Nama: ..... Kelas: .....

SULIT

4551/1

4551/1
BIOLOGI
Kertas 1
Oktober
2020

1 ¼ jam

4551/1
BIOLOGI

MAKTAB RENDAH SAINS MARA

# PEPERIKSAAN AKHIR SIJIL PENDIDIKAN MRSM 2020

## BIOLOGI

## Kertas 1

Satu jam tiga puluh minit

**JANGAN BUKA KERTAS PEPERIKSAAN INI SEHINGGA DIBERITAHU**

1. *Kertas peperiksaan ini adalah dalam dwibahasa.*
2. *Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.*
3. *Calon dikehendaki membaca maklumat di halaman hadapan kertas peperiksaan ini.*

Kertas peperiksaan ini mengandungi 43 halaman bercetak

[*Lihat halaman sebelah*
**SULIT**

1 Diagram 1 shows an animal cell.

*Rajah* 1 *menunjukkan satu sel haiwan.*

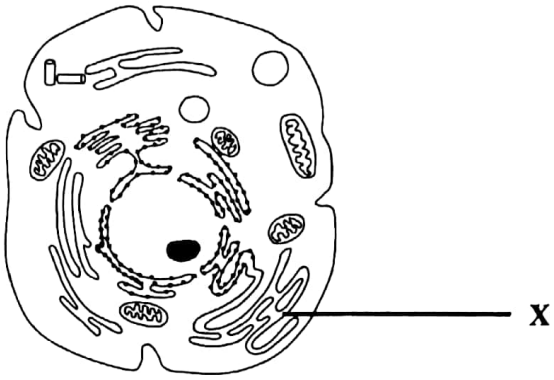



Diagram 1
*Rajah* 1

What is structure X?

*Apakah struktur* X?

A Nucleus
*Nukleus*

B Golgi apparatus
*Jasad Golgi*

C Smooth endoplasmic reticulum
*Jalinan endoplasma licin*

D Rough endoplasmic reticulum
*Jalinan endoplasma kasar*

2 Diagram 2 shows a bar chart of organelles density in cell P.

*Rajah 2 menunjukkan satu carta palang bagi kepadatan organel dalam sel* P.

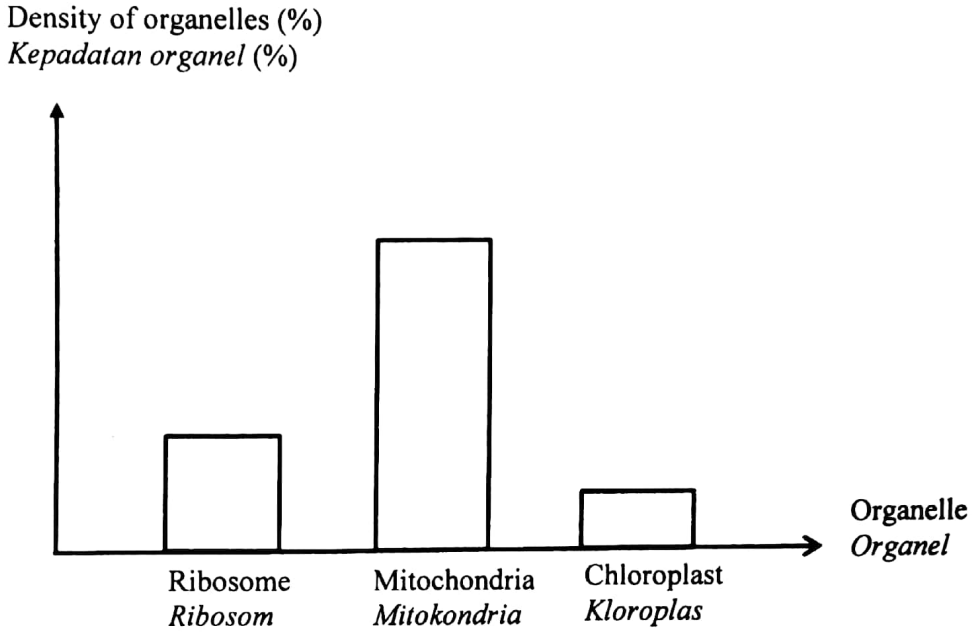



Diagram 2
*Rajah 2*

What is cell P?

*Apakah sel* P?

**A** Guard cell
*Sel pengawal*

**B** Tracheid cell
*Sel trakeid*

**C** Meristematic cell
*Sel meristem*

**D** Palisade mesophyll cell
*Sel mesofil palisad*

3 Diagram 3 shows a process that occurs in *Amoeba* sp.

*Rajah* 3 *menunjukkan suatu proses yang berlaku dalam Amoeba* sp.

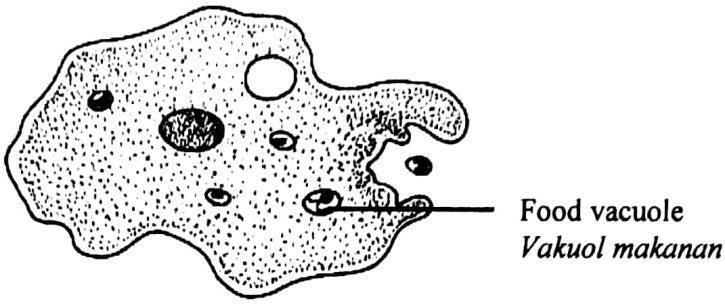



Diagram 3
*Rajah* 3

What is the organelle involved in this process?

*Apakah organel yang terlibat dalam proses ini*?

**A** Smooth endoplasmic reticulum

*Jalinan endoplasma licin*

**B** Lysosome

*Lisosom*

**C** Golgi apparatus

*Jasad Golgi*

**D** Nucleus

*Nukleus*

4 Diagram 4 shows cell organization in human. Name X and Y.

*Rajah* 4 *menunjukkan organisasi sel dalam manusia. Namakan* X *dan* Y.

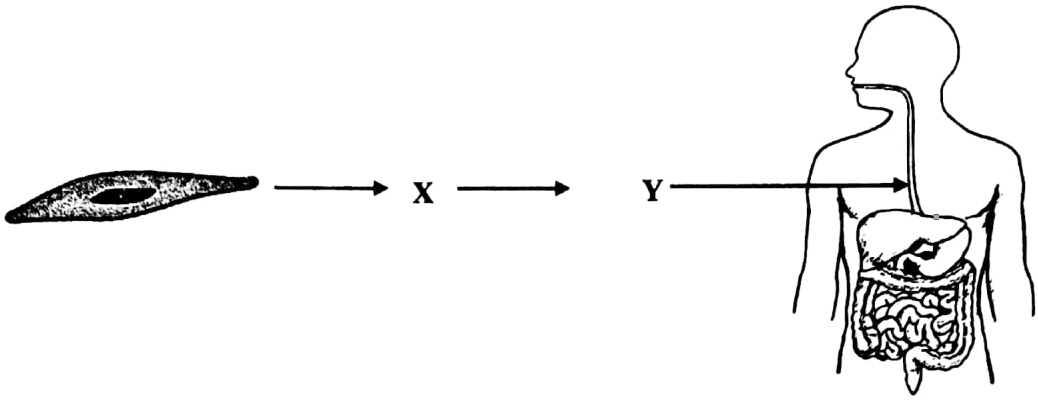



Diagram 4
*Rajah* 4

| | X | Y |
|---|---|---|
| **A** | Smooth muscle tissue<br>*Tisu otot licin* | Esophagus<br>*Esofagus* |
| **B** | Epithelial cells<br>*Sel epitelium* | Kidney<br>*Buah pinggang* |
| **C** | Cardiac muscle tissues<br>*Tisu otot kardium* | Heart<br>*Jantung* |
| **D** | Connective tissues<br>*Tisu penghubung* | Skin<br>*Kulit* |

5 Diagram 5 shows a structure of plasma membrane.

*Rajah 5 menunjukkan struktur satu membran plasma.*

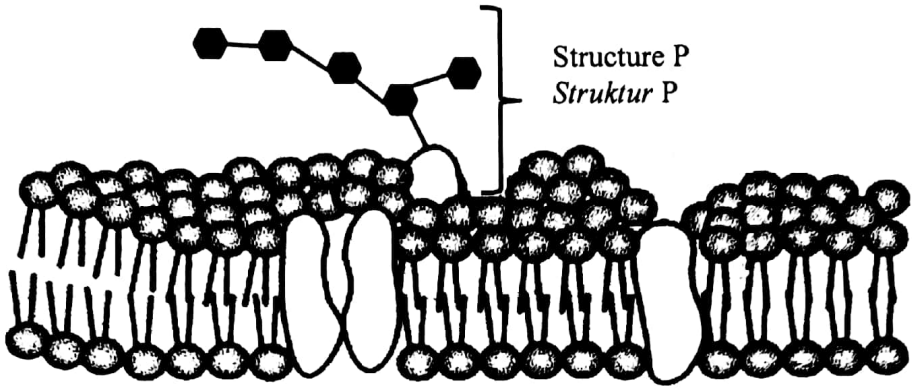



Diagram 5
*Rajah 5*

What is structure P?

