Short Answer Type Questions – I

[2 marks]

Q. 1. How do we see colours?

Ans. The retina of a human eye has a large number of light sensitive cells. These cells are of two types, i.e., rod cells and cone cells. The rod shaped cells show response towards the intensity of light rays, while the cone shaped cells respond to colours. It is these cone cells, which make it possible for a person to see different colours and distinguish between them.

Q. 2. What is colour-blindness? What kind of retinal cells are lacking in person suffering from this defect?

Ans. The defect of the eye due to which a person is unable to distinguish between certain colours, is known as colour blindness. Cone shaped retinal cells are responsible for making a person differentiate between colours. The colour blind persons do not possess cone cells that respond to certain colours.

Q. 3. Why there is no dispersion of light refracted through a rectangular glass slab?

Ans. After refraction at two parallel faces of a glass slab, a ray of light emerges in a direction parallel to the direction of incidence of white light. As rays of all colours emerge in the same direction, i.e., the direction of the incidence of white light, there is no dispersion. However, there is lateral displacement.

Q. 4. Why are 'danger' signal lights red in colour?

Ans. Danger signal lights are red in colour because the red coloured light having longer wavelength is scattered the least by fog or smoke. Therefore, it can be seen clearly from a distance.

Q. 5. What is meant by dispersion of white light? Name the various colours of spectrum of white light in proper sequence.

Ans. The splitting of white light into its component colours is called dispersion of light. The band of the coloured components formed due to dispersion of white light is called 'spectrum'. Seven colours of spectrum are violet, indigo, blue, green, yellow, orange and red also known as 'VIBGYOR'.

Q. 6. What is the cause of dispersion?

Ans. All colours of light travel at the same speed in a vacuum. When these enter a transparent, substance like prism, all slow down by different amounts depending on their wavelength. As these slow down by different amounts, different colours are refracted through different angles.

Q. 7. Why do different rays deviate differently in the prism?

Ans. Different wavelengths deviate differently in the prism because the angle of refraction for different colours having different wavelength is different while passing through the glass prism.

Q. 8. How will you use two identical prisms so that a narrow beam of white light incident on one prism emerges out of the second prism as white light?

Ans. By using two identical prisms, one placed inverted with respect to the other we get a narrow beams of white light incident on one prism emerges out of the second prism as white light.