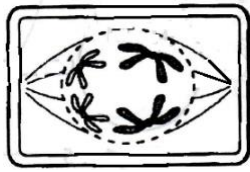
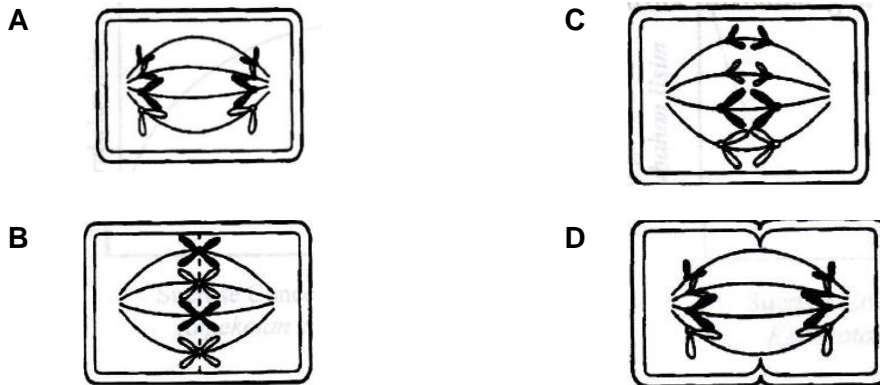


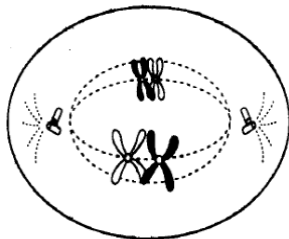
- 1 Diagram 1 shows a stage of mitosis in the plant.  
 S *Rajah 1 menunjukkan satu peringkat mitosis pada tumbuhan*  
 K

Diagram 1 / *Rajah 1*

Which of the following is the next stage?  
*Antara berikut, manakah merupakan peringkat seterusnya?*



- 2 Diagram 2 shows a phase during meiosis.  
 S *Rajah 2 menunjukkan satu fasa semasa meiosis.*  
 F

Diagram 2 / *Rajah 2*

What is the significance of the phase shown?  
*Apakah kepentingan fasa tersebut?*

- A Produce daughter cell with equal number of chromosome as the parent cell.  
*Menghasilkan sel anak yang mempunyai bilangan kromosom yang sama dengan sel induk*
- B Cause crossing over occurs between homologous chromosome.  
*Menyebabkan pindah silang berlaku antara kromosom homolog.*
- C Halved the number of chromosome in each daughter cell  
*Bilangan kromosom dalam sel anak menjadi separuh*
- D Produce variation in gamete  
*Menghasilkan variasi pada gamet*

- 3 Diagram 3 shows a process during cell division  
 S *Rajah 3 menunjukkan satu proses semasa pembahagian sel.*  
 A

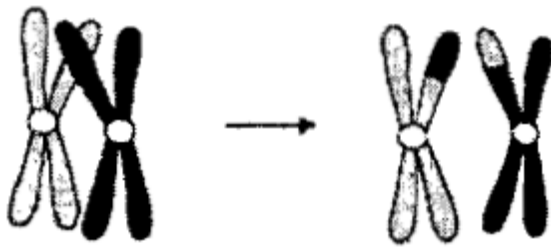


Diagram 3 / Rajah 3

Which of the following organs involves in the process?  
*Antara organ berikut, yang manakah terlibat dalam proses tersebut?*

- A Skin / Kulit  
 B Root / Akar  
 C Anther / Anter  
 D Heart / Jantung
- 4 Diagram 4 shows a cell cycle in an animal cell.  
 S *Rajah 4 menunjukkan satu kitar sel dalam satu sel haiwan.*  
 F

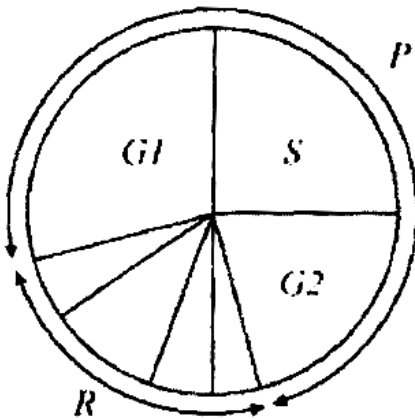


Diagram 4 / Rajah4

What is phase P and R?  
*Apakah fasa P dan R?*

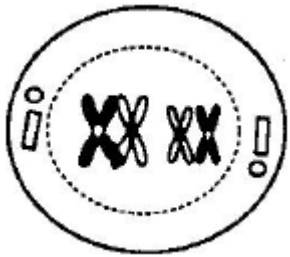
- | P                               | R                             |
|---------------------------------|-------------------------------|
| A Meiosis / <i>Meiosis</i>      | Interphase / <i>Interfasa</i> |
| B Interphase / <i>Interfasa</i> | Mitosis / <i>Mitosis</i>      |
| C Growth / <i>Pertumbuhan</i>   | Interphase / <i>Interfasa</i> |
| D Meiosis / <i>Meiosis</i>      | Growth / <i>Pertumbuhan</i>   |

