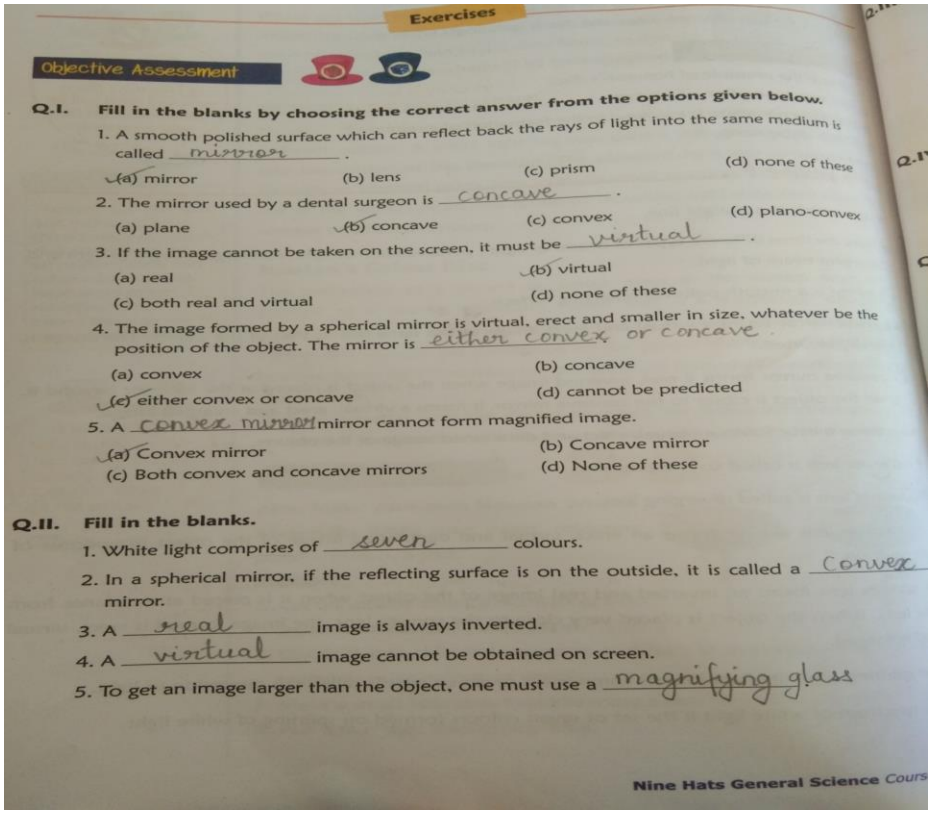
CHAPTER 15 : LIGHT



Exercises

Objective Assessment

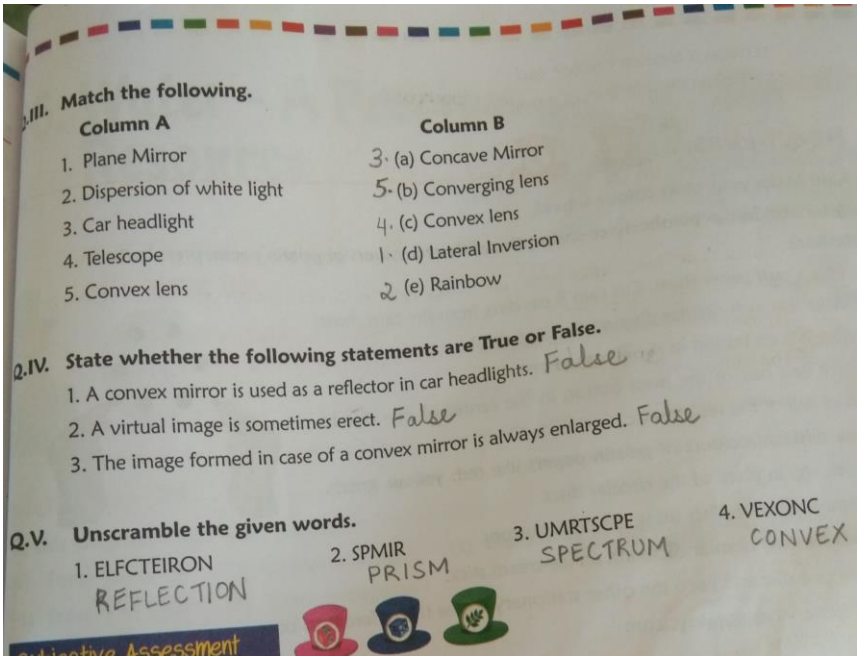
Q.I. Fill in the blanks by choosing the correct answer from the options given below.

1. A smooth polished surface which can reflect back the rays of light into the same medium is called mirror.
   (a) mirror (b) lens (c) prism (d) none of these
2. The mirror used by a dental surgeon is concave.
   (a) plane (b) concave (c) convex (d) plano-convex
3. If the image cannot be taken on the screen, it must be virtual.
   (a) real (b) virtual
   (c) both real and virtual (d) none of these
4. The image formed by a spherical mirror is virtual, erect and smaller in size, whatever be the position of the object. The mirror is either convex or concave.
   (a) convex (b) concave
   (c) either convex or concave (d) cannot be predicted
5. A convex mirror mirror cannot form magnified image.
   (a) Convex mirror (b) Concave mirror
   (c) Both convex and concave mirrors (d) None of these

Q.II. Fill in the blanks.

1. White light comprises of seven colours.
2. In a spherical mirror, if the reflecting surface is on the outside, it is called a convex mirror.
3. A real image is always inverted.
4. A virtual image cannot be obtained on screen.
5. To get an image larger than the object, one must use a magnifying glass

Nine Hats General Science Cours



Q.III. Match the following.

