

T4 BAB 8 UNSUR DAN BAHAN

- | | |
|----|----|
| 23 | Na |
| 11 | |

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4. Jadual 1 menunjukkan unsur W, X, Y dan Z dengan nombor proton dan nombor nukleon masing-masing.

Table 1 shows several elements W, X, Y and Z with their proton and nucleon numbers respectively.

Unsur <i>Element</i>	Nombor proton <i>Proton number</i>	Nombor nukleon <i>Nucleon number</i>
W	15	32
X	11	24
Y	11	23
Z	6	14

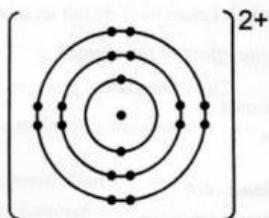
Jadual 1

Table 1

Pasangan unsur yang manakah merupakan isotop?

Which pair of elements are isotope?

- A** W dan X
W and X
- B** W dan Z
W and Z
- C** X dan Y
X and Y
- D** Y dan Z
Y and Z
5. Antara tindak balas berikut, yang manakah akan membentuk bahan ion?
Which of the following reactions will form an ionic substance?
- A** Antara gas dengan gas
Between gases
- B** Antara unsur logam dengan unsur logam
Between metal elements
- C** Antara unsur logam dengan unsur bukan logam
Between a metal elements and non-metal elements
- D** Antara unsur bukan logam dengan unsur bukan logam
Between non-metal elements
6. Rajah 12 menunjukkan susunan elektron bagi ion kalsium, Ca^{2+} .
Diagram 12 shows the electron arrangement for calcium ion, Ca^{2+} .



Rajah 8 / *Diagram 8*

Antara berikut, pernyataan yang manakah betul?

Which of the following statement is true?

- A** Unsur kalsium adalah bukan logam
Calcium element is a non-metal
- B** Atom kalsium mempunyai 18 proton
Calcium atom has 18 protons

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- C** Atom kalsium mempunyai empat petala berisi elektron
Calcium atom has four shells filled with electrons
- D** Unsur kalsium terletak dalam Kumpulan 12 dalam Jadual Berkala Unsur Moden
Calcium element is located in Group 12 in the Modern Periodic Table of Elements

7. Rajah 8 menunjukkan kedudukan unsur-unsur di dalam Jadual Berkala Unsur Modern
Diagram 8 shows the position of elements in the Modern Periodic Table of Elements

A blank periodic table grid is shown. The elements are placed as follows:

- M** is in the first column, second row from the top.
- N** is in the second column, third row from the top.
- P** is in the 18th column, third row from the top.
- Q** is in the 19th column, fourth row from the top.

Rajah 8/ Diagram 8

Antara yang berikut, pasangan manakah yang bukan unsur logam?
Which of the following is a pair of non-metals?

- A. M dan Q
M and Q
B. N dan M
N and M
C. P dan N
P and N
D. Q dan P
Q and P

8. Rajah 11 menunjukkan Jadual Berkala Unsur yang tidak lengkap.
Diagram 11 shows an incomplete Periodic Table of Elements.

[illegible]

Rajah 11

Unsur yang manakah mempunyai bilangan proton 18?
Which element has the number of protons 18?

- | | |
|---|---|
| A | P |
| B | Q |
| C | R |
| D | S |

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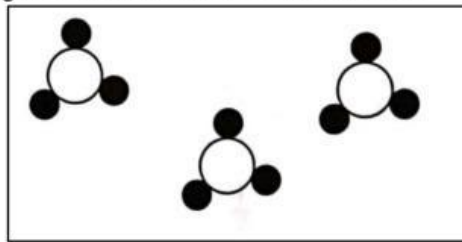
9. Bagaimanakah kobalt-60 dapat digunakan untuk mengawet makanan?

How cobalt-60 can be used to preserve food?

- A Mengurangkan suhu makanan
Reducing the temperature of food
- B Mengubah komposisi kimia makanan
Changing the chemical composition of food
- C Membunuh mikroorganisma dalam makanan
Killing the microorganisms in food
- D Memberikan nutrien tambahan kepada makanan
Provide extra nutrients in food

10. Rajah 5 menunjukkan susunan jirim bagi sesuatu bahan.

Diagram 5 shows the arrangement of matter for a substance.



Rajah 5 / Diagram 5

Apakah jenis bahan tersebut?

What is the type of the substance?