- 5 Diagram 5 shows a stage in mitosis.  
 R *Rajah 5 menunjukkan satu peringkat dalam mitosis.*  
 P

Diagram 5 / *Rajah 5*

What phase is shown in Diagram 5?  
*Apakah fasa yang ditunjukkan dalam rajah 5?*

- |   |                           |   |                             |
|---|---------------------------|---|-----------------------------|
| A | Prophase / <i>Profasa</i> | C | Metaphase / <i>Metafasa</i> |
| B | Anaphase / <i>Anafasa</i> | D | Telophase / <i>Telofasa</i> |
- 6 Diagram 6 shows one of the stages of a cell division in human.  
 S *Rajah 6 menunjukkan salah satu peringkat pembahagian sel dalam manusia.*  
 P

Diagram 6 / *Rajah 6*

What is the significance of the cell division show in human?  
*Apakah kepentingan pembahagian sel yang ditunjukkan itu dalam manusia?*

- |   |                                      |   |   |
|---|--------------------------------------|---|---|
| A | Cloning<br><i>Pengklonian</i>        | C | Produce diploid cell<br><i>Menghasilkan sel diploid</i> |
| B | Tissue culture<br><i>Kultur tisu</i> | D | Produce haploid cell<br><i>Menghasilkan sel haploid</i> |
- 7 Diagram 7 shows the chromosomes in the liver cell of organisms X.  
 S *Rajah 7 menunjukkan kromosom dalam sel hati organisma X.*



F

A	It result in genetic variation <i>la menghasilkan variasi genetic</i>
B	Mitosis is important for replacing dead cell <i>Mitosis penting untuk menggantikan sel yang mati</i>
C	Damaged cells can be replaced by production of identical new cells. <i>Sel yang tercedera boleh diganti dengan penghasilan sel baru yang serupa</i>
D	New cells produced are used for growth of multicellular organisms <i>Sel baharu yang terbentuk digunakan untuk pertumbuhan dalam organisma multisel</i>

10 The diploid chromosomal number of a cat is 38. If one of the homologous chromosome pairs does not separate during meiosis I, how many chromosomes can be found in the gametes?

T

F

*Nombor kromosom diploid bagi seekor kucing ialah 38. Juka satu daripada pasangan homolog tidak terpisah semasa meiosis I, berapakah bilangan kromosom yang mungkin didapati pada gamet?*

I 18  
II 19

III 20  
IV 38

A II only / *II sahaja*

C I and III only / *I dan III sahaja*

B I and II only / *I dan II sahaja*

D IV only / *IV sahaja*

11 Diagram 9 shows a schematic diagram of a reproduction of a cow.

S

P

*Rajah 9 menunjukkan rajah skema bagi pembiakan seekor lembu.*

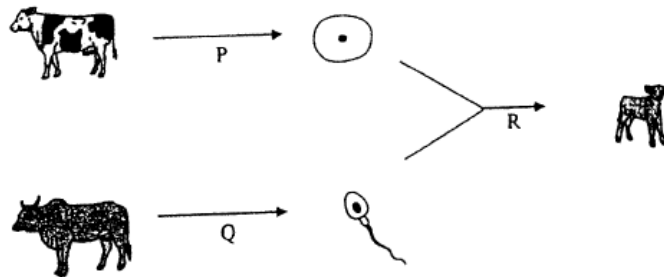


Diagram 9 / Rajah 9

What represented by P, Q and R?

