

T4 B5 GENETIK

1. Rajah 5 menunjukkan suatu proses semasa meiosis.

Diagram 5 shows a process during meiosis.



Rajah 5
Diagram 5

Apakah proses itu?

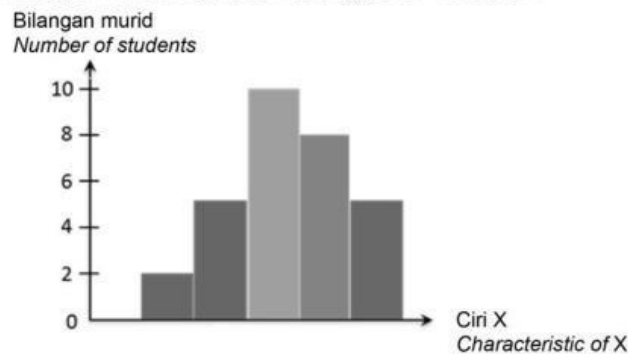
What is the process?

- A Mitosis
Mitosis
- B Pindah silang
Crossing over
- C Persenyawaan
Fertilisation
- D Replikasi DNA
DNA replication

SOALAN 4 [KEDAH 2023 S9]

Rajah 6 menunjukkan histogram yang mewakili sejenis variasi.

Diagram 6 shows a histogram that represents a type of variation.



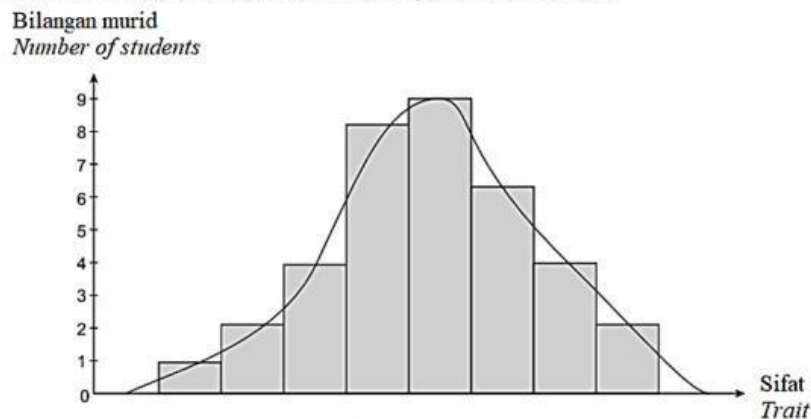
Rajah 6
Diagram 6

Antara yang berikut, yang manakah benar mengenai variasi tersebut? *Which of the following is true about the variation?*

- A Merupakan variasi tak selanjar
Is a continuous variation
- B Contoh variasi ialah ketinggian
An example of variation is height
- C Tidak dipengaruhi oleh persekitaran
Not affected by the environment
- D Menunjukkan perbezaan yang ketara
Shows no significant difference

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3. Rajah 5 menunjukkan histogram yang mewakili sejenis variasi.
Diagram 5 shows a histogram representing a type of variation.

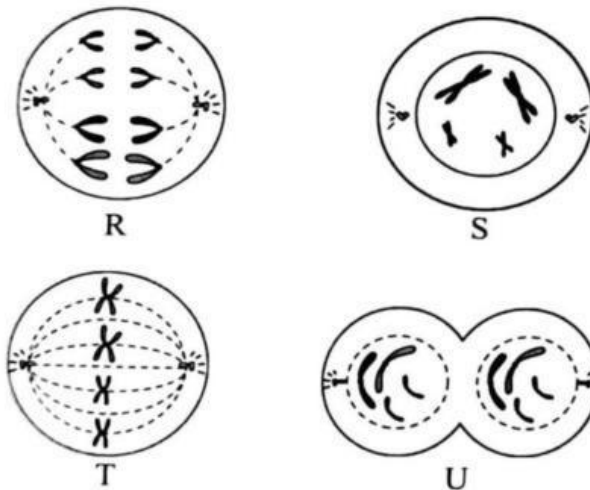


Rajah 5 / Diagram 5

Apakah ciri yang diwakili oleh histogram di atas?

