

**Criteria A**

Focus - Uses of radiations from electromagnetic spectrum.

Learning goals - Students should be able to identify various radiation of the electromagnetic spectrum based on their frequency or wavelength and know where these radiations are used.

ATL skills -

Research - Access information to be informed and inform others.

- Locate, analyze and ethically use information from a variety of resources and media

1. Take help of resources and draw a symbolic diagram of different radiation of the electromagnetic spectrum in increasing order of wavelength.
2. Research on the uses of these different radiations in various fields and write responses to the questions followed.
 - a. State which type of electromagnetic radiation has the highest frequency.
 - b. State which type of electromagnetic radiation has the longest wavelength
 - c. State which type of electromagnetic radiation has a frequency just greater than that of visible light
 - d. State which type of electromagnetic radiation has the most damaging effects on the human body
 - e. Match the following electromagnetic radiations with its uses.

Gamma rays		eyesight
X-rays		Transmitting TV programs
Ultraviolet rays		Airport baggage scanners
Visible light		Grilling food
Infrared		Sterilizing medical equipment
Microwaves		Communicating with spacecraft
Radio Waves		Forgery detection (banknotes)

- f. Based on the properties of X-rays, explain why they are used in medical diagnosis.
- g. Based on the properties of infrared radiations, explain why they are used in remote control for using the television.
- h. Describe the properties required by a wave to be used for wireless internet.
- i. State what kind of wave is used for transmitting data through optic fibre.
- j. A learner suggests that radio waves and microwaves are useful for communication as they travel large distances as they diffract more. Explain which property of these waves makes this possible.
- k. Mobile phones which operate on 4G systems use wavelengths 800 MHz, 1.8 GHz and 2.6 GHz. Identify the one that has the smallest wavelength.



- l. Explain fluorescence and its use.
- m. Distinguish between a soft X-ray and a hard X-ray and state one use of each.

References

- Cambridge press-physics for IGCSE - workbook/course book - David Sang and Darrell Hamilton
- MYP physics 4 and 5 - Oxford
- Physics - Principles and Problems - Glencoe Science.

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