m

**Q12.** A rainbow can be seen in the sky

- a. when the sun is in front of you
- b. when the sun is behind you
- c. when the sun is overhead
- d. only at the time of sunrise

**Fill in the blanks.**

**Q1.** The splitting of white light into its constituent colours is called \_\_\_\_\_ and the band of colours obtained is called \_\_\_\_\_.

**Q2.** The inner surface of a steel spoon acts as a \_\_\_\_\_ mirror.

**Q3.** The outer surface of a flat steel plate acts as a \_\_\_\_\_ mirror.

**Q4.** The outer shining surface of a round bottom steel bowl acts as a \_\_\_\_\_ mirror.

**Q5.** The inner surface of the reflector of a torch acts as a \_\_\_\_\_ mirror.

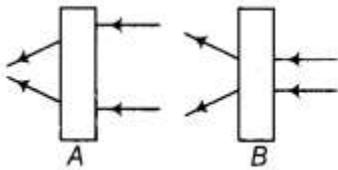
### Very Short Answer.

**Q1.** Avni stands 7m in front of a plane mirror with a painting on a wall 2m behind her. Calculate the distance between:

- Avni and the image of the painting
- Avni's image and the image of the painting.
- Avni and her image.
- Avni's image and the painting if Avni moves 2m towards the mirror.

**Q2.** The image formed by a lens is always virtual, erect and smaller in size for an object kept at different positions in front of it. Identify nature of lens.

**Q3.** Observe the figures carefully.



The given figures show the path of light through lenses of two different types, represented by rectangular boxes A and B. What is the nature of lenses A and B?

**Q4.** Anil made light from a laser torch to fall on a prism. Will he be able to observe a band of seven colours? Explain with a reason.

**Q5.** The side mirror of a scooter got broken. The mechanic replaced it with a plane mirror. Mention any inconvenience that the driver of the scooter will face while using it?

**Q6.** The concave reflecting surface of a torch got rusted. What effect would this have on the beam of light from the torch?

**Q7.** A shopkeeper wanted to fix a mirror which will give a maximum view of his shop. What type of mirror should he use? Give reason.

**Q8.** The distance between an object and a convex lens is changing. It is noticed that the size of the image formed on a screen is decreasing. Is the object moving in a direction towards the lens or away from it?

**Long Answer Question.**

**Q1.** You are given three mirrors of different types. How will you identify each one of them?

**Q2.** Identify three letters of the English alphabet or of your mother tongue whose mirror images are exactly the same as the letters.

**Q3.** Car rear view mirrors carry a warning message that 'objects in the rear view mirror are closer than they appear'. Why do you think this is so?

# Answer

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**Multiple Choice Questions: Choose the most appropriate answer.**

Q1. B. Concave mirror

Q2. A. between pole and focus

Q3. B. between F and O

Q4. C. Purple

Q5. A. plane mirror

Q6. B. the incident ray and the normal

Q7. B. convex mirror

Q8. B. virtual image

Q9. A. Concave mirror

Q10. D. virtual erect image always

Q11. (b) The image formed by a plane mirror is at the same distance behind the mirror as the object is in front of it. Therefore, the distance between object and image is given by  
distance between object and mirror + distance between mirror and image  
 $= 0.5 \text{ m} + 0.5 \text{ m} = 1 \text{ m}$

Q12. A rainbow can only be seen in the sky when the sun is behind you in rainy season.

### Fill in the blanks

Q1. Dispersion , spectrum

Q2. Concave

Q3. Plane

Q4. Convex

Q5. Concave

### Very Short Answer.

Q1.

a.  $7 + 7 + 2 = 16\text{m}$

b. 2m

c. 14m

d.  $2 + 5 + 5 = 12\text{m}$

Q2. Such types of lens which always forms virtual, erect and smaller image in spite of the different positions of an object is called concave lens.

Q3. Since, in first case, light rays are converging towards a point, so the lens A will be a convex lens and in case of lens S, light rays diverge or spread out. So, the lens B will be a concave lens.

Q4. No, because Laser light gives out only 1 colour while we need a white light to break it into 7 colours.

Q5. The side mirror is a convex mirror which allows a diminished view of the objects behind the scooter & gives a greater view. Plane mirror however shows image of same size. Hence as we know that the side mirror of a scooter must be a convex mirror so that we can view a wide range of traffic spread over a large area.

But if plane mirror, is used, we will not be able to see large area of traffic behind us which may create a difficulty in driving vehicle and can cause accident.

**Q6.** If the concave reflecting surface of a torch get rusted, it will produce diffused beam of light with lower intensity, the objects will not be clearly visible in this diffused and lower intensity of light.

**Q7.** If a shopkeeper wanted to fix a mirror which will give him maximum view of his shop, he should use a convex mirror.

As a convex mirror can form images of objects spread over a large area, i.e. it can give a wider field of view.

**Q8.** In case of convex lens, when we move the object away from the lens, the size of image decreases and ultimately, when object is at infinite distance a point image is formed at the focus of lens.

### Long Answer Questions.

**Q1.** We can identify the mirrors by forming images of an object which are given as below:

(i) Plane mirror In case of plane mirror, image will be virtual, erect and of same size as that of object.

(ii) Concave mirror In case of concave mirror, image may be real or virtual, inverted or erect and magnified or diminished depending upon the position of object.

(iii) Convex mirror In case of convex mirror, image formed will always be virtual, erect and diminished in spite of the position of object.

**Q2.** N, O, I

**Q3.** Since a convex mirror produces a highly diminished image of objects and hence the objects appear farther than they actually are.