- A Bahan ion
Ionic substance
- B Bahan atom
Atomic substance
- C Bahan molekul
Molecular substance
- D Bahan campuran
Mixture substance

11. Maklumat merujuk tentang atom T.

- Susunan elektron : 2.8.8.1
- Nombor nukleon : 39

Apakah bilangan proton dan bilangan neutron bagi T?

	Bilangan proton	Bilangan neutron
A	18	19
B	19	18
C	18	20
D	19	20

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BAHAGIAN B

1. Rajah 5.1 menunjukkan suatu Jadual Berkala Unsur Moden yang tidak lengkap.
Diagram 5.1 shows an incomplete Modern Periodic Table of Element.

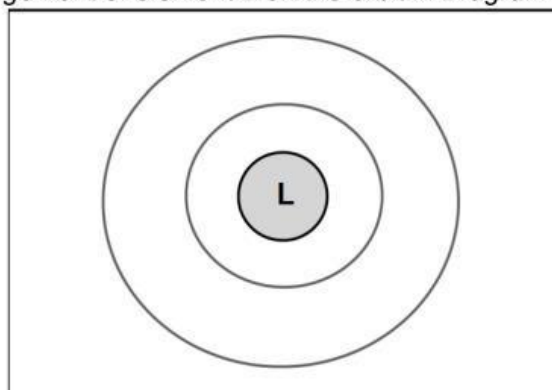
1																	18
	2											13	14	15	16	17	
J														K			L
		3	4	5	6	7	8	9	10	11	12				M		
				N													

Rajah 5.1
Diagram 5.1

- (a) (i) Berdasarkan Rajah 5.1, unsur manakah merupakan halogen?
Based on Diagram 5.1, which element is halogen?

[1 markah / mark]

- (ii) Lukiskan susunan elektron unsur L pada petala dalam rajah 5.2
Draw the electron arrangement of element L on the orbit in Diagram 5.2



Rajah 5.2
Diagram 5.2

[1 markah]
 [1 mark]

- (b) Rajah 5.3 menunjukkan unsur V, W dan X dengan nombor proton dan nombor nukleon masing-masing.
Diagram 5.3 shows elements V, W and X with proton number and nucleon number respectively.

8	7	8
V	W	X
16	14	18

Rajah 5.3
Diagram 5.3

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- (i) Berdasarkan Rajah 5.3, berapakah bilangan neutron untuk unsur W?
Based on Diagram 5.3, what is the number of neutrons for element W?

.....
[1 markah / mark]

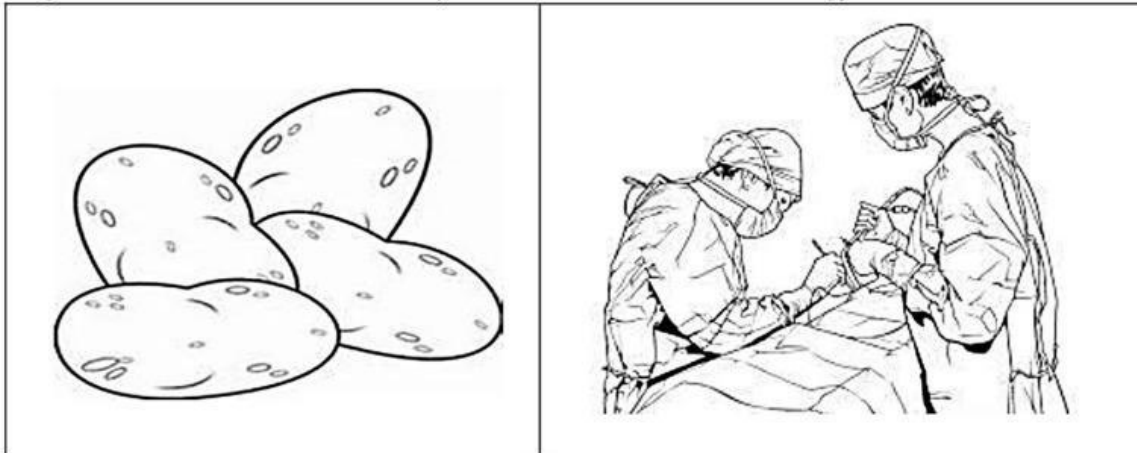
- (ii) Tandakan (✓) pada Rajah 5.3 bagi unsur yang merupakan pasangan isotop.
Mark (✓) on diagram 5.3 for the element that are isotope pairs?

[1 markah / mark]

- (c) Perkembangan teknologi menyebabkan penggunaan isotop semakin meluas dalam pelbagai bidang.