*Apakah struktur* P?

**A** Cholesterol
*Kolestrol*

**B** Phospholipid
*Fosfolipid*

**C** Carrier protein
*Protein pembawa*

**D** Glycoprotein
*Glikoprotein*

6 Statements below are the characteristics of a process.

*Pernyataan di bawah adalah ciri-ciri bagi suatu proses.*

- Requires energy
  *Memerlukan tenaga*
- Movement of molecules or ions against concentration gradient.
  *Pergerakan molekul dan ion melawan cerun kepekatan.*

What is the process described above?

*Apakah proses yang digambarkan di atas?*

**A** Osmosis

*Osmosis*

**B** Active transport

*Pengangkutan aktif*

**C** Simple diffusion

*Resapan ringkas*

**D** Facilitated diffusion

*Resapan berbantu*

7 Diagram 6 shows the movement of substance Q through the plasma membrane.

*Rajah 6 menunjukkan pergerakan bahan Q melalui membran plasma.*

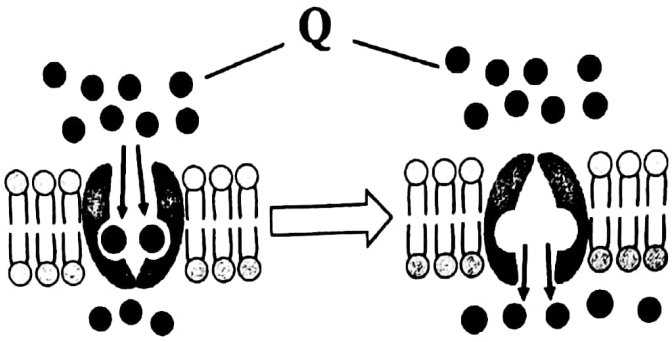



Diagram 6
*Rajah 6*

Which of the following is example of substance Q?

*Yang manakah antara di bawah adalah contoh bahan Q?*

**A** Water
*Air*

**B** Glycerol
*Gliserol*

**C** Oxygen
*Oksigen*

**D** Glucose
*Glukosa*

8 Which of the process below results in the accumulation or elimination of water molecules from the cells?

*Proses yang manakah di bawah menyebabkan pengumpulan dan penyingkiran molekul air dari sel?*

**A** Osmosis
*Osmosis*

**B** Active transport
*Pengangkutan aktif*

**C** Simple diffusion
*Resapan ringkas*

**D** Facilitated diffusion
*Resapan berbantu*

9 Diagram 7 shows the effect of osmosis on red blood cells that are immersed in different concentrations of sodium chloride.

*Rajah 7 menunjukkan kesan osmosis ke atas sel darah merah yang direndam dalam larutan natrium klorida yang mempunyai kepekatan berbeza.*

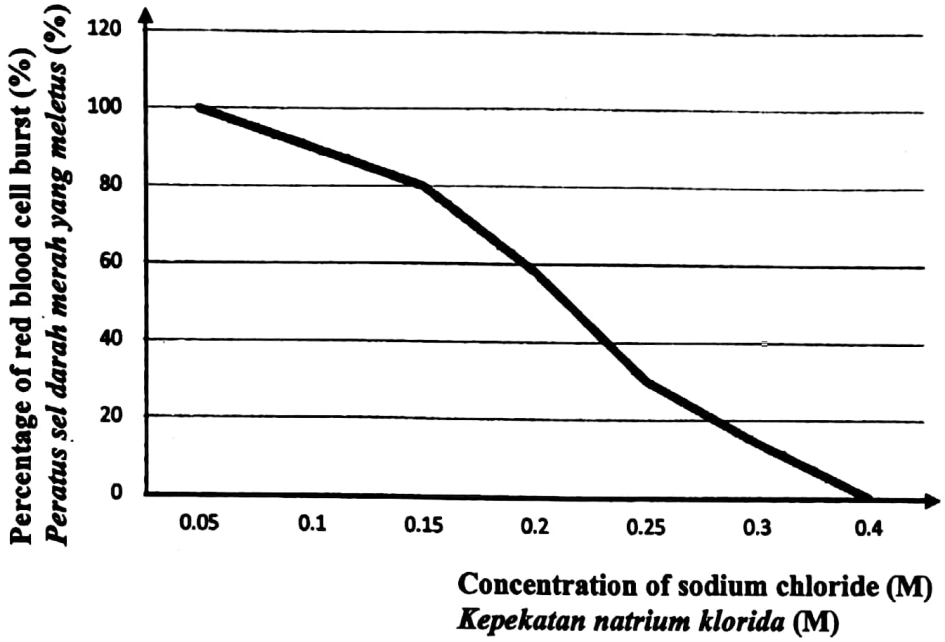



Diagram 7
*Rajah 7*

From the diagram, which concentration of sodium chloride solution is isotonic to the red blood cells?

*Berdasarkan rajah, kepekatan natrium klorida yang manakah adalah isotonik terhadap sel darah merah?*

**A** 0.05 M

**B** 0.20 M

**C** 0.30 M

**D** 0.40 M

10 Diagram 8 shows two foods R and S which contain carbohydrate.

*Rajah 8 menunjukkan dua makanan mengandungi karbohidrat* R *dan* S.


R


S

Diagram 8
*Rajah 8*

What types of carbohydrate can be found in R and S?

*Jenis karbohidrat manakah yang terdapat dalam* R *dan* S?

| | R | S |
|---|---|---|
| **A** | Sucrose<br>*Sukrosa* | Lactose<br>*Laktosa* |
| **B** | Starch<br>*Kanji* | Lactose<br>*Laktosa* |
| **C** | Lactose<br>*Laktosa* | Sucrose<br>*Sukrosa* |
| **D** | Maltose<br>*Maltosa* | Fructose<br>*Fruktosa* |

11 Which of the following element is required to produce amino acids?

*Antara unsur berikut, yang manakah diperlukan untuk menghasilkan asid amino*?

**A** Nitrogen
*Nitrogen*

**B** Magnesium
*Magnesium*

**C** Potassium
*Kalium*

**D** Manganese
*Mangan*

12 Diagram 9 shows a structure of triglyceride molecule.
*Rajah 9 menunjukkan satu struktur molekul trigliserida.*

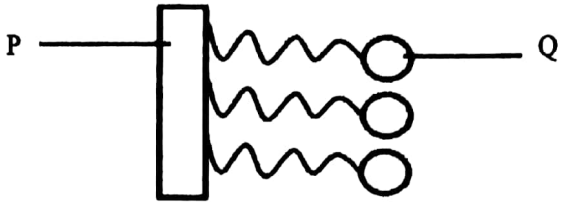



Diagram 9
*Rajah 9*

What are the substance labelled as P and Q?
*Apakah bahan yang di label* P *dan* Q?

| | P | Q |
|---|---|---|
| **A** | Glycerol<br>*Gliserol* | Fatty acid<br>*Asid lemak* |
| **B** | Phosphate<br>*Fosfat* | Glycerol<br>*Gliserol* |
| **C** | Phosphate<br>*Fosfat* | Fatty acid<br>*Asid lemak* |
| **D** | Fatty acid<br>*Asid lemak* | Glycerol<br>*Gliserol* |

13 Diagram 10 shows the breaking down of a complex molecule by an enzyme.
*Rajah* 10 *menunjukkan proses penguraian molekul kompleks oleh enzim.*

