

Kertas 1

1. Antara yang berikut, yang manakah **benar** tentang sel soma?

*Which of the following are **true** about somatic cells?*

- I Terhasil melalui mitosis
Produced through mitosis
- II Mengandungi bilangan kromosom diploid
Contains a diploid number of chromosomes
- III Sel soma ialah sel pembiakan
Somatic cells are reproductive cells
- IV Dalam sel soma manusia, terdapat tiga set kromosom
In human somatic cells, there are three sets of chromosome

- A I dan II
I and II
- B I dan III
I and III
- C II dan IV
II and IV
- D III dan IV
III and IV

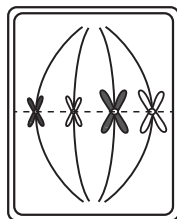
2. Antara yang berikut, yang manakah urutan yang **betul** bagi fasa-fasa di dalam kitar sel?

Which of the following is the correct sequence of phases in a cell cycle?

- A $G_1 \rightarrow G_2 \rightarrow S \rightarrow M$
- B $G_1 \rightarrow S \rightarrow G_2 \rightarrow M$
- C $S \rightarrow G_1 \rightarrow G_2 \rightarrow M$
- D $M \rightarrow S \rightarrow G_1 \rightarrow G_2$

3. Rajah 1 menunjukkan satu sel tumbuhan yang sedang mengalami pembahagian sel mitosis.

Diagram 1 shows a plant cell undergoing mitotic cell division.



Rajah 1 / Diagram 1

Antara yang berikut, yang manakah merupakan fasa tersebut?

Which of the following is the phase?

- A Profasa
Prophase
- B Metafasa
Metaphase
- C Anafasa
Anaphase
- D Telofasa
Telophase

4. Terdapat 36 kromosom di dalam nukleus satu organisma. Berapakah bilangan kromosom yang terbentuk di dalam sel anak melalui mitosis?

There are 36 chromosomes in the nucleus of an organism. How many chromosomes are formed in the daughter cell through mitosis?

- A 18
- B 36
- C 72
- D 144

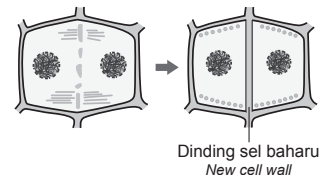
5. Antara yang berikut, yang manakah proses sitokinesis yang berlaku dalam sel tumbuhan?

Which of the following is the cytokinesis process that occurs in plant cells?

- A Pergerakan kromosom daripada keadaan metafasa.
The movement of chromosomes from the metaphase condition.
- B Membran plasma mencerut antara dua nukleus untuk menghasilkan dua sel anak.
Plasma membrane constricts between two nuclei to produce two daughter cells.
- C Kromatid-kromatid berpisah dan bergerak ke arah kutub sel yang bertentangan.
The chromatids separate and move towards the opposite poles of the cell.
- D Pembentukan plat sel dalam sitoplasma.
The formation of cell plates in the cytoplasm.

6. Rajah 2 menunjukkan peristiwa-peristiwa bagi fasa P dalam kitar sel.

Diagram 2 shows events of phase P in a cell cycle.



Rajah 2 / Diagram 2

Fasa P ialah

Phase P is

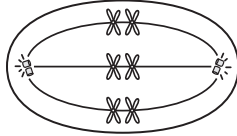
- A G_1 / G_1
- B G_2 / G_2
- C Mitosis / *Mitosis*
- D Sitokinesis / *Cytokinesis*

7. Apakah fasa berlakunya pindah silang antara kromatid bukan beradik pada kromosom homolog?

In which phase does crossing over takes place between non-sister chromatids from a pair of homologous chromosomes?

- A** Profasa I
Prophase I
- B** Metafasa I
Metaphase I
- C** Profasa II
Prophase II

8. Rajah 3 menunjukkan susunan kromosom homolog dalam satu peringkat meiosis.
Diagram 3 shows the arrangement of homologous chromosomes in a stage of meiosis.

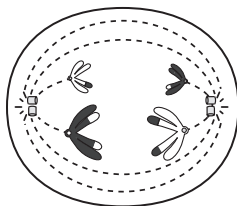


Rajah 3 / Diagram 3

Antara yang berikut, yang manakah bilangan kromosom dalam sel anak selepas meiosis lengkap?
Which of the following is the number of chromosomes in a daughter cell after completing meiosis?

- A** 3
- B** 6
- C** 12
- D** 24

9. Rajah 4 menunjukkan fasa X dalam satu pembahagian sel.
Diagram 4 shows phase X in a cell division.

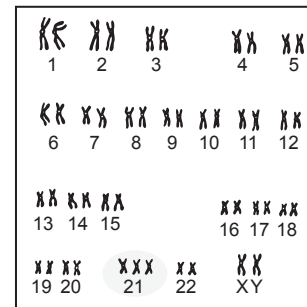


Rajah 4 / Diagram 4

Fasa X ialah
The phase X is

- A** Anafasa I
Anaphase I
- B** Anafasa II
Anaphase II
- C** Metafasa I
Metaphase I
- D** Metafasa II
Metaphase II