Rajah 5.4 menunjukkan kegunaan isotop dalam bidang teknologi makanan dan perubatan.
The development of technology causes the use of isotopes to become more widespread in various fields.

Diagram 5.4 shows the use of isotopes in the field of food technology and medicine.



Rajah 5.4
Diagram 5.4

Banding dan bezakan kepentingan penggunaan isotop dalam bidang tersebut.
Compare and contrast the importance of using isotopes in the field.

.....
.....
[2 markah] [2 marks]

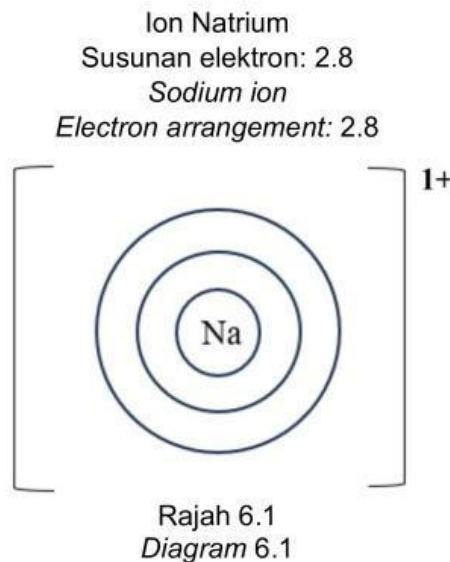
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2. Jadual Berkala Unsur Moden menunjukkan unsur yang disusun mengikut tertib menaik nombor proton dari kiri ke kanan dan dari atas ke bawah.
The Modern Periodic Table of Elements shows the elements are arranged from left to right and top to bottom, in the order of their increasing proton number.

- (a) Nyatakan maksud nombor proton.
State the meaning of proton number.

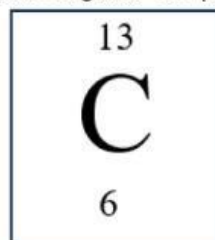
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[1 markah / mark]

- (b) Atom Natrium (Na) boleh membentuk ion natrium (Na^+) untuk mencapai susunan elektron oktet yang stabil.
Lengkapkan susunan elektron ion natrium dalam Rajah 6.1.
Sodium atoms (Na) can form sodium ions (Na^+) to achieve a stable octet electron arrangement.
Complete the electron arrangement of the sodium ion in Diagram 6.1.

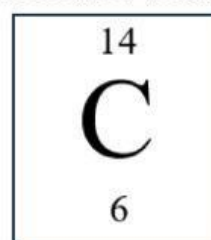


[1 markah]
[1 mark]

- (c) Rajah 6.2 (a) dan Rajah 6.2 (b) menunjukkan dua jenis atom karbon.
Diagram 6.2 (a) and Diagram 6.2 (b) show two types of carbon atom.



Rajah 6.2 (a)
Diagram 6.2 (a)



Rajah 6.2 (b)
Diagram 6.2 (b)

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- (i) Nyatakan **satu** persamaan dan **satu** perbezaan antara dua atom tersebut.

*State **one** similarity and **one** difference between two atoms.*

Persamaan:

Similarity:

.....

.....

Perbezaan:

Difference:

.....

.....

[2 markah] / [2 marks]

- (ii) Berdasarkan Rajah 6.2 (a) dan Rajah 6.2 (b), cadangkan atom yang paling sesuai digunakan untuk kajian ahli arkeologi. Wajarkan jawapan anda.

Based on Diagram 6.2 (a) and Diagram 6.2 (b), suggest the most suitable atom to be used for archaeologists' studies. Justify your answer.

.....

.....

[2 markah] / [2 marks]

3. Isotop dalam bentuk radioisotop banyak digunakan dalam pelbagai bidang
Isotope in the form of radioisotope is mostly used in various field.

- (a) Nyatakan satu contoh isotop yang digunakan dalam bidang arkeologi

State an example of isotope used in the archaeology field.

.....