*Apakah yang diwakili oleh P, Q dan R?*

	P	Q	R
A	Mitosis	Meiosis	Mitosis
B	Mitosis	Mitosis	Meiosis
C	Meiosis	Mitosis	Meiosis
D	Meiosis	Meiosis	Mitosis

12 Which phase of mitosis shows early formation of cell plate in a plant cell?

S

*Fasa mitosis manakah yang menunjukkan pembentukan awal plat sel dalam sel*

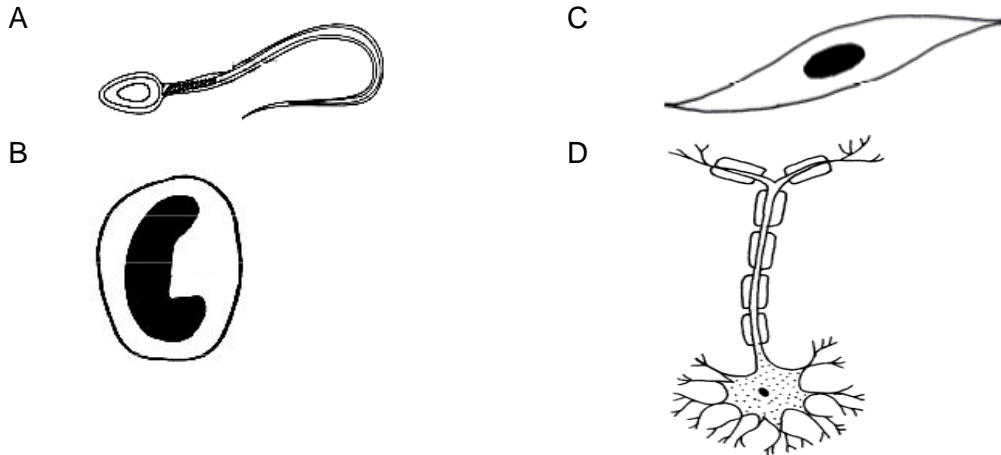
F tumbuhan?

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

13 Which of the following cells is a product of meiosis?

S Antara sel berikut yang manakah hasil meiosis?

P



14 Diagram 10 shows several stages in meiosis.

T Rajah 10 menunjukkan peringkat-peringkat dalam meiosis.

F

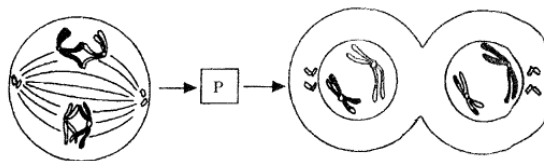


Diagram 10 / Rajah 10

What is the chromosome behaviour in stage P?

Apakah perlakuan kromosom dalam peringkat P?

A	Chromosome condense and thicken <i>Kromosom memendek dan menebal</i>
B	Chromosome arrange themselves around equatorial plate <i>Kromosom tersusun di satah khatulistiwa</i>
C	Homologous chromosomes pair together and crossing-over occurs <i>Kromosom homolog berpasangan dan pindah silang berlaku</i>
D	Homologous chromosomes separate and move to the opposite poles <i>Kromosom homolog berpisah dan bergerak ke kutub-kutub yang bertentangan</i>

- 15 Diagram 11 shows part of the contents of a cell nucleus.  
 S *Rajah 11 menunjukkan sebahagian kandungan dalam nucleus sel.*

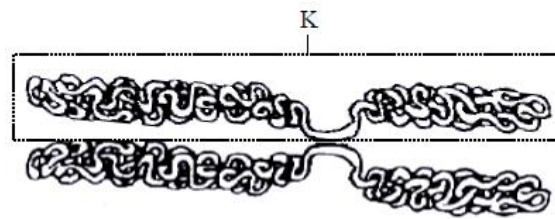


Diagram 11 / Rajah 11

What is K?  
 Apakah K?

- |   |                               |   |  |
|---|-------------------------------|---|--|
| A | Chromosome<br><i>Kromosom</i> | C | Chromatid<br><i>Kromatid</i>             |
| B | Gene<br><i>Gen</i>            | D | Double helix DNA<br><i>DNA ganda dua</i> |
- 16 Diagram 12 shows the different stages of mitosis  
 S *Rajah 12 menunjukkan peringkat-peringkat yang berbeza dalam mitosis*  
 P

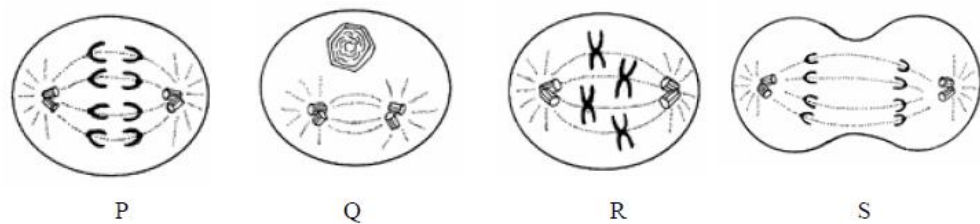


Diagram 12 / Rajah 12

Arrange the diagrams in the correct sequence.  
 Susun rajah tersebut dalam urutan yang sesuai.

