Practice Question Set For GCSE
Subject : Physics
Paper-2 Topic: Waves (Low Demand Questions)

Merit Minds
www.merit-minds.com
Exam Preparation and Free Resources

Name of the Student:_____
Max. Marks : 18 Marks **Time : 18 Minutes**

Q1.

The diagram below shows types of waves within the electromagnetic spectrum.

Some of the types of waves are represented by letters.

P	**microwaves**	**Q**	**visible light**	**R**	**S**	**gamma rays**

(a) Which letter shows the position of ultraviolet (UV) radiation within the electromagnetic spectrum?

Tick **one** box.

P ☐ **Q** ☐ **R** ☐ **S** ☐

(1)

(b) A special lamp can produce UV radiation.

Which **two** statements describe the electromagnetic waves emitted by a UV lamp?

Tick **two** boxes.

They have a higher frequency than X-rays. ☐

They have the same wave speed as visible light. ☐

They have a longer wavelength than microwaves. ☐

They have a lower frequency than gamma rays. ☐

They have a greater wave speed than radio waves. ☐

(2)

(c) UV radiation is used to treat a vitamin D deficiency.

People should **not** use a UV lamp for long periods of time.

Downloaded from www.merit-minds.com

State **two** risks of exposure to high levels of UV radiation.

1. _____

_____

2. _____

_____

(2)

(d) Ionising radiation is used for some medical imaging.

Name **two** types of electromagnetic waves that are used.

1. _____

2. _____

(2)

(Total 7 marks)

Q2.

(a) Complete the sentences.

Choose the answers from the box.

ionising	**light**	**sound**	**transmitted**	**waves**

X-rays travel at the speed of _____ .

X-rays can cause cancer because they are _____ .

(2)

(b) How do X-rays compare with gamma rays?

Tick **one** box.

X-rays have a longer wavelength and a higher frequency	☐
X-rays have a longer wavelength and a lower frequency	☐
X-rays have a shorter wavelength and a higher frequency	☐
X-rays have a shorter wavelength and a lower frequency	☐

(1)

A scientist measured the radiation dose that a person received at different distances from an X-ray machine.

The table shows the results.

Distance from machine in	**Dose in millisieverts/**			**Mean dose in millisieverts**
	Test 1	**Test 2**	**Test 3**	

Downloaded from www.merit-minds.com

m				
0.5	0.152	0.146	0.155	0.151
1.0	0.039	0.035	0.040	**X**
1.5	0.017	0.018	0.017	0.017
2.0	0.012	0.007	0.007	0.009
2.5	0.007	0.006	0.005	0.006

(c) Calculate value **X** in the table.

_____

_____

_____

Mean dose = _____ millisieverts

(2)

(d) What conclusion can be made from the results in the table?

Tick **one** box.

The dose decreases if you stand further from the machine. ☐

The dose is directly proportional to the distance. ☐

The dose is the same at all distances from the machine. ☐

There is a linear relationship between dose and distance. ☐

(1)

(e) An X-ray gives a radiation dose of 0.180 millisieverts.

Natural sources give a dose of 0.012 millisieverts per day.

Calculate the time it would take for natural sources to give a dose of 0.180 millisieverts.

_____

_____

_____

Time = _____ days

(2)

(f) Suggest why doctors use X-rays even though this increases the risk of cancer to the patient.

_____

_____

(1)

Downloaded from www.merit-minds.com

(g) X-rays can also be used to treat cancer.

A patient receives a dose of 20 millisieverts from an X-ray.

Proton beam therapy delivers 40% of this dose.

Calculate the dose delivered by proton beam therapy.

_____

_____

_____

Dose = _____ millisieverts

(2)

(Total 11 marks)

Downloaded from www.merit-minds.com