[1 markah / mark]

- (b) Jadual 6.1 menunjukkan beberapa contoh isotop

Table 6.1 shows a few examples of isotopes

Isotop <i>Isotope</i>	Bilangan proton <i>Number of protons</i>	Bilangan neutron <i>Number of neutrons</i>	Nombor nukleon <i>Nucleon number</i>
Klorin-35 <i>Chlorine-35</i>	17		35
Natrium-23 <i>Sodium-23</i>		12	23

Jadual 6.1

Table 6.1

[2 markah]

[2 marks]

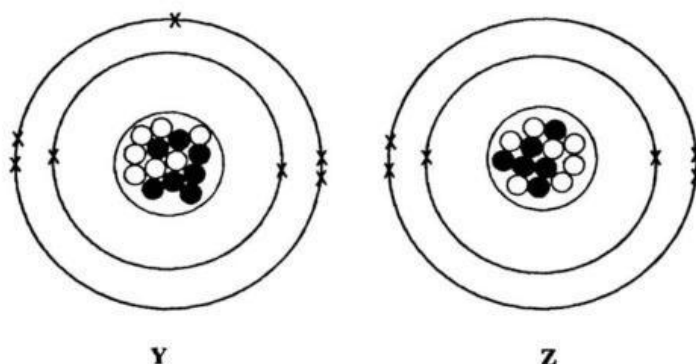
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- c) Rajah 6.2 menunjukkan maklumat bagi unsur X dan Rajah 6.2 menunjukkan struktur bagi atom Y dan Z.

Diagram 6.2 shows the information of element X and Diagram 6.2 shows the atom structure of Y and Z.

X	
Bilangan proton <i>Numbers of proton</i>	6
Bilangan electron <i>Numbers of electron</i>	6
Bilangan neutron <i>Numbers of neutrons</i>	6

Jadual 6.2
Table 6.2



Rajah 6
Diagram 6

Berdasarkan Rajah 6, yang manakah merupakan pasangan isotop bagi unsur X?
Jelaskan jawapan anda.

*Based on Diagram 6, which is the pair of isotope of element X?
Explain your answer*

.....

.....

[2 markah / marks]

- d) Sebuah syarikat menjalankan perniagaan mengeksport halia. Sebelum memasarkan hasilnya, halia tersebut perlu didedahkan kepada sinar gama. Disebabkan masalah teknikal, pemancar sinar gama tidak boleh berfungsi dengan baik.
Nyatakan satu kesannya terhadap halia tersebut
A company does a business in exporting ginger. Before marketing its product, the ginger need to be exposed to gamma rays. Because of technical problems, the gamma rays transmitter cannot function well.
State one effect on the ginger.

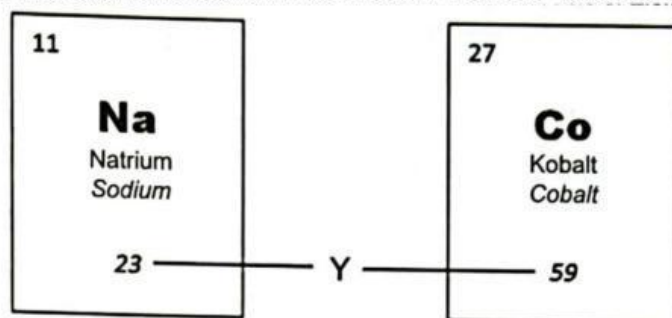
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[1 markah / mark]

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4. Rajah 5.1 menunjukkan dua unsur yang terdapat dalam Jadual Berkala Unsur Moden.
Diagram 5.1 shows two elements found in the Modern Periodic Table of Elements.



Rajah 5.1
Diagram 5.1

- (a) Berdasarkan Rajah 5.1,
Based on Diagram 5.1,
 (i) apakah yang diwakili oleh Y?
what does Y represent?

[1 markah / mark]

- (ii) lengkapkan jadual berikut.
complete the following table.

Unsur <i>Elements</i>	Isotop <i>Isotope</i>	Nombor proton <i>Number of protons</i>	Nombor nukleon <i>Nucleon number</i>
Na	Natrium-23 <i>Sodium-23</i>	11	23
	Natrium-24 <i>Sodium-24</i>		24
Co	Kobalt-59 <i>Cobalt-59</i>	27	59
	Kobalt-60 <i>Cobalt-60</i>	27	

[2 markah / marks]

- (iii) Nyatakan satu kegunaan kobalt-60 dalam bidang perubatan.
State one use of cobalt-60 in medicine.

[1 markah / mark]

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(c) Rajah 5.2 menunjukkan sebahagian daripada Jadual Berkala Unsur Moden yang tidak lengkap.

Diagram 5.2 shows part of the Incomplete Modern Periodic Table of Elements.

	Q														R				

Rajah 5.2

Diagram 5.2

Berikan dua ciri perbezaan di antara unsur Q dan R.

Give two different characteristics between elements Q and R.

.....

