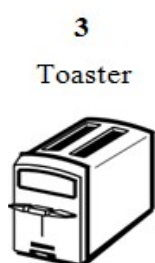
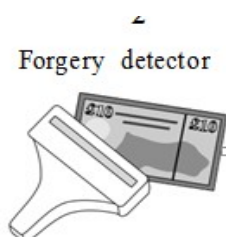


# Electromagnetic Waves 3

**Q:1** Each of these devices uses electromagnetic radiation.



Match the parts of the electromagnetic spectrum, A, B, C and D, with the drawings labelled 1-4.

- A     infra red
- B     radio waves
- C     ultraviolet
- D     visible light

**Q:2** Match types of electromagnetic radiation, A, B, C and D, with numbers 1- 4 in the table.

- A gamma rays
- B microwaves
- C ultraviolet rays
- D X-rays

	do not penetrate human tissue below skin depth but can cause severe burns
	penetrate only a few centimetres into human tissue but produce a lot of heat
	pass through all types of human tissue, including bones, and can kill all types of ce
	pass easily through soft human tissue without much absorption

**Q:3** We use electromagnetic radiation in many different ways.

Match words, A, B, C and D, with the numbers 1-4 in the table.

- A infra red radiation
- B gamma radiation
- C visible light
- D ultraviolet radiation

	is used in sunbeds
	is used in heaters
	is used to treat cancer

**Q:4** The electromagnetic spectrum is continuous but Match words, A, B, C and D, with the numbers

- A gamma rays
- B radio waves
- C ultraviolet waves
- D visible light

the wavelengths within it can be grouped into types.

1-4 in the sentences.

The type of electromagnetic radiation which can be used to send signals along optical fibres is . . . 1 . . . .

The type of electromagnetic radiation which has the highest frequency is . . . 2 . . . .

The type of radiation that has the longest wavelength is . . . 3 . . . .

The type of electromagnetic radiation used in sunbeds for tanning is . . . 4 . . .

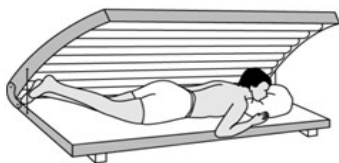
**Q:5** Different devices use different types of electromagnetic waves.



**1**  
Camera



**2**  
Hospital scanner



**3**  
Sunbed



**4**  
TV remote control

Match types of electromagnetic waves, A, B, C and D, with the diagrams 1- 4.

- A**     infra red
- B**     visible light
- C**     ultraviolet
- D**     X-rays

**Q:6**     Different types of electromagnetic radiation have different hazards.

Match words, A, B, C and D, with the statements 1- 4 in the table.

- A     microwaves
- B     ultraviolet rays
- C     visible light
- D     X-rays

	could cause skin cancer during sunbathing
	could cause blindness if you look directly at the Sun
	could kill cells deep inside your body
	could damage your brain while using a mobile phone

**Q:7**     The table shows part of the electromagnetic spectrum.

Gamma		Ultraviolet		Infrared		Radio
-------	--	-------------	--	----------	--	-------

Match words, A, B, C and D, with the numbers 1- 4 in the sentences.

- A            gamma
- B            infra red
- C            radio
- D            ultraviolet

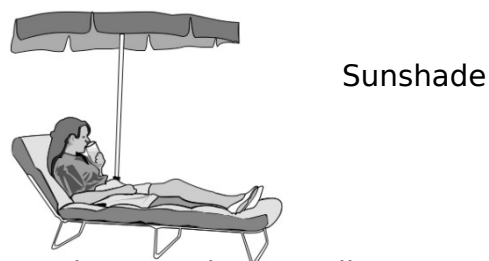
The part of the electromagnetic spectrum with the longest wavelengths is . . . 1 . . . .

Between X-rays and visible light in the electromagnetic spectrum is . . . 2 . . . radiation.

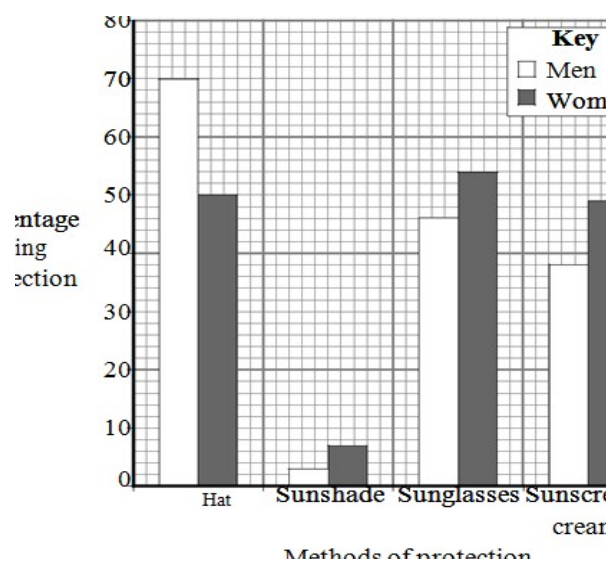
Some radioactive isotopes emit . . . 3 . . . radiation.