Column A	Column B
1. Plane Mirror	3. (a) Concave Mirror
2. Dispersion of white light	5. (b) Converging lens
3. Car headlight	4. (c) Convex lens
4. Telescope	1. (d) Lateral Inversion
5. Convex lens	2 (e) Rainbow

Q.IV. State whether the following statements are True or False.

1. A convex mirror is used as a reflector in car headlights. False
2. A virtual image is sometimes erect. False
3. The image formed in case of a convex mirror is always enlarged. False

Q.V. Unscramble the given words.

1. ELFCTEIRON REFLECTION
2. SPMIR PRISM
3. UMRTSCPE SPECTRUM
4. VEXONC CONVEX

Objective Assessment

Students, Kindly write the highlighted question and answers in your science exercise book.

Q.VI) **Answer in short.**

1) What is a converging beam of light ?

Ans. Refer pg.206

2) Write one difference between a real and virtual image.

Ans. Refer pg. 210

3) Mention two uses each of (a) Convex mirror (b) Concave mirror

Ans. Refer pg. 211, 212

4) What are the causes of dispersion of light ?

Ans. Refer pg. 215

Q.VII) **Answer in brief.**

1) Can a real image be taken on a screen? Explain.

Ans. Yes, A real image is formed by the actual intersection of reflected light rays and can be formed on a screen. For example, the pictures that are projected on the screen in a cinema hall are real images. We can see the rays of light coming from the projector and falling on the screen.

2) Do light rays actually pass through a virtual image ?

Ans. No

3) Write the difference between a concave mirror and a convex mirror.

Ans.

	Concave Mirror	Convex Mirror
1.	A spherical mirror whose reflecting surface is curved inwards is called a concave mirror.	A spherical mirror whose reflecting surface is curved outwards is called a convex mirror.
2.	It is also called a converging mirror.	It is also called a diverging mirror.
3.	In a concave mirror, the image is erect and enlarged if the object is very close to the mirror.	In a convex mirror, the image is always erect and diminshed at whatever distance the object may be in front of the mirror.

4) Convex mirrors are used as driving mirrors. What is their advantage over plane mirrors ?

Ans. In convex mirrors, the image is always erect and diminished, at whatever distance the object may be in front of the mirror. The convex mirror has a wide field of view and hence is used as a driving mirror in vehicles, to view the traffic behind.

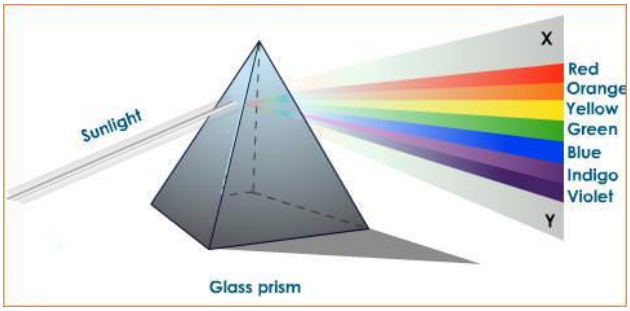
5). With the help of a simple experiment prove that the white light is composed of seven colours.

Ans. To show that white light consists of seven colours

Things needed: A prism, a white screen or white paper.

Method:

1. Allow a narrow beam of sunlight to enter a dark room through a small hole in a window.
2. Place a prism in the path of the light rays such that they fall on one face of the prism.
3. Let the light coming out of the other face of the prism fall on a white sheet of paper or a white screen.



Observation: You observe a band of seven colours formed on the white screen. You see the seven colours in the following order: Violet (V), Indigo (I), Blue (B), Green (G), Yellow (Y), Orange (0) and Red (R) (VIBGYOR).

Conclusion: White light consists of seven colours.

6) You are provided with a plane mirror, convex mirror and a concave mirror. How will you distinguish between them?

Ans. 1. When the image is erect, of the same size as that of an object size and it does not change its size and nature on moving the mirror closer or away from the face, the mirror is a plane mirror.

2. When the image is erect, magnified and it becomes inverted on moving the mirror away from the face, the mirror is a concave mirror.

3. When the image is erect, diminished and it remains erect on moving the mirror away from the face, the mirror is a convex mirror.

7) State four characteristics of an image formed in a plane mirror.

Ans. An image formed by a plane mirror shows the following characteristics:

i) It is upright or erect, but appears reversed right to left.

ii) It is always virtual.

iii) It is of the same size as the size of the object.

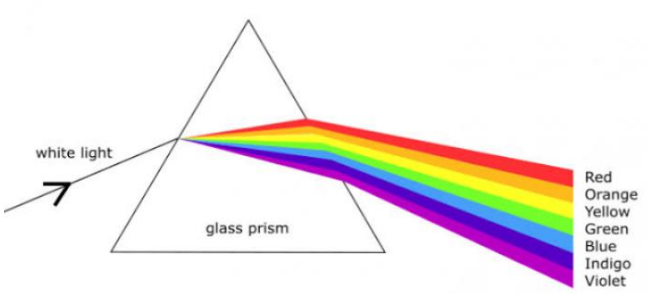
iv) The image formed by the mirror is at the same distance behind the mirror as the object is in front of it.

8) State the difference between a real image and a virtual image.

Ans. Refer pg. 210

9) With the help of a diagram show the Dispersion of white light by a prism.

Ans.



10) What do you mean by lateral inversion?

Ans. Refer pg. 209

11) What is Newton's Colour Disc?

Ans. Newton's colour disc is a mechanical device that rotates an array of colours arranged as petals around an axis. When the disc rotates fast enough the perception of the colour changes to white. This is because white light is nothing but a mixture of light of all wavelengths in the visible range.

12) Explain the principles of a magnifying glass.

Ans. Refer pg. 212