Chapter 7 Lenses and their uses

(2 and 3 marks questions)

Q.1. In the table given below find the relation between the three columns and rewrite the table

column 1	column 2	column 3
farsightedness	can clearly see objects that are near	bifocal lense
Presbyopia	can clearly see objects that are at a distance	concave lens
nearsightedness	problem of old age	convex lens

Q. 2 Distinguish between

1. real image and virtual image
2. concave lens and convex lens
3. farsightedness and nearsightedness
4. simple microscope and compound microscope
5. compound microscope and refractive telescope
6. simple microscope and refractive telescope

Q . 3 properties, specialities, uses etc.

1. where is a concave lens used ?
   or
   In which device is the concave mirror used?

2. For what is the convex lens used ?
3. Explain the working of a simple microscope with the help of a diagram. Where is a simple microscope used?

Q. 4 . Write scientific reasons:

1. A simple microscope is used in watch repairing.
   or
   Watch repairer uses a magnifying lens for repairing watches
2. Some people need a bifocal lense in old age.
3. A person having vision defect of nearsightedness uses glasses with concave lenses
4. A person having a vision defect of farsightedness uses glasses with convex lenses.
5. In a cinema hall we cannot enjoy the movie by sitting very close to the screen
6. A person with healthy eyes cannot clearly see an object kept at a distance of less than 25cm.
7. Sensation and identification of colors can happen only in light.
8. Direction of light rays does not change when it passes through the optical center of a lens.
9. Rays passing through a convex lens converge(come together)
10. Rays passing through a concave lens diverge (spread)
11. When a burning incense stick is moved in a circular way it forms a halo of red light.
12. Persons who are color blind cannot distinguish between different colors.
13. It is dangerous to give a driving license to a person having color blindness.

Q. 5 Solve the following

1. The focal length of a convex lens is 20 cm. If an object with 2 cm height is kept in front of it at a distance of 30 cm then
   (i) where does the image form?
   (ii) what is the height of the image?

(iii) how much is the magnification by this lens ?

2. A pin having 3 cm height is kept in front of a convex lens at a distance of 1o cm. It is found that the image thus formed has a height of 12 cm. Calculate the focal length of the lens

3. A convex lens forms a real and inverted image of a pencil at a distance of 40 cm . The image is as big as the object. On the basis of this find the distance at which the pencil has been kept in front of the lens. Find the focal length and the power of the lens

4. An object having height 5 cm has been kept at a distance of 25 cm in front of a converging lens having focal length 10cm. Find the place of the image formed its nature and shape.

5. Doctor has advised a + 1.5 D power lens to repair a vision defect. What will be the focal length of this lens? identify the kind of lens and the vision defect.

6. An object havin height 60 cm has been kept in front of a concave lens having focal length 40 cm . Find the place at which image will be formed and its height.

7. An object when kept at a distance of 60 cm from a lens forms an image in front of it at a distance of 20 cm, What will be the focal length of this lens? is it a converging lens or a diverging lens?

8. The power of a convex lens id 2.5 D . Find the focal length of this lens.

9. If three lenses having power 2, 2.5 and 1.7 are kept closer then what will be the total power of this?

10. If two convex lenses having the same focal length are kept together then the total power is 20 D. Find the focal length of each lens.

11. a convex lens having focal length 10 cm and a concave lens having focal length 50 cm are kept touching each other.

(i) what will be the focal length of their combination

(ii) what will be their combined power ?

(iii) what will be the combined behaviour will it be like a concave lens or a convex lens?

Q. 6 Questions based on diagrams

1. Draw diagram showing image obtained by a concave lens.
2. Draw a diagram of the structure of the human eye by labelling each part.

Q, 7. Other important questions

1. An object has been kept in front of a + 10 cm focal length. write about the nature of the image formed.
2. What is the function of the pupil of the human eye and the muscles attached to the lens?
3. What is presbyopia? What is the reason for it? How is the defect of presbyopia repaired?
4. How does the human eye identify colors? explain.
5. What do the eyes perceive different colors?