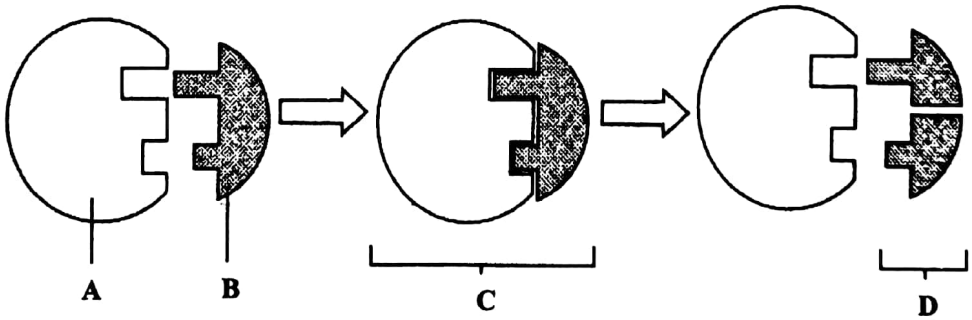



Diagram 10
*Rajah* 10

Which of the molecules **A**, **B**, **C** or **D** represents the substrate?
*Antara molekul* **A**, **B**, **C** *atau* **D**, *yang manakah mewakili substrat*?

14 Diagram 11 shows information about a brand of detergent containing an enzyme.

*Rajah* 11 *menunjukkan maklumat tentang satu jenama detergen yang mengandungi sejenis enzim.*

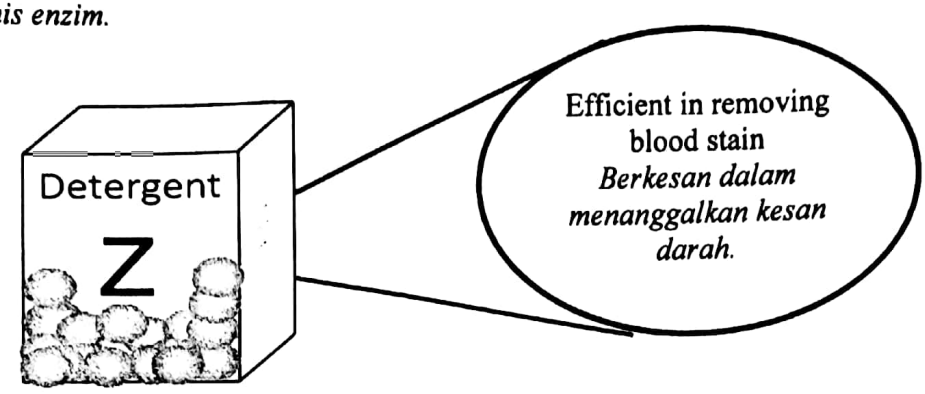



Diagram 11
*Rajah* 11

What is the enzyme?

*Apakah enzim tersebut*?

**A** Zymase
*Zimase*

**B** Amylase
*Amilase*

**C** Cellulase
*Selulase*

**D** Protease
*Protease*

15 Diagram 12 shows a phase of mitosis takes place in animal cell.

*Rajah* 12 *menunjukkan satu fasa mitosis yang berlaku di dalam sel haiwan.*

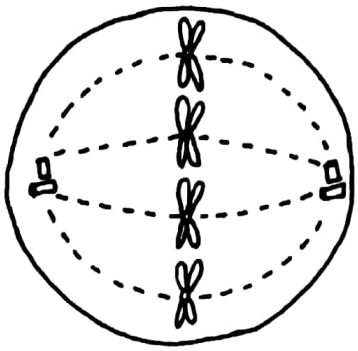


Diagram 12
*Rajah* 12

Name the phase shown in the diagram 12.

*Namakan fasa yang ditunjukkan di dalam rajah* 12.

**A** Prophase
*Profasa*

**B** Metaphase
*Metafasa*

**C** Anaphase
*Anafasa*

**D** Telophase
*Telofasa*

16 Diagram 13 shows a phase during meiosis.

*Rajah* 13 *menunjukkan satu fasa semasa meiosis.*

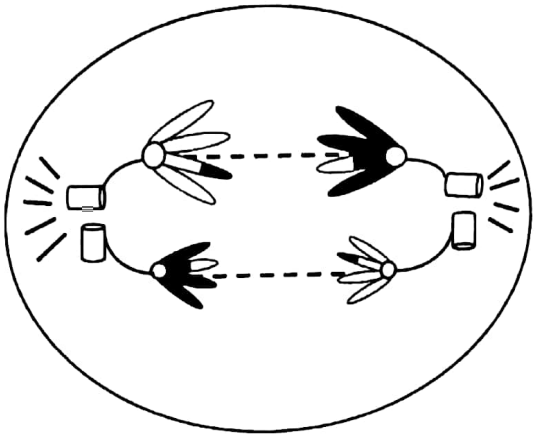


Diagram 13
*Rajah* 13

Which of the answers below is correct about the significance of this phase?

*Manakah jawapan di bawah yang betul tentang kepentingan fasa ini?*

**A** Will produce daughter cell with same number of chromosomes as parent cell.

*Menghasilkan sel anak yang mempunyai bilangan kromosom yang sama dengan sel induk.*

**B** Will cause crossing over to occur between homologous chromosomes.

*Menyebabkan pindah silang berlaku antara kromosom homolog.*

**C** Will half the number of chromosomes in each daughter cell.

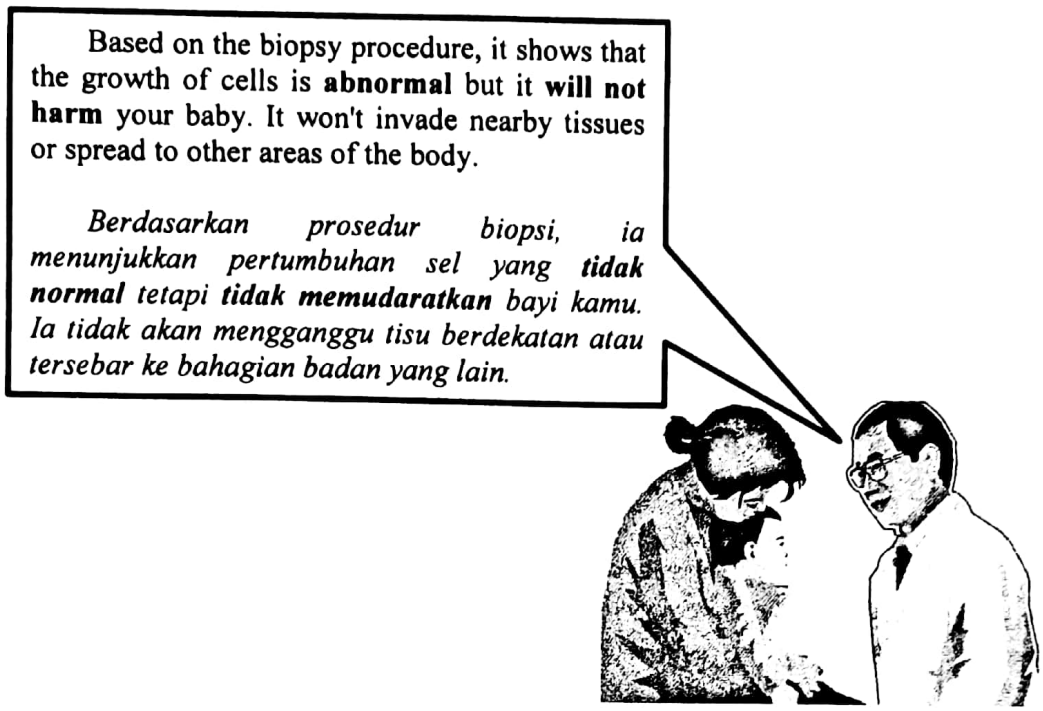
*Menyebabkan bilangan kromosom dalam sel anak menjadi separuh.*

**D** Will produce variation in gamete.

*Menghasilkan variasi pada gamet.*

17 The following is a part of conversation between a doctor and a patient.

*Berikut adalah sebahagian daripada perbualan antara doktor dan pesakit.*




From the doctor's explanation, what is the process that can cause this condition?