What characteristic is represented by the histogram above?

- A Ketinggian
Height
 - B Kumpulan darah
Blood group
 - C Jenis cuping telinga
Types of earlobes
 - D Kebolehan menggulung lidah
Ability to roll the tongue
4. Rajah 5 menunjukkan beberapa peringkat yang berlaku dalam pembahagian sel secara mitosis.
Diagram 5 shows several stages that occur in mitosis.



Rajah / Diagram 5

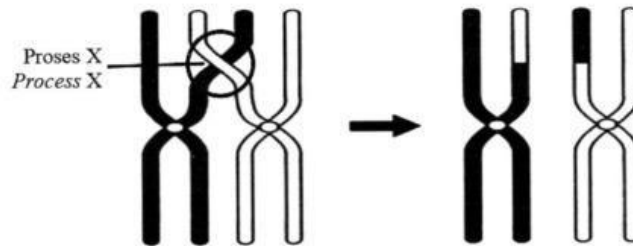
Antara yang berikut, yang manakah menunjukkan susunan peringkat-peringkat mitosis mengikut urutan yang betul?

Which of the following shows the **correct** order of the stages of mitosis?

- A T, U, S, R
- B R, S, T, U
- C S, T, R, U
- D U, T, S, R

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5. Rajah 2 menunjukkan satu proses semasa pembahagian sel.
Diagram 2 shows a process during cell division.



Rajah 2
Diagram 2

Apakah proses X?

What is process X?

- | | | | |
|----------|--|----------|---------------------------------------|
| A | Replikasi kromosom
<i>Chromosomal replication</i> | B | Sitokinesis
<i>Cytokinesis</i> |
| C | Kromosom homolog
<i>Homologous chromosomes</i> | D | Pindah silang
<i>Crossing over</i> |

6. Jika seorang budak lelaki mempunyai ayah yang normal (X^HY) dan ibu yang merupakan pembawa hemofilia (X^HX^h), berapakah peratus budak lelaki itu akan mewarisi penyakit tersebut?

If a boy's father is normal (X^HY) and his mother is a carrier for haemophilia (X^HX^h), what is the percentage that the boy will inherit the disease?

- A 25%
B 50%
C 75%
D 100%

BAHAGIAN A

1. Sekumpulan pelajar Tingkatan 5 menjalankan eksperimen untuk mengenal past! kumpulan darah mereka di makmal. Jadual 1 menunjukkan kumpulan darah bagi 30 orang pelajar tersebut.

A group of Form 5 students conduct an experiment to identify their blood group in the laboratory. Table 1 shows the blood group of the 30 students.

O	B	AB	AB	B	O
A	AB	A	AB	O	AB
AB	O	B	B	AB	AB
B	B	A	A	A	B
O	B	AB	O	AB	A

- a) Berdasarkan Jadual 1 di atas, lengkapkan jadual di bawah

Based on Table 1 above, complete the table below.