Signals can be sent from remote controls to a television by . . . 4 . . . radiation.

**Q:8** There are several ways of protecting ourselves from the Sun's radiation.



The bar chart shows how men and women in Australia protect themselves from the Sun's radiation.



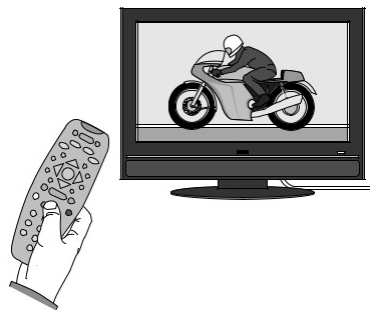
Match  
D, with

the types of protection, A, B, C and  
the statements 1- 4 in the table.

- A hat
- B sunshade
- C sunglasses
- D sunscreen cream

	would be used by 27 women in a sample of 40
	would be used by 49 % of women
	would give protection to the whole body

**Q:9** This question is about electromagnetic radiation and television.



Match types of electromagnetic radiation, A, B, C and D, with the numbers 1- 4 in the sentences.

- A infra red
- B microwaves
- C radio waves
- D visible light

Television signals from a transmitter on Earth are carried by . . . 1 . . . .

Television signals from a satellite are carried by . . . 2 . . . .

A television remote control uses . . . 3 . . . .

A television screen is designed to produce . . . 4 . . . .

**Q:10** Electromagnetic radiation can be absorbed, reflected and transmitted.

Match words, A, B, C and D, with the numbers 1- 4 in the sentences.

A infra red

B microwaves

C visible light

D X-rays

A mirror is designed to reflect . . . 1 . . . .

Mobile phone masts are designed to transmit . . . 2 . . . .

The metal surface inside an oven is designed to reflect . . . 3 . . . .

Lead-lined aprons used in hospitals are designed to absorb . . . 4 . . . .

**Q:11** The waves in the electromagnetic spectrum can be grouped in order of wavelength.

Match types, A, B, C and D, with the numbers 1- 4 in the table.

A gamma rays

B infra red rays

C radio waves

D ultraviolet rays

.....

X-rays

...2...

visible light

...3...

microwave

**Q:12** Electromagnetic waves can be ...4... used for communications.

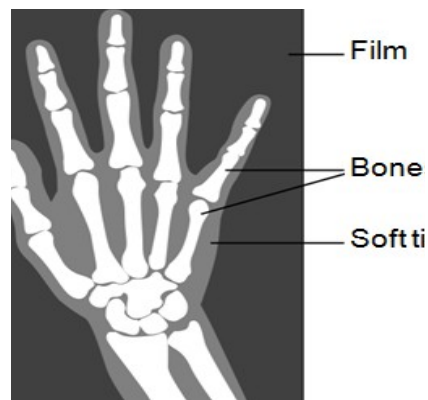
Match words, A, B, C and D, with the uses 1- 4 in the table.

A infra red waves

- B microwaves
- C radio waves
- D visible light

2	used to send a signal between a remote control and a televisi
3	used to transmit television programmes
4	used to see someone waving a flag

**Q:13** Electromagnetic radiation is used to detect broken bones. The picture shows a photograph of a broken wrist.



Match words, A, B, C and D, with the numbers 1- 4 in the sentences.

- A bones
- B film
- C soft tissue



D X-ray tube

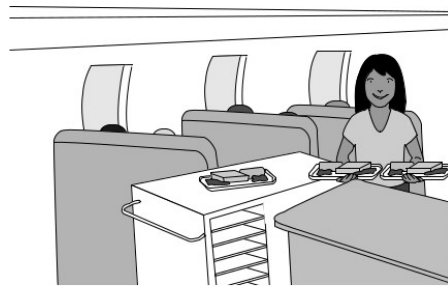
The electromagnetic radiation is produced by the . . . 1 . . . .

The electromagnetic radiation is detected by the . . . 2 . . . .