*Dari penjelasan doktor tersebut, apakah proses yang boleh menyebabkan keadaan ini?*

**A** Mitosis

*Mitosis*

**B** Meiosis

*Meiosis*

**C** Uncontrolled meiosis

*Meiosis tidak terkawal*

**D** Uncontrolled mitosis

*Mitosis tidak terkawal*

18 Diagram 14 shows a food pyramid.

*Rajah* 14 *menunjukkan piramid makanan.*

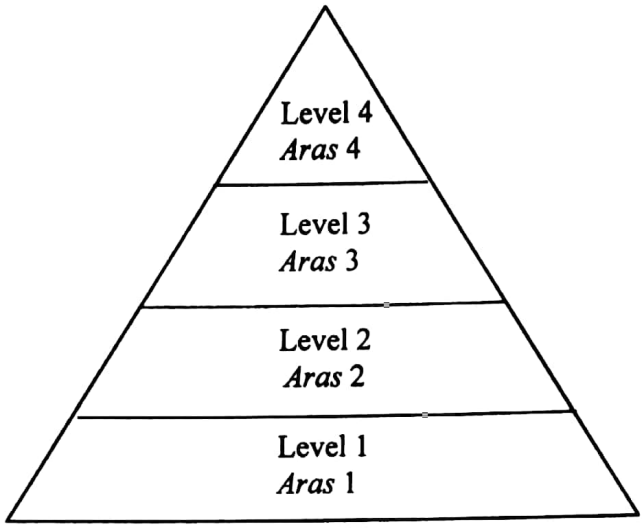



Diagram 14
*Rajah* 14

Which level should be taken less by a **gout** patient?

*Aras manakah perlu dikurangkan pengambilan oleh pesakit* ***gout****?*

**A** Level 1
*Aras* 1

**B** Level 2
*Aras* 2

**C** Level 3
*Aras* 3

**D** Level 4
*Aras* 4

19 Table 1 shows the Body Mass Index (BMI).

*Jadual 1 menunjukkan Indeks Jisim Tubuh* (BMI).

| **BMI (kg/m²)** ***Indeks Jisim Tubuh*** | **Category** ***Kategori*** |
|---|---|
| < 18.5 | Underweight *Kurang berat badan* |
| 18.5 – 24.9 | Desirable weight *Berat badan unggul* |
| 30 or more 30 *atau lebih* | Obese *Obes* |

Table 1
*Jadual 1*

Which of the following individual is in the obese category?

*Antara individu berikut yang manakah berada dalam kategori obes?*

| | **Height (centimetre/cm)** ***Tinggi (sentimeter/cm)*** | **Weight (kilogram/kg)** ***Berat (kilogram/kg)*** |
|---|---|---|
| **A** | 185 | 116 |
| **B** | 172 | 71 |
| **C** | 167 | 53 |
| **D** | 150 | 40 |

20 Which of the following nutrients are needed to form strong bones and teeth?

*Antara nutrient berikut, yang manakah diperlukan untuk menguatkan tulang dan gigi?*

I Iron

*Besi*

II Calcium

*Kalsium*

III Vitamin D

*Vitamin* D

IV Phosphorus

*Fosforus*

**A** I and III

I *dan* III

**B** III and IV

III *dan* IV

**C** I, II and IV

I, II *dan* IV

**D** II, III and IV

II, III *dan* IV

21 Diagram 15(a) shows a class of food while diagram 15(b) shows human digestive system.

*Rajah* 15(a) *menunjukkan satu kelas makanan manakala rajah* 15(b) *menunjukkan sistem pencernaan manusia.*

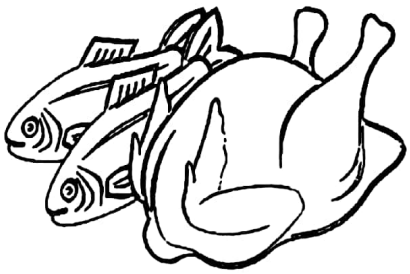


Diagram 15(a)
*Rajah* 15(a)

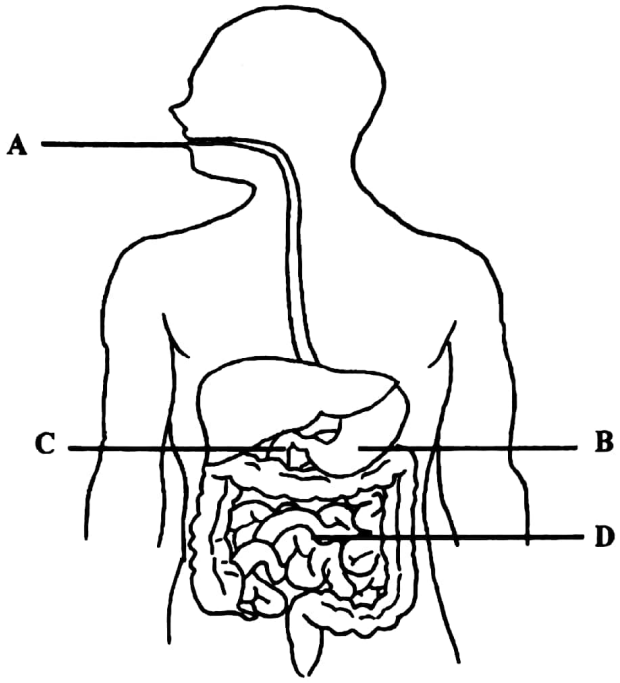



Diagram 15(b)
*Rajah* 15(b)

Which part **A, B, C** or **D** in Diagram 15(b) is the second step of digestion for the food class shown in the Diagram 15(a)?

*Antara bahagian* **A, B, C** *atau* **D** *pada Rajah* 15(b) *yang manakah ialah langkah kedua pencernaan kelas makanan seperti yang ditunjukkan dalam Rajah* 15(a)?

22 A farmer noticed that leaves of plants in his garden have turned yellow and easily drop. He decided to apply fertilizer to overcome the problem.

*Seorang petani mendapati daun-daun pada pokok-pokok di kebun beliau telah menjadi kekuningan dan mudah jatuh. Beliau bercadang menggunakan baja bagi mengatasi masalah tersebut.*

| Type of fertilizer<br>*Jenis baja* | Content<br>*Kandungan* |
|---|---|
| R | Magnesium and Phosphorus<br>*Magnesium dan Fosforus* |
| S | Nitrogen and Sulphur<br>*Nitrogen dan Sulfur* |
| T | Phosphorus and Nitrogen<br>*Fosforus dan Nitrogen* |
| U | Potassium and Calcium<br>*Kalium dan Kalsium* |

Table 2
*Jadual* 2

Which of the following fertilizer in Table 2 is the **most suitable** to overcome the problem?

*Baja yang manakah dalam Jadual* 2 ***paling sesuai*** *untuk mengatasi masalah tersebut*?

**A** Fertilizer R

*Baja* R

**B** Fertilizer S

*Baja* S

**C** Fertilizer T

*Baja* T

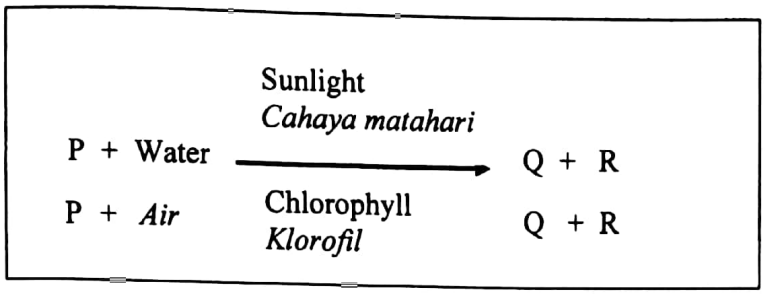
**D** Fertilizer U

*Baja* U

23 The following equation shows the process of photosynthesis.

*Persamaan berikut menunjukkan proses fotosintesis.*




What is represented by P, Q and R?