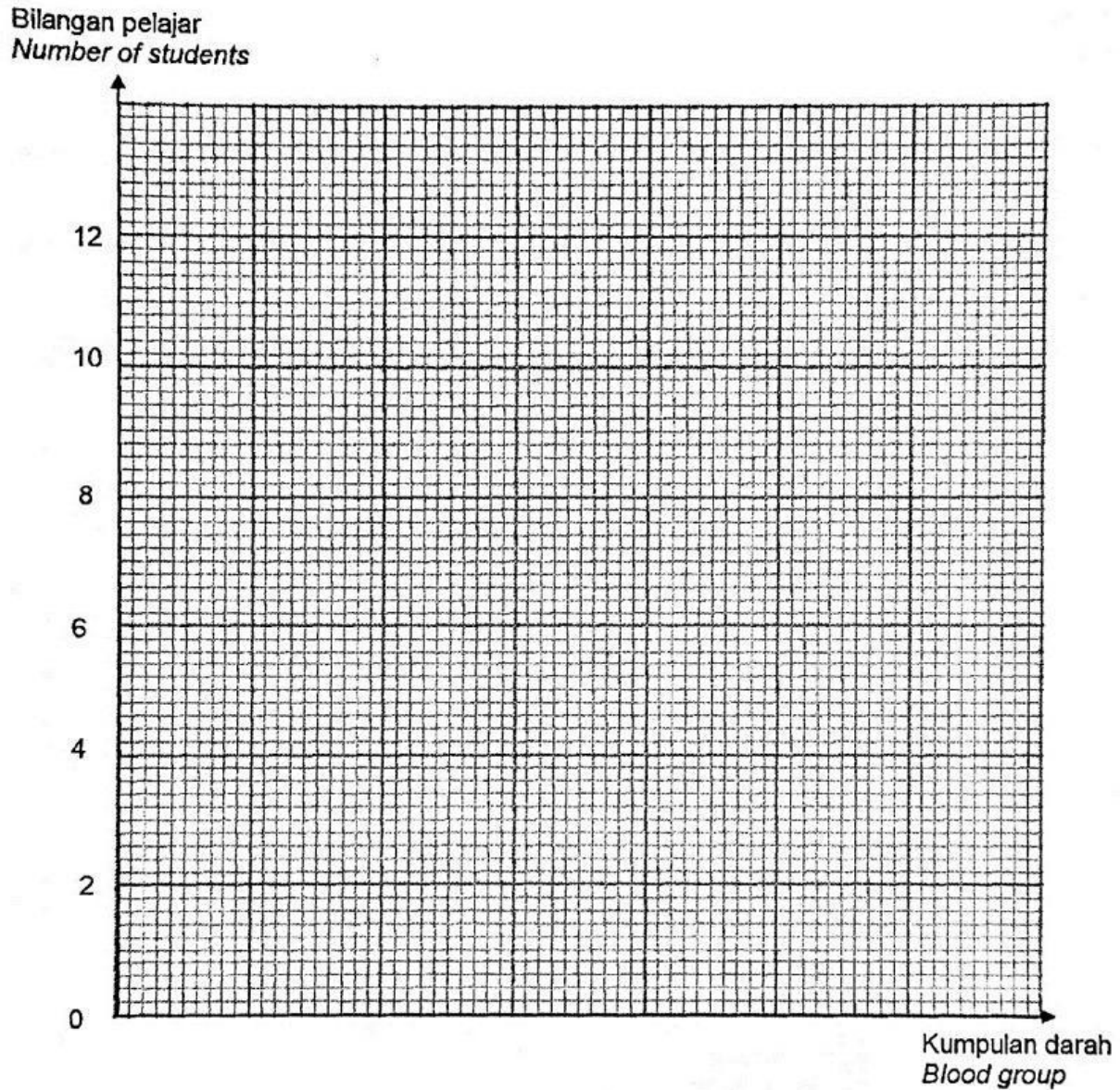
Kumpulan darah <i>Blood group</i>	A	B	AB	O
Bilangan murid <i>Number of students</i>				

[1 markah / mark]

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b) Berdasarkan Jadual di 1 (a), plotkan graf bar yang menunjukkan bilangan murid melawan kumpulan darah.