10. Rajah 5 menunjukkan kariotip seorang individu.
Diagram 5 shows the karyotype of an individual.

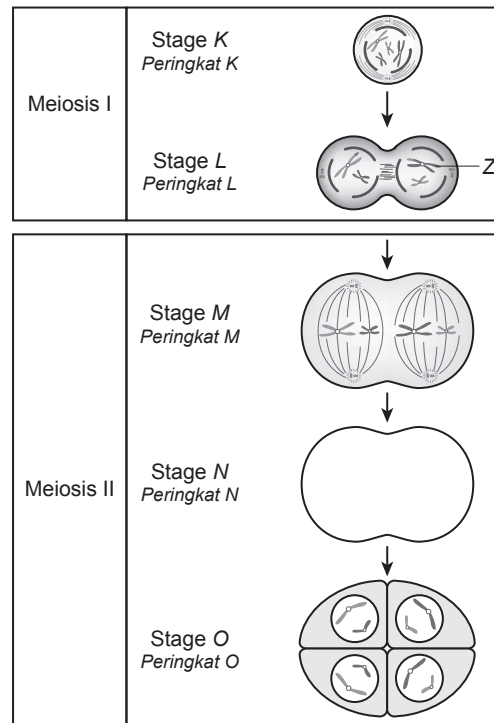


Rajah 5 / Diagram 5

Antara yang berikut, yang manakah penyakit genetik yang ditunjukkan oleh individu itu?
Which of the following is the genetic disorder shown by the individual?

- A** Sindrom Down
Down syndrome
- B** Sindrom Turner
Turner syndrome
- C** Sindrom Klinefelter
Klinefelter syndrome
- D** Sindrom Cri du chat
Cri du chat syndrome

1. Rajah 1.1 menunjukkan beberapa peringkat meiosis dalam sel haiwan.
Diagram 1.1 shows some of the stages of meiosis in an animal cell.



Rajah 1.1 / Diagram 1.1

- (a) Apakah struktur berlabel Z?
What is the structure labelled Z?

[1 markah / 1 mark]

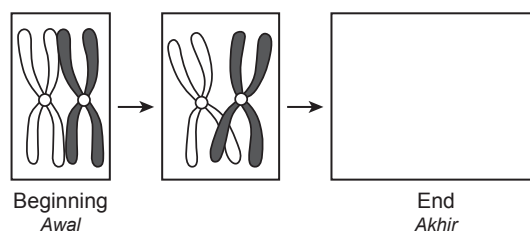
- (b) (i) Lengkapkan rajah bagi peringkat N dalam Rajah 1.1.
Complete the diagram for stage N in Diagram 1.1.

[1 markah / 1 mark]

- (ii) Nyatakan **satu** peristiwa yang berlaku dalam peringkat N.
State **one** of the events which occurs in stage N.

[1 markah / 1 mark]

- (c) Rajah 1.2 menunjukkan proses X yang berlaku semasa peringkat K.
Diagram 1.2 shows process X which takes place during stage K.



Rajah 1.2 / Diagram 1.2

- (i) Lukiskan keadaan kromosom pada akhir proses X di dalam kotak yang diberi dalam Rajah 1.2.
Draw the condition of the chromosomes at the end of process X in the box given in Diagram 1.2.

[1 markah / 1 mark]

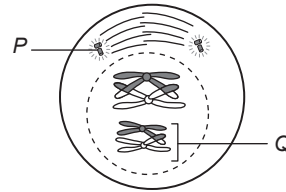
- (ii) Apakah proses X?
What is process X?

[1 markah / 1 mark]

- (iii) Berikan **satu** kepentingan proses X kepada organisma.
Give **one** importance of process X to an organism.

[1 markah / 1 mark]

2. Rajah 2 menunjukkan peringkat X dalam suatu sel haiwan yang sedang menjalani meiosis.
Diagram 2 shows stage X in an animal cell undergoing meiosis.



Rajah 2 / Diagram 2

- (a) (i) Namakan peringkat X.
Name stage X.

[1 markah / 1 mark]

- (ii) Berdasarkan Rajah 2, terangkan perlakuan kromosom semasa peringkat X.
Based on Diagram 2, explain the behaviour of chromosome during stage X.

[2 markah / 2 marks]

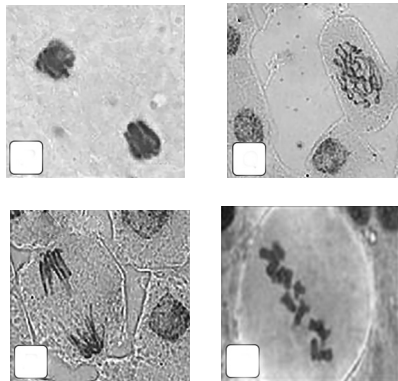
- (b) (i) Apakah struktur P? / What is structure P?

[1 markah / 1 mark]

- (ii) Ramalkan apa yang akan berlaku jika struktur P gagal berfungsi semasa pembentukan gamet.
Terangkan.
Predict what will happen if structure P fails to function during the formation of gametes. Explain.

[3 markah / 3 marks]

3. (a) Rajah 3 menunjukkan peringkat-peringkat mitosis P, Q, R dan S pada hujung akar bawang.
Diagram 3 shows the stages of mitosis, P, Q, R and S at the tip of the onion root.



Rajah 3 / Diagram 3

- (i) Susunkan peringkat-peringkat mitosis dalam Rajah 3 mengikut urutan yang betul.
Arrange the stages of mitosis in Diagram 3 in the correct sequence.

[1 markah / 1 mark]

- (ii) Berdasarkan jawapan anda di 3(a)(i), namakan setiap peringkat dan terangkan perlakuan kromosom pada setiap peringkat mitosis.

Based on your answers in 3(a)(i), name each stage and describe the behaviour of the chromosomes in each stage of mitosis.

[9 markah / 9 marks]

- (b) Banding dan bezakan antara mitosis dan meiosis.
Compare and contrast between mitosis and meiosis.

[10 markah / 10 marks]