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

| | P | Q | R |
|---|---|---|---|
| **A** | *Glucose*<br>*Glukosa* | *Water*<br>*Air* | *Oxygen*<br>*Oksigen* |
| **B** | *Oxygen*<br>*Oksigen* | *Glucose*<br>*Glukosa* | *Carbon dioxide*<br>*Karbon dioksida* |
| **C** | *Carbon dioxide*<br>*Karbon dioksida* | *Energy*<br>*Tenaga* | *Oxygen*<br>*Oksigen* |
| **D** | *Carbon dioxide*<br>*Karbon dioksida* | *Glucose*<br>*Glukosa* | *Oxygen*<br>*Oksigen* |

24 Diagram 16 shows the structures found in a plant cell.

*Rajah* 16 *menunjukkan struktur – struktur yang dijumpai di dalam sel tumbuhan.*

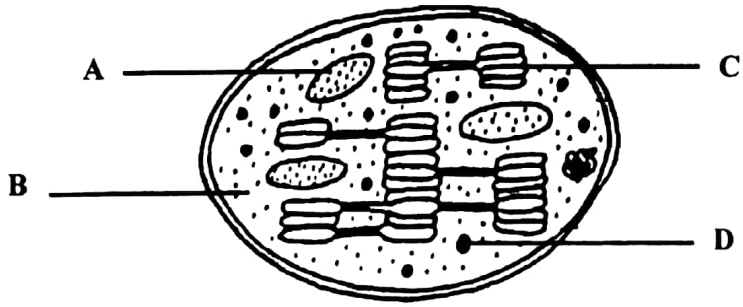



Diagram 16
*Rajah* 16

Which of the following structure **A, B, C** and **D** does light reaction takes place?

*Antara struktur* **A, B, C** *dan* **D** *yang manakah menjalankan tindak balas cahaya*?

[*Lihat halaman sebelah*

25 Diagram 17 shows a set up of experiment to study factors affecting the rate of photosynthesis.

*Rajah* 17 *menunjukkan satu persediaan radas eksperimen untuk mengkaji faktor - faktor yang mempengaruhi kadar fotosintesis.*

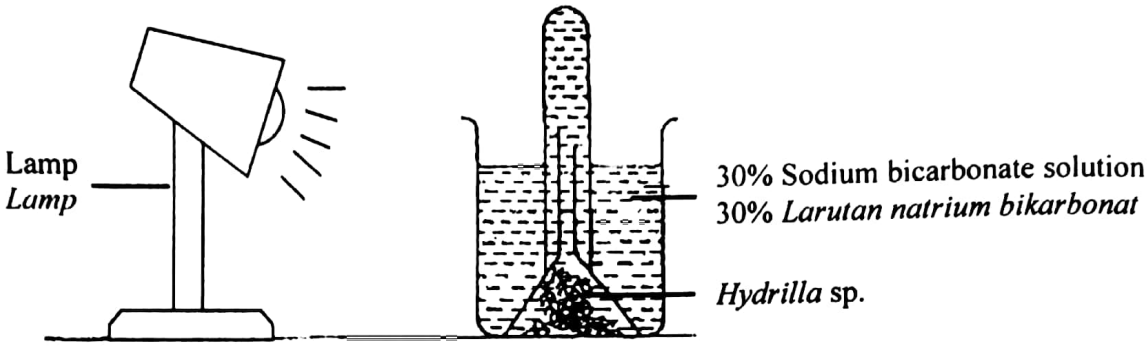



Diagram 17
*Rajah* 17

A student wants to study the effect of carbon dioxide concentration on the rate of photosynthesis of *Hydrilla* sp. What is the factor that should be manipulated in this experiment?

*Seorang pelajar ingin mengkaji kesan kepekatan karbon dioksida ke atas kadar fotosintesis Hydrilla* sp. *Apakah faktor yang perlu dimanipulasikan dalam eksperimen ini*?

**A** Light intensity

*Keamatan cahaya*

**B** Temperature of water

*Suhu air*

**C** Concentration of oxygen in water

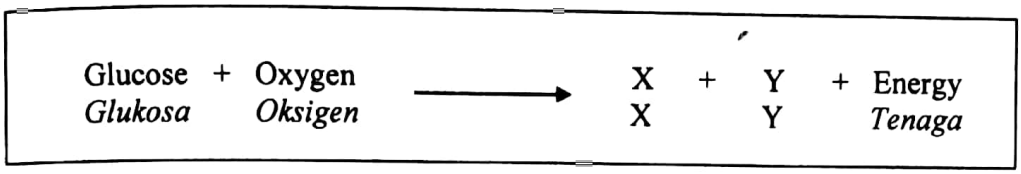
*Kepekatan oksigen dalam air*

**D** Concentration of sodium bicarbonate solution

*Kepekatan larutan natrium bikarbonat*

26 The following equation shows a process that takes place in human muscles.

*Persamaan berikut menunjukkan satu proses yang berlaku dalam otot manusia.*




What are X and Y?

*Apakah* X *dan* Y?

| | X | Y |
|---|---|---|
| **A** | Water<br>*Air* | Lactic acid<br>*Asid laktik* |
| **B** | Ethanol<br>*Etanol* | Carbon dioxide<br>*Karbon dioksida* |
| **C** | Carbon dioxide<br>*Karbon dioksida* | Water<br>*Air* |
| **D** | Lactic acid<br>*Asid laktik* | Carbon dioxide<br>*Karbon dioksida* |

27 Diagram 18 shows an experiment to investigate the activity of yeast.

*Rajah* 18 *menunjukkan eksperimen untuk mengkaji aktiviti yis.*

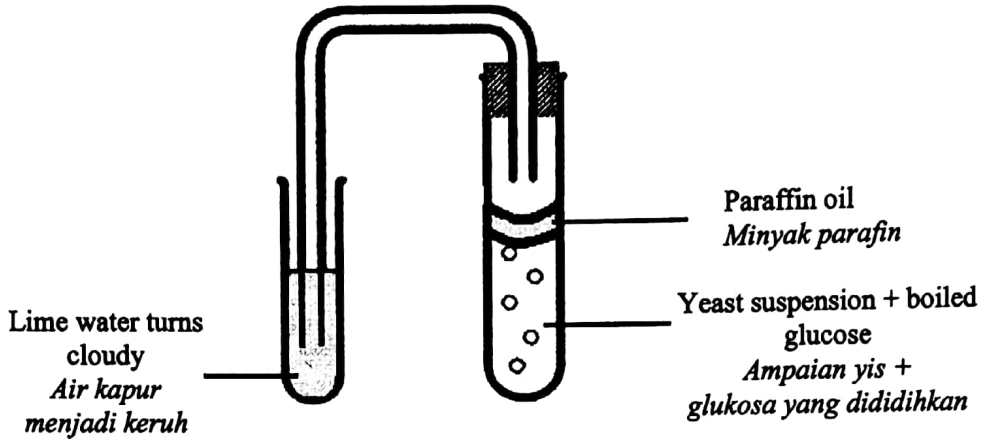



Diagram 18
*Rajah* 18

The yeast is suspended in a glucose solution. Which of the following occurs during the experiment?

*Yis terampai dalam larutan glukosa. Manakah yang berikut berlaku semasa eksperimen*?

**A** Carbon dioxide is produced

*Karbon dioksida di hasilkan*

**B** Aerobic respiration takes place

*Berlakunya respirasi aerobik*

**C** Complete breakdown of glucose

*Penguraian lengkap molekul glukosa*

**D** Lactic acid produced

*Asid laktik dihasilkan*

28 Diagram 19(a) shows alveolus of a healthy individual and Diagram 19(b) shows alveolus of an individual with emphysema.

*Rajah* 19(a) *menunjukkan alveolus individu yang sihat dan Rajah* 19(b) *menunjukkan alveolus individu yang mengidap emfisema.*

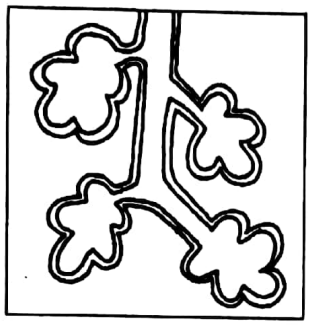


Diagram 19(a)
*Rajah* 19(a)

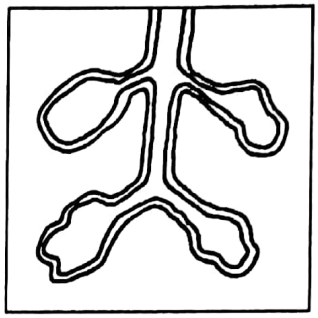


Diagram 19(b)
*Rajah* 19(b)

What is the symptom of individual that suffers emphysema?

