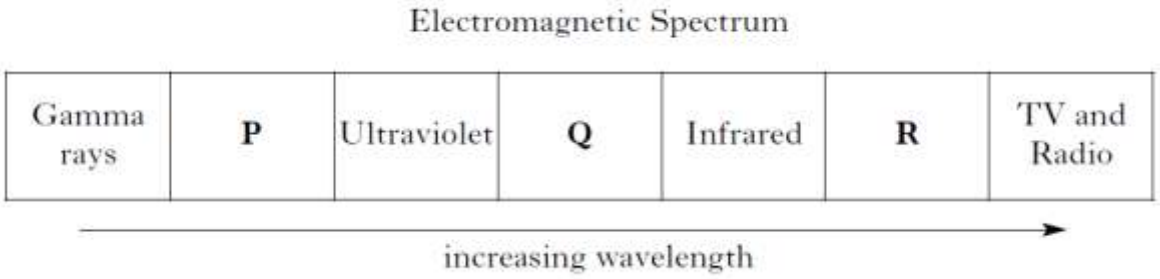
Electromagnetic Spectrum - Homework

1. The diagram represents the electromagnetic spectrum in order of increasing wavelength. Some of the radiations have not been named.



a) Name radiation P, Q & R. (3)
b) Which radiation in the electromagnetic spectrum has the highest frequency? (1)
c) Stars emit ultraviolet and infrared radiation. Name a detector for each of these two radiations. (2)

2. Different types of waves in the electromagnetic spectrum are used in telecommunications.

a) What property do all electromagnetic waves have in common? (1)

b) Calculate the wavelength of a radio wave transmitted by Radio 1 that has a frequency of 99.5 MHz. (3)
c) A TV remote control uses infra-red waves to communicate with a TV.
Why do you have to point the remote directly at the TV to change the channel? (1)
d) State one use of microwaves in a telecommunication system. (1)

(turn over)

3. Different types of radiation are used to detect and treat illnesses and injuries. Four of these radiations are;

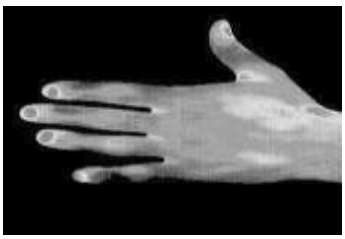
infrared	laser light	ultraviolet	X-rays

a) What type of radiation is used to treat skin conditions such as acne? (1)

b) State **one** medical use of X-rays. (1)

c) What can be used to detect X-rays? (1)

d)



Colour photographs called thermograms are used to find the temperature variation in a patient's body. Name the type of EM radiation used to make thermograms. (1)

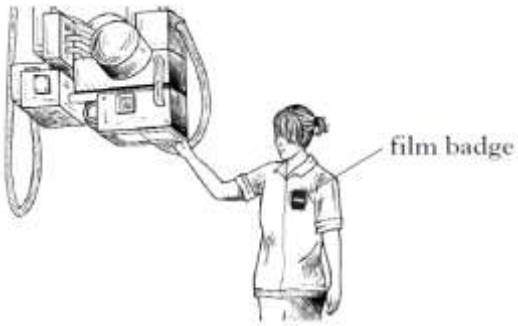
4. Read the following passage.

In a hospital, a new digital X-ray imaging system is being used to replace photographic film. In the digital system, X-rays are detected by sensors and an image displayed on a computer screen. Photographic film, which contains silver, is expensive and hazardous chemicals are used to develop the film. The digital system is less expensive, does not use hazardous chemicals and the X-ray image is obtained in a shorter time.

a) Using information **given in the passage** state **two** advantages of the digital X-ray imaging system. (2)

b) Hospital staff who operate X-ray machines wear film badges.

A film badge contains photographic film sealed in a plastic holder. Visible light cannot enter the film badge.
What effect does X-ray radiation have on photographic film? (1)
Suggest a reason why hospital staff wear film badges. (1)



(20 marks)