The electromagnetic radiation is transmitted by the . . . 3 . . . .

The electromagnetic radiation is absorbed by the . . . 4 . . . .

**Q:14** The drawing shows meals being served on an aircraft.



Match types of electromagnetic waves, A, B, C and D, with the numbers 1-4 in the sentences.

A gamma rays

B infra red rays

C radio waves

D visible light

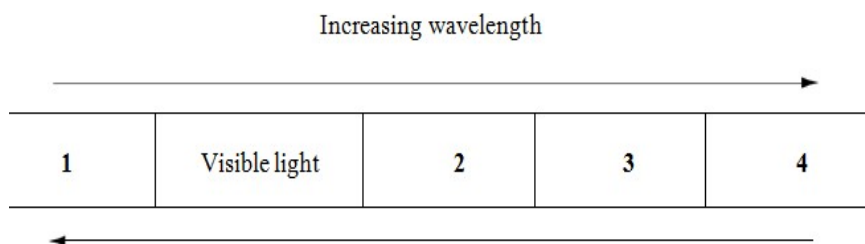
The food was heated in ovens by . . . 1 . . . .

The fruit in the meal pack does not go mouldy because it has been treated with . . .  
2 . . . .

The lamps in the cabin are designed to give off . . . 3 . . . .

The pilot keeps in touch with air traffic control by using . . . 4 . . . .

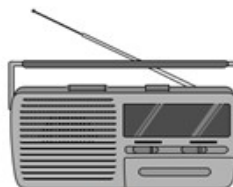
**Q:15** The diagram shows part of the electromagnetic spectrum.



Match devices, A, B, C and D, with the types of electromagnetic radiation 1-4 in the spectrum.



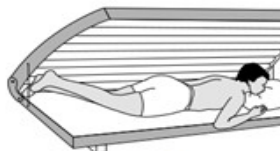
**A**



**B**



**D**



**Q:16** The table gives typical frequencies for different types of electromagnetic radiation.

Match the names of the types of electromagnetic radiation, A, B, C and D, with the numbers 1-4 in the table.

- A     infra red radiation
- B     ultraviolet radiation
- C     visible light
- D     X-rays

radiation	in Hz
1	100 000 billion
2	1 000 000 billion
3	10 000 000 billion
4	100 000 000 billion

**Q:17** Electromagnetic waves have many uses.

Match the types of waves, A, B, C and D, with the numbers 1-4 in the sentences.

- A infra red rays
- B visible light
- C ultraviolet rays
- D X-rays

Luggage at airports is examined using . . . 1 . . . .

Mobile phone screens give off . . . 2 . . . .

Sunbeds use . . . 3 . . . .

When cooking bacon, a grill uses . . . 4 . . . .

**Q:18** This question is about the uses of some types of electromagnetic radiation.

Match words, A, B, C and D, with the uses 1- 4 in the table.

- A infra red
- B microwaves
- C ultraviolet
- D X-rays

	Use
1	sending signals in mobile phone networks
2	sending signals along optical fibres
3	photographing people's bones in hospital
4	reading 'invisible' security markings on passports

**Q:19** This question is about four types of electromagnetic radiation.

Match words, A, B, C and D, with the numbers 1– 4 in the sentences.

- A gamma
- B infra red
- C radio
- D visible light

The type of electromagnetic radiation with the longest wavelength is . . . 1 . . . .

The type of electromagnetic radiation with the highest frequency is . . . 2 . . . .

The type of electromagnetic radiation that is used to cook food is . . . 3 . . . .

The type of electromagnetic radiation that allows us to see is . . . 4 . . . .

**Q:20** Different types of electromagnetic radiation affect living tissue and cells in different ways.

Match types of radiation, A, B, C and D, with the descriptions 1– 4 in the table.

- A infra red
- B ultraviolet
- C visible light
- D X-rays

	The radiation . . .
1	can be felt by the skin as heat.
2	can pass through fleshy tissue but is absorbed by bone
3	can be detected by special cells in the eye.
4	can be absorbed by the skin and cause a suntan.

**Q:21** Different types of electromagnetic waves are used

in hospitals.

Match types of electromagnetic wave, A, B, C and D, with the numbers 1- 4 in the sentences.

A gamma rays

B infra red rays

C radio waves

D visible light

Surgical instruments are sterilised using . . . 1 . . . .

Laser eye surgery uses . . . 2 . . . .

Damaged muscles are given heat treatment using . . . 3 . . . .

A doctor can be contacted by a bleeper that uses . . . 4 . . . .

**TOTAL MARKS=84**