# WORKSHEET 2

## CHAPTER 6 – SPECTRUM

### A. Tick (✓) the correct option.

1. Which of the following wave has the maximum wavelength?
   a. X-rays  b. Microwaves  c. Radiowaves  d. Gamma rays
2. The colour of spectrum which has maximum wavelength is
   a. red.  b. violet.  c. orange.  d. yellow.
3. The wavelength ranging from $4 \times 10^{-7}$ m to $7 \times 10^{-2}$ m is called
   a. infrared spectrum.  b. visible spectrum.  c. invisible spectrum.  d. none of these.
4. The colour of clear sky looks blue due to
   a. refraction.  b. reflection.  c. scattering.  d. none of these.
5. Out of all the colours of visible light, the colour scattered the most is
   a. blue.  b. red.  c. yellow.  d. violet.

### B. Fill in the blanks.

1. Danger signals are red because red colour is least _____
2. Sky would have looked dark if earth had no _____
3. _____ are used in the radar systems for aircraft navigation.
4. Intensity of scattered light varies inversely as the _____ power of the wavelength of incident light.
5. Electromagnetic waves do not require _____ for their propagation.

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

1. Electromagnetic waves are generated when electric charge is accelerated.
2. The wavelength of violet colour ranges from 6300 to 7600 Å.
3. Spectrometer is used to measure the angle od deviation.
4. Electromagnetic waves are transverse waves.
5. Infrared radiations are used to detect the purity of gems, bggs, ghee, etc.

### D. Match the following.

| | |
|---|---|
| 1. Visible light | $4 \times 10^{-7}$ m to $6 \times 10^{-10}$ m |
| 2. X-rays | $1 \times 10^{-3}$ m to $3 \times 10^{-1}$ m |
| 3. Infrared radiations | $4 \times 10^{-7}$ m to $7 \times 10^{-7}$ m |
| 4. Ultraviolet radiations | $4 \times 10^{-7}$ m to $7 \times 10^{-4}$ m |
| 5. Microwaves | $1 \times 10^{-10}$ m to $3 \times 10^{-8}$ m |

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

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

## E. Answer the following questions.

**Very short answer questions**

1. State two uses of gamma rays.
2. Name the seven colours white light is compared of.

**Short answer questions**

1. What are the sources of ultraviolet radiations?
2. What is an electromagnetic spectrum?

**Long answer questions**

1. Why are danger signals red?
2. What are the uses of gamma rays?

# ANSWERS

## WORKSHEET 2

### A. Tick (✓) the correct option.

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

### B. Fill in the blanks.

1. scattered
2. atmosphere
3. Microwaves
4. fourth
5. medium

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

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

### D. Match the following.

1. Visible light — $4 \times 10^{-7}$ m to $7 \times 10^{-7}$ m
2. X-rays — $1 \times 10^{-10}$ m to $3 \times 10^{-8}$ m
3. Infrared radiations — $4 \times 10^{-7}$ m to $7 \times 10^{-4}$ m
4. Ultraviolet radiations — $4 \times 10^{-7}$ m to $6 \times 10^{-10}$ m
5. Microwaves — $1 \times 10^{-3}$ m to $3 \times 10^{-1}$ m

### E. Answer the following questions.

**Very short answer questions**

1. Two uses of gamma rays are
   i. radiography
   ii. treating cancer
2. White light is composed of seven colours – violet, indigo, blue, green, yellow, orange and red (VIBGYOR).

**Short answer questions**

1. The sources of ultraviolet radiations are the sun, mercury-vapour lamp and electric arc.
2. The orderly classification of electromagnetic waves according to their wavelength or frequency is called the electromagnetic spectrum.

**Long answer questions**

1. Among the colours of visible light, red colour has the longest wavelength and hence is least scattered. Thus, red light can easily pass through fog, mist or smoke. That is why red colour is used as universal danger signal.
2. The uses of gamma rays are as follows:
   i. They are used to kill cancerous cells in human body, thus help in the treatment of cancer and tumour.
   ii. They can kill microorganisms easily so they are used to preserve foodstuff for a long time.
   iii. They are used to detect flaws or cracks in metal castings.