***Choose the right Answer from the given options.(A) (5)**

Q1. Dispersion of light by glass prism takes place because

(a) the lights of different colours have different intensities. (b) the lights of different colours have different speeds in a medium.

(c) different colours have different frequencies. (d) the lights of different colours have different energies.

Q2. A person cannot see objects distinctly kept beyond 2 m. This defect can be corrected by using a lens of power

(a) +0.5 D (b) -0.5 D (c) +0.2 D (d) -0.2 D

Q3. At Noon the sun appears white Because

(a) light is least scattered (b) all colours get scattered equally (c) blue colour is scattered the most (d) red colour is scattered the most

Q4. Which of the following phenomena of light are involved in the formation of a rainbow?

(a) Reflection, refraction and dispersion (b) Refraction, dispersion and total internal reflection

(c) Refraction, dispersion and internal reflection (d) Dispersion, scattering and total internal reflection

Q5. The focal length of eye lens increases when eye muscles

(a) are relaxed and lens becomes thinner (b) contract and lens becomes thicker

(c) are relaxed and lens becomes thicker (d) contract and lens becomes thinner

(MCQ) (B) Assertion-Reason Questions (5)

The following questions consist of two statements - Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

(a) Both A and R are true and R is the correct explanation of A.

(b) Both A and R are true but R is not the correct explanation of A.

(c) A is true but R is false. (d) A is false but R is true.

1. Assertion(A): White light is dispersed into its seven-colour components by a prism.

Reason (R): Different colours of light bend through different angles with respect to the incident ray as they pass through a prism.

2. Assertion(4): The phenomenon of scattering of light by the colloidal particles gives rise to the Tyndall effect. b

Reason (R): The colour of the scattered light depends on the size of the scattering particles.

3. Assertion(4): A normal human eye can clearly see all the objects beyond a certain minimum distance.

Reason (R): The human eye has the capacity of adjusting the focal length of the eye lens.

Short Question.. (10)

Q1. Write the structure of eye lens and state the role of ciliary muscles in the human eye.

Q2.(a) List two causes of hypermetropia.

(b) draw a ray diagram (i) a hypermetropia eye and (ii) its correction using a suitable optical device.

Q3. What is meant by scattering of light ? Use this phenomenon to explain why the clear sky appears blue.

Q4.(i) A person is suffering from both myopia and hypermetropia.

(a) What kind of lenses can correct this defect ?

(b) How are these lenses prepared?

(ii) A person needs a lens of power + 3D for correcting his near vision and -3D for correcting his distant vision. Calculate the focal lengths of the lenses required to correct these defects.

Q5.Why does it take some time to see objects in a dim room when you enter the room from bright sunlight outside?

Long Question.

Q1. What is a rainbow ? Draw a labeled diagram to show the formation of a rainbow. (3)

Q2. How does refraction of light take place in the atmosphere ? Explain the reason why stars appear to twinkle and the planets do not twinkle. (3)

Q3. A person is unable to see objects distinctly placed within 50 cm from his eyes. (4)

(i) Name the defect of vision the person is suffering from and list its two possible causes.

(ii) Draw a ray diagram to show the defect in the above case.

(iii) Mention the type of lens used by him for the correction of the defect and calculate its power. Assume that the near point for the normal eye is 25 cm.

(iv) Draw labelled diagram for the correction of the defect in the above case.