*Apakah simptom pada individu yang menghidap emfisema*?

**A** Wheezing breathing

*Berdehit semasa bernafas*

**B** Chronic sneezing

*Bersin yang kronik*

**C** Body shivering

*Badan menggigil*

**D** Frequent fainting

*Kerap pengsan*

29 Which of the following is a biotic component of an ecosystem?

*Antara berikut, yang manakah merupakan komponen biotik bagi suatu ekosistem*?

**A** Air

*Udara*

**B** Water

*Air*

**C** Sand

*Pasir*

**D** Bacteria

*Bakteria*

30 Diagram 20 shows part of nitrogen cycle.

*Rajah* 20 *menunjukkan sebahagian daripada kitar nitrogen.*

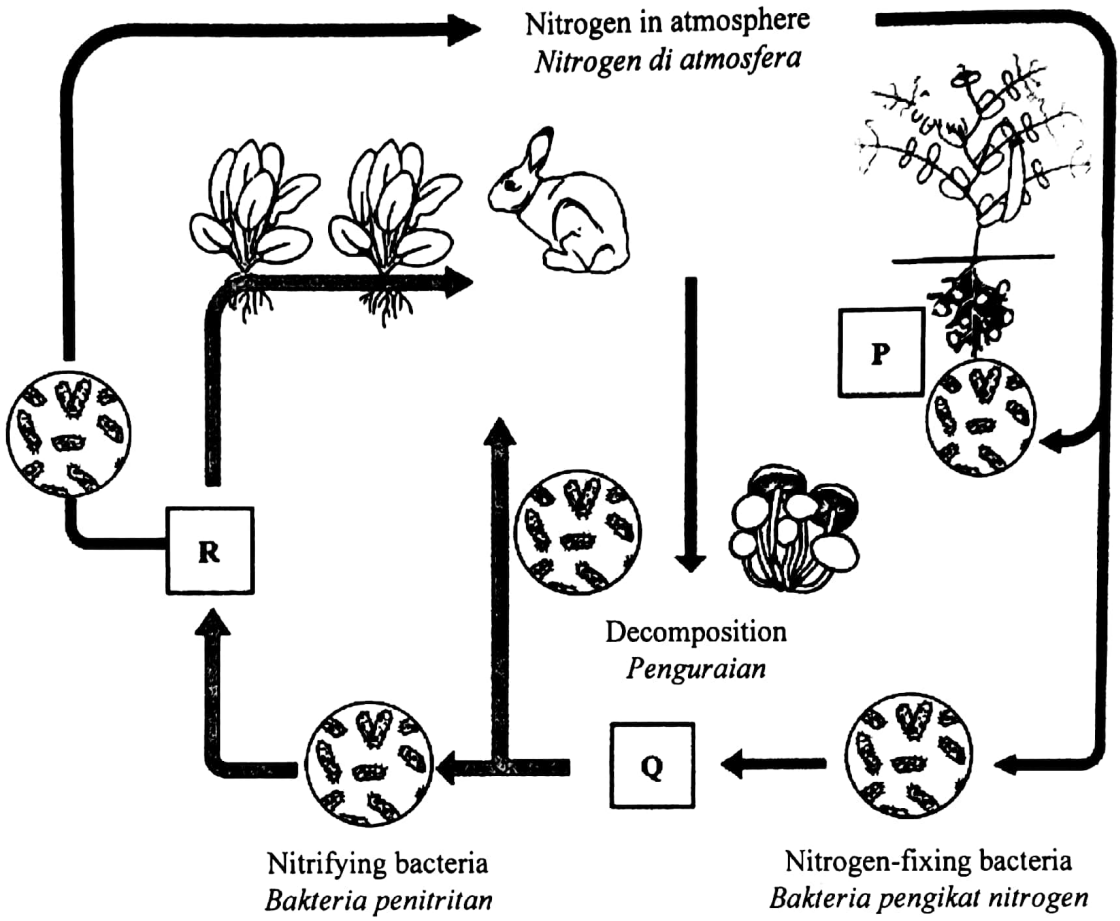



Diagram 20
*Rajah* 20

Which of the following represents P, Q and R?

*Antara berikut yang manakah menunjukkan* P, Q *dan* R?

| | P | Q | R |
|---|---|---|---|
| A | *Rhizobium sp* | Nitrates<br>*Nitrat* | Ammonium ion<br>*Ion ammonium* |
| B | Nitrates<br>Nitrat | Ammonium ion<br>*Ion ammonium* | *Rhizobium sp* |
| C | *Rhizobium sp* | Ammonium ion<br>*Ion ammonium* | Nitrates<br>*Nitrat* |
| D | Nitrites<br>*Nitrit* | *Rhizobium sp* | Ammonium ion<br>*Ion ammonium* |

31 Diagram 21 shows two types of food products.

*Rajah* 21 *menunjukkan dua jenis produk makanan.*


Diagram 21
*Rajah* 21

Which of the following microorganism is used in the production of the above food products?

*Antara mikroorganisma berikut, yang manakah digunakan dalam penghasilan produk makanan di atas*?

**A** *Staphylococcus* sp.

**B** *Lactobacillus* sp.

**C** *Azotobactor* sp.

**D** *Mucor* sp.

32 Which of the following causes eutrophication?

*Antara berikut yang manakah menyebabkan eutrofikasi*?

**A** Fertilizer
*Baja*

**B** Cyanide
*Sianida*

**C** Herbicide
*Racun rumpai*

**D** Insecticide
*Racun serangga*

33 Diagram 22 shows the Air Pollution Index (API) of four cities A, B, C and D in Malaysia from 5 September to 11 September 2019.

*Rajah 22 menunjukkan Indeks Pencemaran Udara* (IPU) *di empat bandar* A, B, C *dan* D *di Malaysia dari 5 hingga 11 September* 2019.

| **API** *IPU* | 0 – 50 | 51 – 100 | 101 – 200 | 201 – 300 | >300 | >500 |
|---|---|---|---|---|---|---|
| **STATUS** *STATUS* | Good *Baik* | Moderate *Sederhana* | Unhealthy *Tidak sihat* | Very Unhealthy *Sangat tidak sihat* | Hazardous *Bahaya* | Emergency *Darurat* |

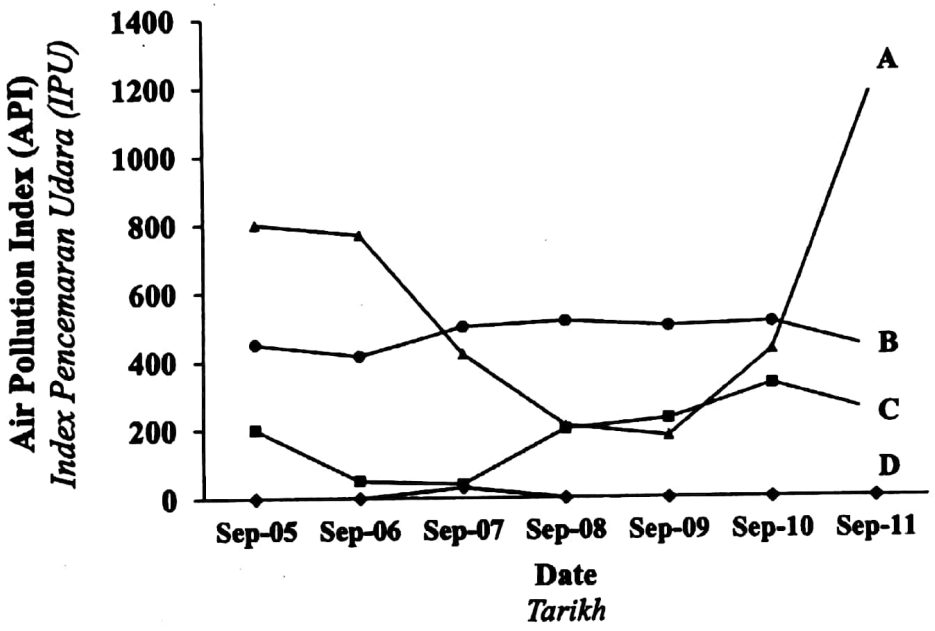



Diagram 22
*Rajah* 22

Based on the graph, which city **A, B, C** or **D** is categorized as emergency status?