Based on the Table in 1 (a), plot the bar chart that shows the number of students against blood group. [2 markah / marks]



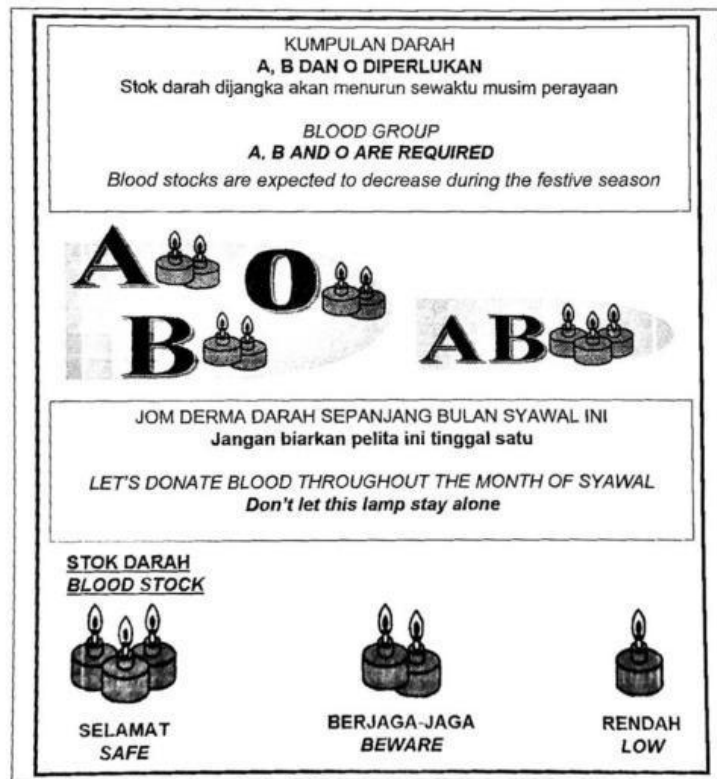
c) Apakah jenis variasi di atas?
What kind of variation is above?

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[1 markah / mark]

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- d) Rajah 1 menunjukkan stok darah di Pusat Darah Negara. Stok darah kumpulan AB adalah selamat.

Diagram 1 shows the blood stock at the National Blood Center. AB group blood stocks are safe.



Pada pendapat anda, mengapakah penggunaan darah AB paling selamat ?

In your opinion, why is the use of AB blood the safest?

[1 markah / mark]