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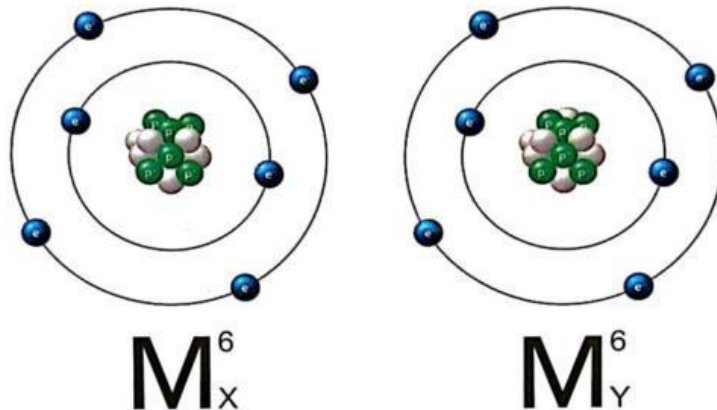
[2 markah / marks]

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BAHAGIAN C

1. Isotop merupakan variasi sesuatu unsur kimia. Kepelbagaian dalam unsur ini digunakan dalam pelbagai bidang yang dapat dimanfaatkan dalam kehidupan harian.
Isotopes are variations of a chemical element. The diversity in this element is used in various fields that can be utilized in daily life.

- (a) Rajah 12.1 menunjukkan sejenis unsur yang mempunyai jumlah sub-atom yang berbeza.
Diagram 12.1 shows a type of element that has different numbers of sub-atoms.



Rajah 12.1
Diagram 12.1

Nyatakan definisi isotop dan berikan satu bahan isotop yang digunakan dalam bidang perubatan.

State the definition of isotope and give an isotope substance used in medical field.

[2 markah / 2 marks]

- (b) Berdasarkan Rajah 12.1, nyatakan nombor nukleon X dan Y.

Based on Diagram 12.1, state the nucleon number of X and Y.

[2 markah / 2 marks]

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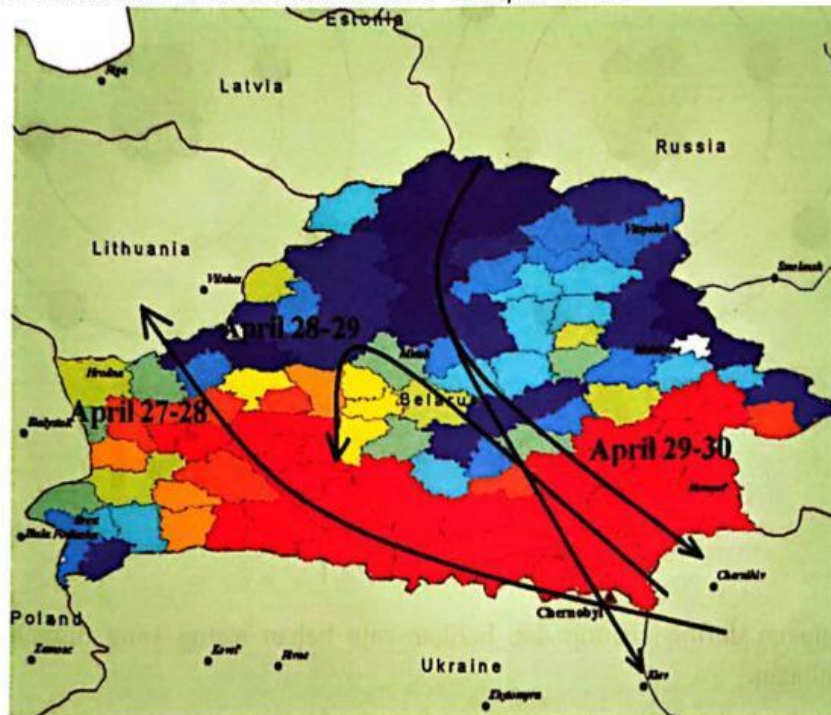
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(c) Bencana Chernobyl ialah satu kemalangan nuklear yang berlaku pada 26 April 1986 di Loji Kuasa Nuklear Chernobyl, Ukraine. Satu kejadian letupan dan kebakaran melepaskan sejumlah besar bahan pencemar radioaktif yang tersebar ke sebahagian besar Eropah Timur.

The Chernobyl disaster was a nuclear accident that occurred on 26 April 1986 at the Chernobyl Nuclear Power Plant, Ukraine. An explosion and fire incident released a large amount of radioactive contaminants that spread over almost all of Eastern Europe.

Rajah 12.3 menunjukkan pergerakan angin pada 27-30 April 1986.