*Berdasarkan graf, bandar manakah* **A, B, C** *atau* **D** *dikategorikan sebagai status darurat*?

34 Diagram 23 shows a human white blood cell.

*Rajah* 23 *menunjukkan sel darah putih manusia.*

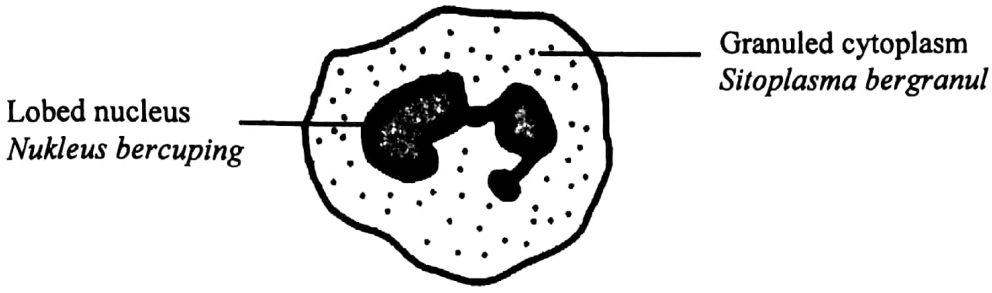



Diagram 23
*Rajah* 23

What is the function of the cell?

*Apakah fungsi sel tersebut?*

**A** Transport oxygen
*Mengangkut oksigen*

**B** Blood clotting
*Pembekuan darah*

**C** Phagocytosis
*Fagositosis*

**D** Antibody production
*Penghasilan antibodi*

35 Diagram 24 shown mechanism of blood clotting.

*Rajah 24 menunjukkan mekanisme pembekuan darah.*

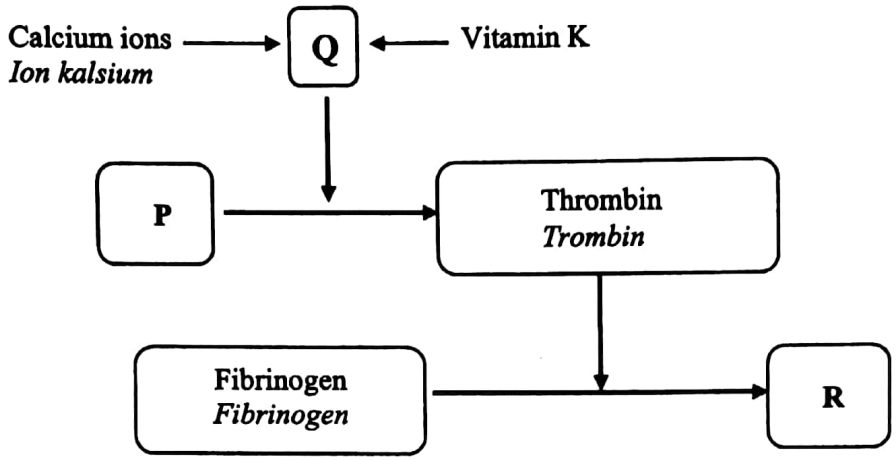



Diagram 24
*Rajah 24*

What are P and Q?

*Apakah P dan Q?*

| | P | Q | R |
|---|---|---|---|
| A | Prothrombin *Protrombin* | Platelet *Platelet* | Thromboplastin *Tromboplastin* |
| B | Prothrombin *Protrombin* | Thromboplastin *Tromboplastin* | Fibrin *Fibrin* |
| C | Platelet *Platelet* | Prothrombin *Protrombin* | Thromboplastin *Tromboplastin* |
| D | Fibrin *Fibrin* | Thromboplastin *Tromboplastin* | Prothrombin *Protrombin* |

36 Diagram 25 shows cross section of a plant root.

*Rajah* 25 *menunjukkan keratan rentas akar tumbuhan.*

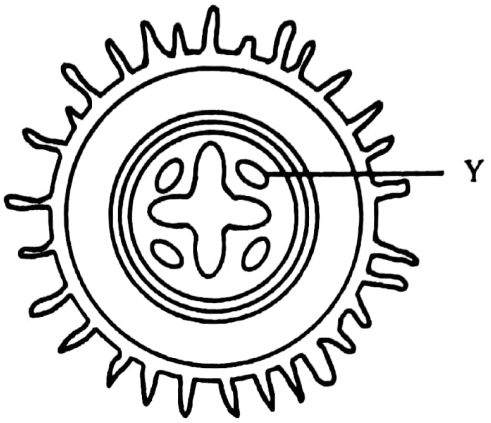



Diagram 25
*Rajah* 25

What is Y?

*Apakah* Y?

**A** Xylem
*Xilem*

**B** Phloem
*Floem*

**C** Cambium
*Kambium*

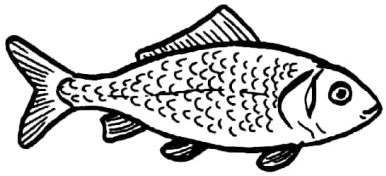
**D** Pith
*Teras*

37 Which organism has hydrostatic skeleton?

*Organism yang manakah mempunyai rangka hidrostatik?*

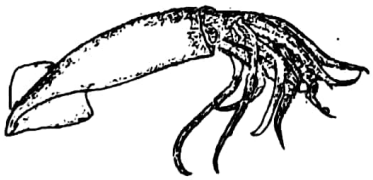
A

B



C

D



38 Diagram 26 shows a human upper limb.

*Rajah 26 menunjukkan bahagian anggota atas manusia.*

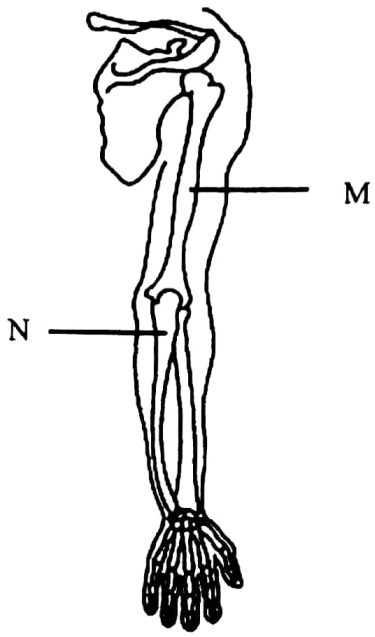



Diagram 26
*Rajah 26*

Name bones M and N.
*Namakan tulang* M *dan* N.

| | M | N |
|---|---|---|
| **A** | Humerus<br>*Humerus* | Ulna<br>*Ulna* |
| **B** | Ulna<br>*Ulna* | Radius<br>*Radius* |
| **C** | Radius<br>*Radius* | Humerus<br>*Humerus* |
| **D** | Scapula<br>*Skapula* | Humerus<br>*Humerus* |

39 Which of the following is an internal stimulus in the body?

*Antara berikut, yang manakah merupakan rangsangan dalaman pada badan?*

**A** Changes in light intensity

*Perubahan pada keamatan cahaya*

**B** Changes in blood sugar level

*Perubahan aras gula darah*

**C** Changes in temperature

*Perubahan suhu*

**D** Changes in sound

*Perubahan bunyi*

40 An accident victim injured his head and had difficulty in memorizing.

*Seorang mangsa kemalangan mengalami kecederaan kepala dan mengalami kesukaran mengingat.*

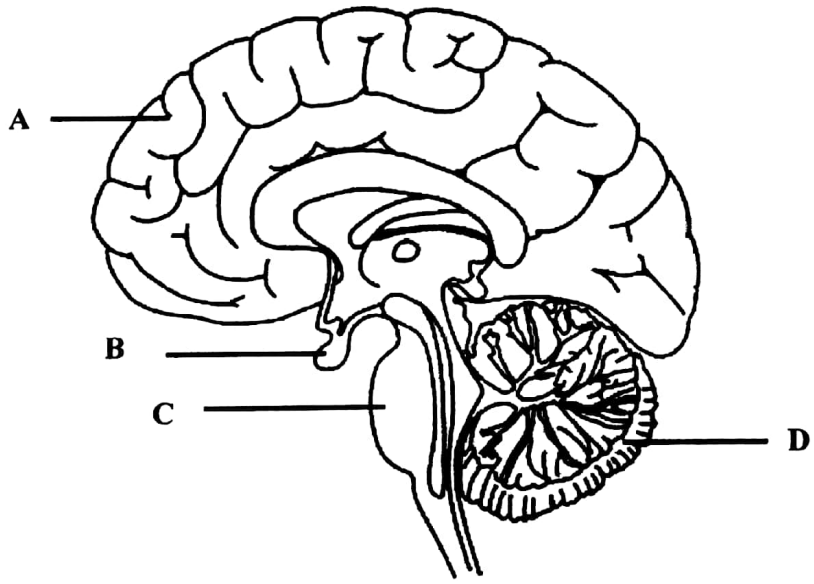



Diagram 27
*Rajah* 27

Which part of **A**, **B**, **C** or **D** was injured?