- |   |               |   |               |
|---|---------------|---|---------------|
| A | P → Q → R → S | C | S → R → Q → P |
| B | Q → R → P → S | D | S → R → P → Q |
- 17 Diagram 13 shows the homologous chromosomes in organism P and Q before meiosis.  
 S *Rajah 13 menunjukkan kromosom homolog dalam organisma P dan Q sebelum meiosis.*  
 A

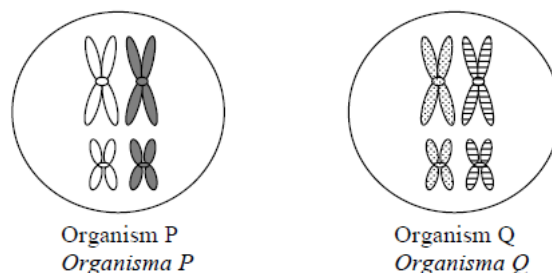
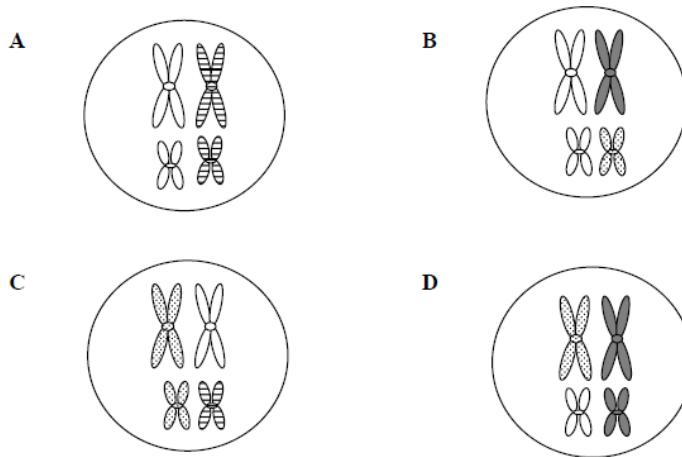


Diagram 13 / Rajah 13

Which of the following shows the product of fertilisation between organism P and Q?

Antara berikut yang manakah merupakan hasil persenyawaan antara organisma P dan organisma Q?



- 18 Diagram 14 shows a cell cycle.  
 S Rajah 14 menunjukkan satu kitar sel.  
 F

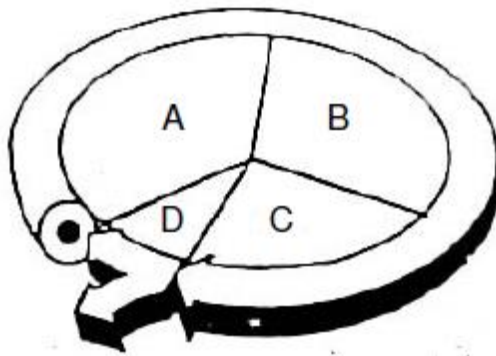


Diagram 14 / Rajah 14

Which of the phases labelled **A**, **B**, **C** and **D** does the replication of DNA occur?  
 Yang manakah antara fasa-fasa berlabel **A**, **B**, **C** dan **D** berlakunya replikasi DNA?

- 19 The following information is about a stage in mitosis.  
 S Maklumat berikut adalah mengenai satu peringkat mitosis.  
 T

Sister chromatids are pulled by spindle fibres to form daughter chromosomes.  
 Kromatid beradik ditarik oleh gentian gelendung membentuk anak kromosom.

Which of the following is the phase of mitosis?  
 Yang manakah antara berikut fasa mitosis itu?

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

- 20 Diagram 15 shows a stage of meiosis in a cell of an animal.  
 T Rajah 15 menunjukkan satu peringkat meiosis dalam satu sel sejenis haiwan.  
 F



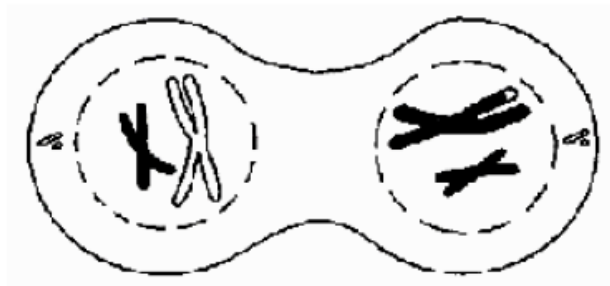


Diagram 15 / Rajah 15

What is the diploid number of chromosomes in each somatic cell of the animal?

