Name of the Student:_____

Max. Marks : 17 Marks **Time : 17 Minutes**

Q1.

The table shows the average background radiation dose from various sources that a person living in Britain receives in one year.

Source of background radiation	Average amount each year in dose units
Buildings	50
Food anddrink	300
Medicaltreatments (including X-rays)	300
Radon gas	1250
Rocks	360
Space(cosmic rays)	240
TOTAL	2500

(a) Only **two** of the following statements are true.

Tick (✓) the boxes next to the true statements.

Half the average background radiation dose comes from radon gas. ☐

Everyone receives the same background radiation dose. ☐

Cosmic rays produce less background radiation than food and drink. ☐

(1)

(b) Most sources of background radiation are natural but some are artificial (man-made).

Which source of background radiation given in the table is artificial?

_____

(1)

(c) Each time a dental X-ray is taken, the patient receives about 20 units of radiation.

How many dental X-rays would give the yearly average dose for medical treatments?

_____

_____

Number of X-rays = _____

(2)

(Total 4 marks)

Q2.

(a) The names of three types of nuclear radiation are given in **List A**. Some properties of these three types of radiation are given in **List B**.

Draw a straight line to link each type of radiation in **List A** to its correct property in **List B**. Draw only three lines.

List A Type of nuclear radiation	**List B** Property of radiation
	not deflected by an electric field
alpha	
	stopped by thin metal but not paper
beta	
	the most strongly ionising
gamma	
	will not harm living cells

(3)

(b) Nuclear radiation is given out from the centre of some types of atom.

What name is given to the centre of an atom? _____

(1)

(c) One of the substances in the table is used as a radioactive tracer. A hospital patient breathes in air containing the tracer. The radiation given out is measured by a doctor using a detector outside the patient's body.

Substance	**Radiation given out**	**Solid, liquid or gas**
X	alpha	gas
Y	gamma	gas

Z	gamma	solid

Which **one** of the substances, **X**, **Y** or **Z**, should be used as the tracer? _____

Give **two** reasons for your answer.

1. _____

_____

2. _____

_____

(3)

(d) Radiation can also be used to kill the bacteria on fresh food.

Give **one** reason why farmers, shop owners or consumers may want food to be treated with radiation.

_____

_____

(1)

(Total 8 marks)

Q3.

(a) Complete the **two** spaces in the sentence.

Stars form when enough _____ and gas from _____ are

pulled together by gravitational attraction.

(2)

(b) How are stars able to give out energy for millions of years?

Put a tick (✓) next to the answer.

By atoms joining together ☐

By atoms splitting apart ☐

By burning gases ☐

(1)

(c) There are many billions of stars in our galaxy. Our Sun is one of these stars. What is the name of our galaxy?

_____

(1)

(d)

Why was the Universe created?

We cannot expect scientists to answer this question. What is the reason for this?

Put a tick (✓) next to the reason.

It will take too long to collect the scientific evidence.	☐
The answer depends on beliefs and opinions, not scientific evidence.	☐
There is not enough scientific evidence.	☐

(1)

(Total 5 marks)