Diagram 12.3 shows the wind movement on 27-30 April 1986.



Sumber / Source: Arcnews Online 2003

Rajah 12.3

Diagram 12.3

Kebarangkalian tinggi penghidap kanser tiroid dalam kalangan 1/1 000 orang kanak-kanak ditunjukkan oleh kawasan berwarna merah manakala kawasan berwarna biru mempunyai kebarangkalian yang paling sedikit.

Berdasarkan Rajah 12.3, jelaskan hubung kait kesan bencana Chernobyl dengan kebarangkalian penghidap kanser tiroid di kawasan bertanda merah dan biru.

A high probability of suffering from thyroid cancer among 1/1 000 children is indicated by the red area while the blue area has the least probability.

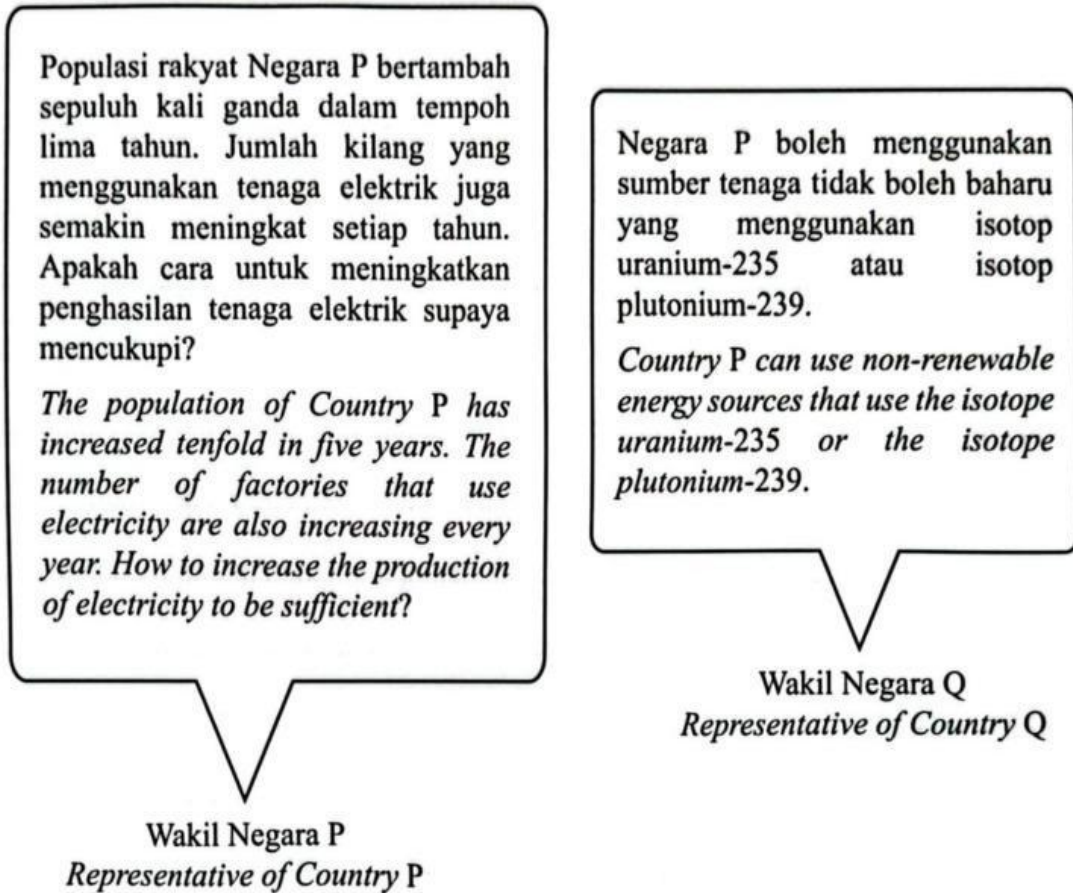
Based on Diagram 12.3, explain the relationship between the effects of the Chernobyl disaster with the probability of suffering from thyroid cancer in the areas marked in red and blue.

[4 markah / 4 marks]

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(d) Rajah 12.2 menunjukkan dialog wakil antara dua buah negara dalam sebuah persidangan tenaga antarabangsa.

Diagram 12.2 shows a dialogue between representative of two countries in an international energy conference.



Rajah 12.2
Diagram 12.2

Wajarkan cadangan Wakil Negara Q.

Justify the proposal of Representative of Country Q.

[4 markah / 4 marks]

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