Electromagnetic spectrum – 2020 O Level 5054

1. Nov/2020/Paper_11/No.26

An electromagnetic wave has a speed of 3.0×10^8 m/s and a wavelength of 10 cm.

What is the frequency of the wave?

A 3.3×10^{-10} Hz

B 3.3×10^{-8} Hz

C 3.0×10^{7} Hz

D 3.0×10^{9} Hz

2. Nov/2020/Paper_12/No.25

Applications use different components of the electromagnetic spectrum.

Which shows correct applications for X-rays, ultraviolet light and microwaves?

	X-rays	ultraviolet light	microwaves
A	mobile phone	fluorescent tube	intruder alarm
B	killing cancerous cells	sterilising surgical instruments	satellite television
C	medical imaging	television controller	sunbed
D	sterilising surgical instruments	television controller	detecting cracks in metal

3. June/2020/Paper_11/No.29

What is a feature of red light compared with that of violet light?

A A prism deviates red light more.

B Red light has a lower frequency.

C Red light has a shorter wavelength.

D The speed of red light in a vacuum is smaller.

4. June/2020/Paper_21/No.9b

(b) Fig. 9.2 shows an X-ray image of a hand. An X-ray detector is placed just below the hand. An image of the bones and human tissue around the bones is formed on a screen by the detector.

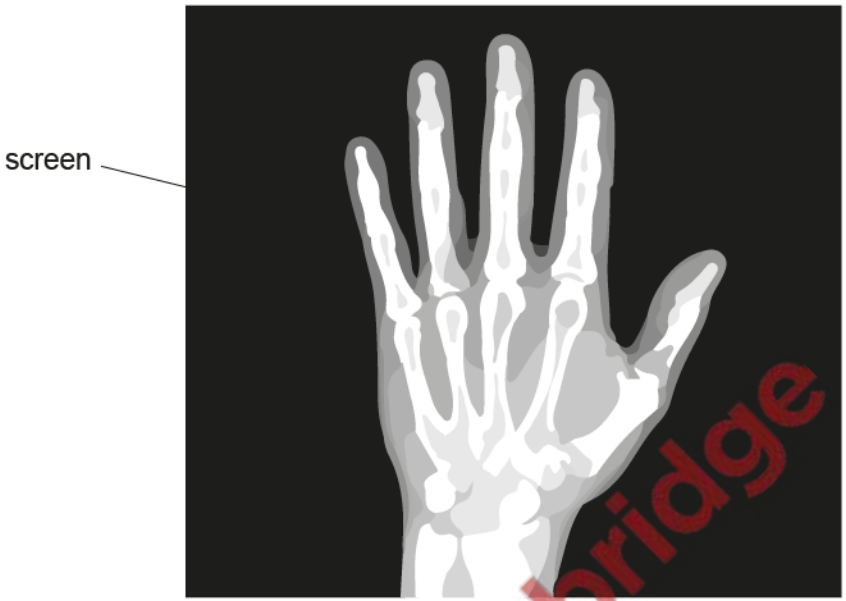

Fig. 9.2

(i) Describe what happens to the X-rays to produce the image.

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..... [3]

(ii) The wavelength of the X-rays used is 2.0×10^{-9} m. The speed of electromagnetic waves is 3.0×10^{8} m/s.

Calculate the frequency of the X-rays.

frequency = ... [2]

(iii) Suggest one reason why X-rays are **not** used to form an image of an unborn child.

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..... [1]