Apakah nombor diploid bagi kromosom di dalam setiap sel somatik haiwan itu?

- A 2
- B 4
- C 8
- D 16

- 21 Diagram 16 shows the cell cycle.  
 S Rajah 16 menunjukkan kitar sel.  
 P

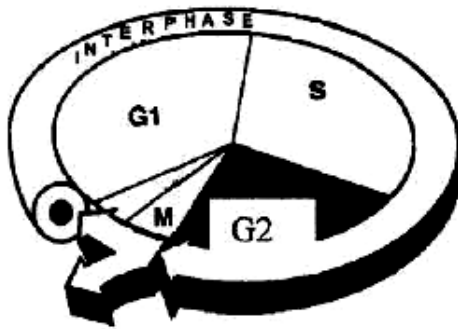


Diagram 16 / Rajah 16

At which stage a formation of a new organelles occurs?

Pada peringkat manakah berlakunya pembentukan organel-organel baru?

- A G1
- B G2
- C S
- D M

- 22 Diagram 17 shows the typical structure of a flower.  
 S Rajah 17 menunjukkan struktur tipikal bunga.  
 P

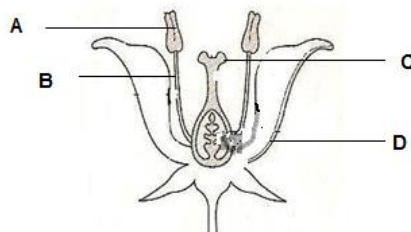


Diagram 17 / Rajah 17

Which of the following parts labeled A, B, C and D undergo meiosis?

Yang manakah antara bahagian berlabel A, B, C dan menjalankan proses meiosis?

- 23 Which of the following statements is true at the end of the phase shown in Diagram 18 ?  
 S Diagram 18 ?  
 A Antara yang berikut, pernyataan yang manakah benar pada hujung fasa yang

ditunjukkan dalam Rajah 18?

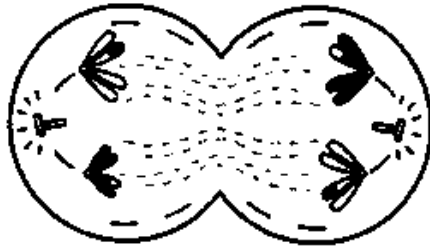


Diagram 18 / Rajah 18

- A Chromosome becomes shorter and thicker.  
*Kromosom memendek dan menebal*
- B Chromosome arrange themselves at the equatorial plane  
*Kromosom menyusun di satah khatulistiwa*
- C Homologous chromosomes pair together and crossing over occurs  
*Kromosom homolog berpasangan dan berlakunya pindah silang*
- D Homologous chromosomes separate and move to opposite poles  
*Kromosom homolog berpisah dan bergerak ke kutub bertentangan*

- 24 An animal cell possesses a chromosomal number of  $2n = 24$ .  
S Which of the following is true of the number of chromosomes found in the ovum,  
F zygote and ovary of the animal?  
*Bilangan kromosom dalam satu sel haiwan adalah  $2n=12$ .*  
*Antara dibawah, yang manakah benar berkenaan bilangan kromosom dalam ovum, zygote dan ovary haiwan tersebut ?*

	<b>Ovum ovum</b>	<b>Zygote zigot</b>	<b>Ovary ovari</b>
<b>A</b>	12	24	24
B	24	24	24
C	24	12	12
D	12	24	12

- 25 What is the significance of meiosis?  
S *Apakah kepentingan meiosis?*  
P
- A Cloning  
*Pengklonan*
- B Tissue culture  
*Kultur tisu*
- C Produce haploid cell  
*Menghasilkan sel haploid*
- D Produce diploid cell  
*Menghasilkan sel diploid*
- 26 Which process is used in tissue culture technique?  
S *Antara process berikut yang manakah digunakan dalam teknik kultur tisu?*  
P
- A Fertilisation / *Persenyawaan*
- B Synthesis / *Sintesis*
- C Meiosis / *Meiosis*
- D Mitosis / *Mitosis*



IV crossing over  
*pindah silang*

A I and II only  
*I dan II sahaja*

B II and III only  
*II dan III sahaja*

C III and IV only  
*III dan IV sahaja*

D I, II and IV  
*I, II dan IV sahaja*