WORKSHEET 1

CHAPTER 6 – SPECTRUM

A. Tick (✓) the correct option.

1. The total deviation through which the incident ray is turned by the prism is given by
   a. $\delta_1 + \delta_2$. b. $\delta_1 - \delta_2$. c. $\delta_1\delta_2$. d. none of these.
2. White light is composed of how many colours?
   a. Four b. Six c. One d. Seven
3. The instrument used to produce pure spectrum is
   a. voltmeter. b. spectrometer. c. ammeter. d. none of these.
4. Among the following colours, which has the longest wavelength?
   a. Orange b. Red c. Blue d. Violet
5. Which of the following wave is used to treat cancer?
   a. X-ray b. Microwaves c. Gamma rays d. None of these

B. Fill in the blanks.

1. The regions of spectrum that do not sensitise human eye are called _____
2. _____ is the natural source of infrared radiations.
3. _____ are used for sterilising surgical instruments and drinking water.
4. The colour of the clear sky look blue due to _____ of light.
5. Light of _____ wavelength is scattered much more than light of _____ wavelength.

C. State whether the following statements are true or false.

1. X-rays can penetrate through human flesh and bones.
2. Ultraviolet radiations cause health hazards like skin cancer.
3. When an object is removed from view, its image persists on reliance for about 1/16th to 1/20th of a sound.
4. Prism produces seven colours by itself.
5. The angle of deviation (δ) decreases with the increase in the wavelength of light.

D. Match the following.

1. X-ray	klystron tube
2. Visible light	radioactive materials
3. Microwaves	radio TV transmitters
4. Radio waves	stars
5. Gamma rays	sun

Name: ..... Teacher's signature: .....

Class: ..... X ..... Date: .....

E. Answer the following questions.

Very short answer questions

1. Define the dispersion of white light.
2. What is a spectrometer?

Short answer questions

1. How are X-rays produced?
2. What is the wavelength angle of visible light?

Long answer questions

1. What are the characteristics of electromagnetic waves?
2. Gives one use of each of the following waves:
   a. Gamma rays
   b. Visible light
   c. Microwaves
   d. Radio waves

ANSWERS

WORKSHEET 1

A. Tick (✓) the correct option.

1. a
2. d
3. b
4. b
5. c

B. Fill in the blanks.

1. invisible spectrum
2. Sun
3. Ultraviolet radiations
4. scattering
5. short, long

C. State whether the following statements are true or false.

1. F
2. T
3. T
4. F
5. T

D. Match the following.

1. X-rays	stars
2. Visible light	sun
3. Microwaves	klystron tube
4. Radio waves	ratio TV transmitters
5. Gamma rays	radioactive materials

E. Answer the following questions.

Very short answer questions

1. The phenomenon of splitting of white light into its constituent colours on passing through a glass is called dispersion of light.
2. Spectrometer is an instrument which produces pure spectrum on passing a beam of light through it.

Short answer questions

1. X-rays are produced when very fast moving electrons are stopped by a heavy metal target of high melting point.
2. 4×10^{-7} m to 7×10^{-7} m (visible spectrum)

Long answer questions

1. Characteristics of electromagnetic waves are as follows:
   i. Electromagnetic waves do not require any material medium for their propagation.
   ii. Electromagnetic waves travel in free space or vacuum with the same velocity, i.e. 3×10^8 m/s.
   iii. Electromagnetic wave show the phenomena of reflection and refraction.
   iv. All electromagnetic waves are generated when electric charge is accelerated.
   v. These waves are transverse waves.
2. a. Gamma rays – Radioactive materials, nuclear reactions
   b. Visible light – The sun, hot objects
   c. Microwaves – Klystron tube
   d. Radio waves – Stars and galaxies, radio and TV transmitters.