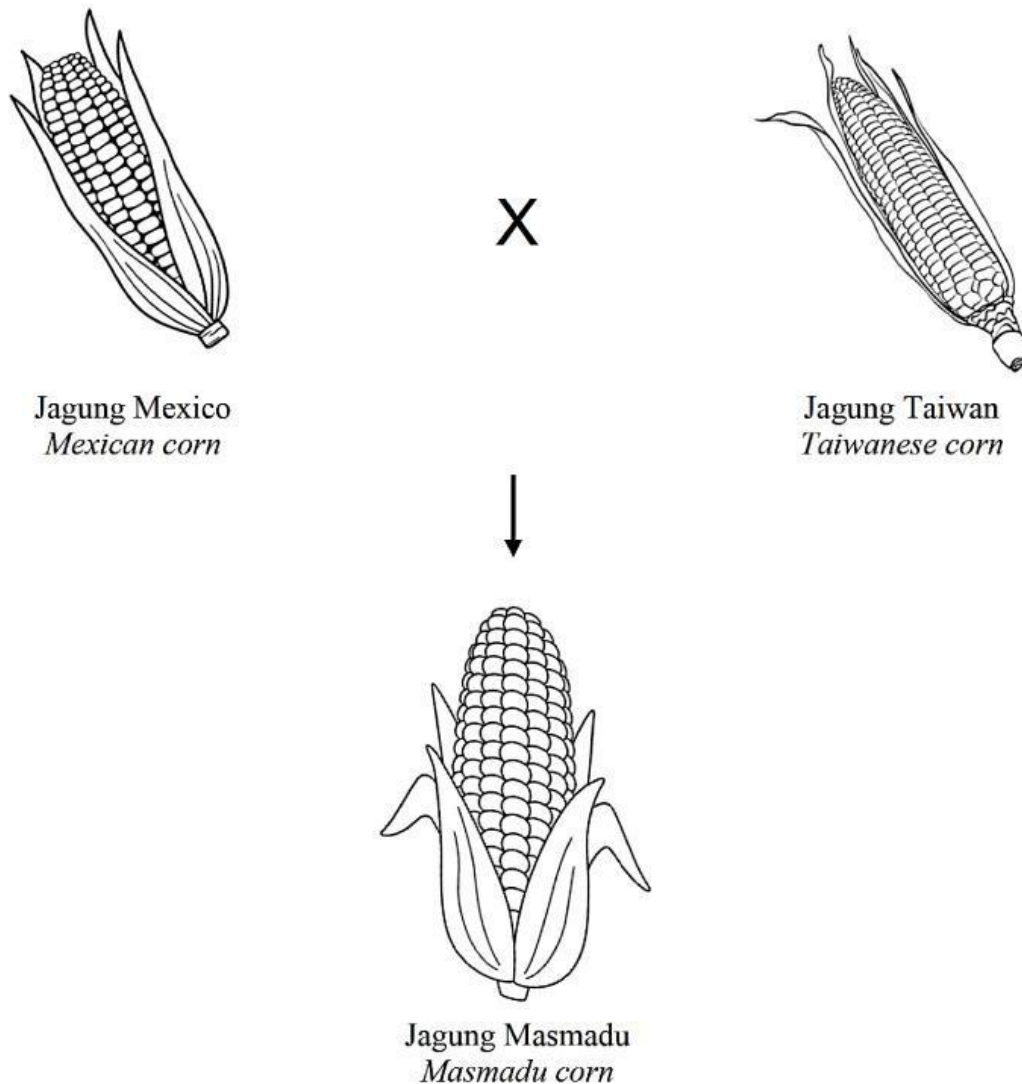
BAHAGIAN B

1. Organisma Termodifikasi Genetik (GMO) adalah satu kaedah teknologi kejuruteraan genetik yang digunakan untuk tujuan tertentu.

Rajah 6.1 menunjukkan GMO yang dijalankan ke atas buah jagung.

Genetically Modified Organism (GMO) is a method of genetic engineering technology used for specific purposes.

Diagram 6.1 shows GMOs that have been carried out on corn.



Jagung Masmadu
Masmadu corn

Rajah 6.1
Diagram 6.1

- (a) Berdasarkan Rajah 6.1,
Based on Diagram 6.1,
(i) bagaimanakah kaedah GMO ini dijalankan?
how is this GMO method carried out?
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[1 markah][1 mark]

- (ii) nyatakan **satu** tujuan kaedah ini.
state one purpose of this method.

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[1 markah][1 mark]

- (b) Encik Ahmad ialah pengusaha ladang jagung. Beliau sedar terdapat kebaikan dan keburukan kaedah GMO ke atas tanamannya.

Wajarkan keburukan kaedah GMO pada tanaman.

Mr. Ahmad is a corn farm operator. He is aware that there are advantages and disadvantages of GMO method to the crops.

Justify the disadvantages of GMO methods on crops.

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[2 markah][2 marks]

- (c) Rajah 6.2 menunjukkan maklumat bagi dua jenis kejuruteraan genetik.

Diagram 6.2 shows information for two types of genetic engineering.

DNA Rekombinan <i>Recombinant DNA</i>	Terapi Gen <i>Gene Therapy</i>
- Menggabungkan dua spesis berbeza <i>Combines two different species</i> - Menghasilkan produk baru seperti insulin <i>Produces new product such as insulin</i> - Merawat pelbagai jenis penyakit kronik <i>Treats various types of chronic diseases</i>	- Menyisipkan gen normal ke dalam sel atau tisu <i>Inserting normal gene into cells or tissues</i> - Memperbaiki gen-gen mutan (abnormal / rosak) <i>Fixing mutant genes (abnormal / defective)</i> - Merawat penyakit berkaitan genetik <i>Treating genetics-related diseases</i>

Rajah 6.2
Diagram 6.2

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Banding bezakan kedua-dua jenis kejuruteraan genetik tersebut.
Compare and contrast the two types of genetic engineering.

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[2 markah][2 marks]