*Bahagian manakah* **A**, **B**, **C** atau **D** *yang mengalami kecederaan?*

41 Diagram 28 is a graph that shows the relationship between blood glucose level and time.

*Rajah* 28 *ialah graf yang menunjukkan hubungan antara aras glukosa darah dengan masa.*

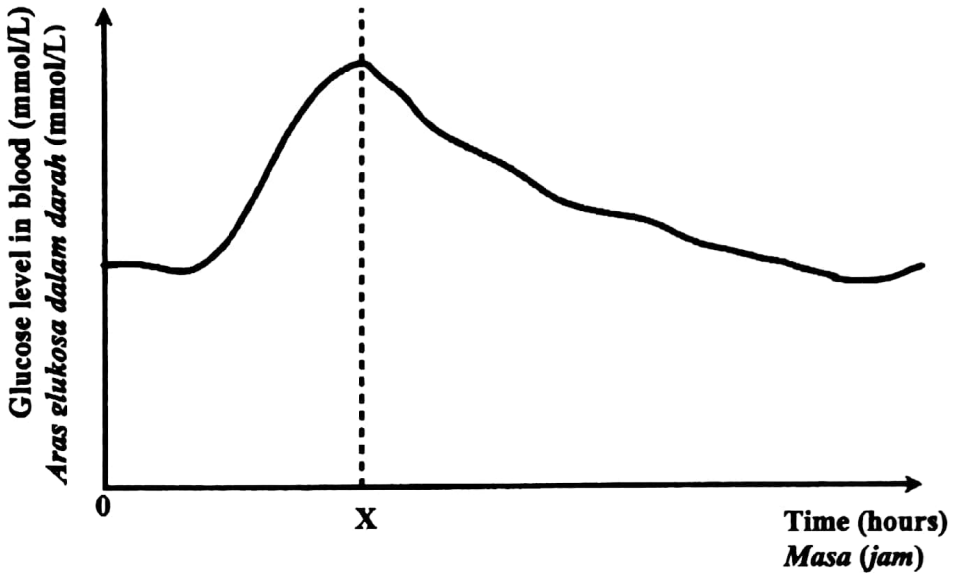



Diagram 28
*Rajah* 28

What happened after point X?

*Apakah yang berlaku selepas titik* X?

A The individual ate vegetables
*Individu itu telah makan sayur*

B The individual starts eating again
*Individu itu mula makan semula*

C The individual drank a glass of fruit juice
*Individu itu telah minum air jus buah-buahan*

D The individual was given an insulin injection
*Individu itu telah diberikan suntikan insulin*

42 Diagram 29 shows the process of spermatogenesis. The number of chromosomes in the primordial germ cell is 38.

*Rajah* 29 *menunjukkan proses spermatogenesis. Bilangan kromosom di dalam sel germa primordium ialah* 38.

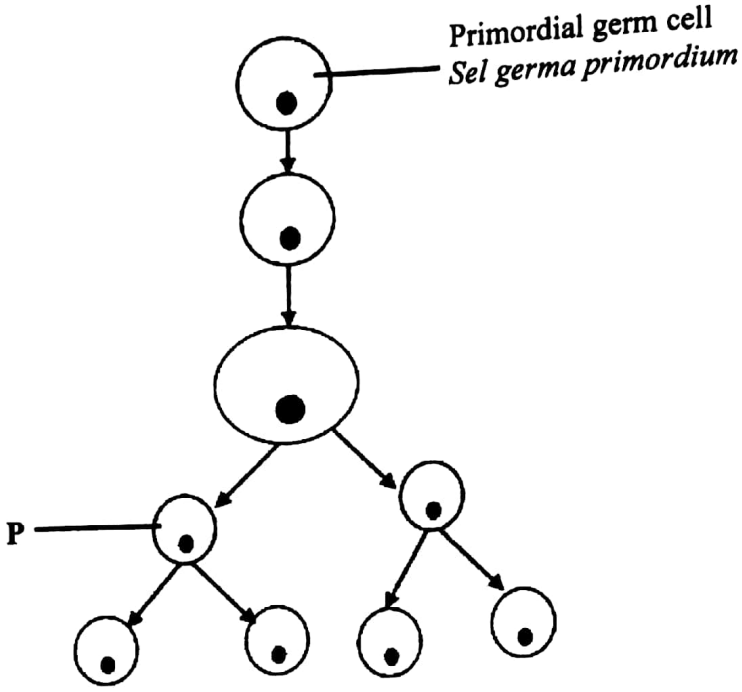



Diagram 29
*Rajah* 29

What is the number of chromosomes in cell **P**?

*Berapakah bilangan kromosom di dalam sel* **P**?

**A** 76

**B** 38

**C** 19

**D** 46

43 Table 3 shows a menstrual cycle of a woman. Her menstruation starts on 3rd March and the cycle is 28 days.

*Jadual* 3 *menunjukkan kitar haid seorang wanita. Beliau mengalami haid pada* 3hb *Mac dan kitarnya ialah* 28 *hari.*

| **March 2020**<br>***Mac* 2020** | | | | | | | |
|---|---|---|---|---|---|---|---|
| Week/<br>*Minggu* | Sunday/<br>*Ahad* | Monday/<br>*Isnin* | Tuesday/<br>*Selasa* | Wednesday/<br>*Rabu* | Thursday/<br>*Khamis* | Friday/<br>*Jumaat* | Saturday/<br>*Sabtu* |
| 1 | **1** | **2** | **3** | **4** | **5** | **6** | **7** |
| 2 | **8** | **9** | **10** | **11** | **12** | **13** | **14** |
| 3 | **15** | **16** | **17** | **18** | **19** | **20** | **21** |
| 4 | **22** | **23** | **24** | **25** | **26** | **27** | **28** |
| 5 | **29** | **30** | **31** | | | | |

Table 3
*Jadual* 3

Which week does ovulation occur?

*Minggu ke berapakah dia akan mengalami ovulasi*?

**A** Week 1
*Minggu* 1

**B** Week 2
*Minggu* 2

**C** Week 3
*Minggu* 3

**D** Week 4
*Minggu* 4

[*Lihat halaman sebelah*

44 The following statement refers to a situation related to infertility.

*Penyataan berikut merujuk kepada satu situasi berkaitan ketidaksuburan.*

> A couple has been married for 7 years, but still have no child. It was found that the husband's sperm count is low while his wife ovum is normal.
>
> *Sepasang suami isteri telah berkahwin selama 7 tahun, tetapi masih tidak mempunyai anak. Didapati kiraan sperma suami rendah manakala ovum isterinya normal.*

Based on the situation above, what is the best method for the wife to get pregnant?

*Berdasarkan situasi di atas, apakah kaedah terbaik yang boleh diambil untuk membolehkan isteri tersebut mengandung?*

**A** Spermicide

*Spermisid*

**B** Surrogate mother

*Ibu tumpang*

**C** Contraceptive implants

*Implan perancang*

**D** Artificial insemination

*Permanian beradas*

45 Diagram 30 shows a Female Reproductive System with Polycystic Ovary Syndrome (PCOS).

*Rajah* 30 *menunjukkan Organ Pembiakan Wanita yang mengalami Sindrom Polisistik Ovary* (PCOS).

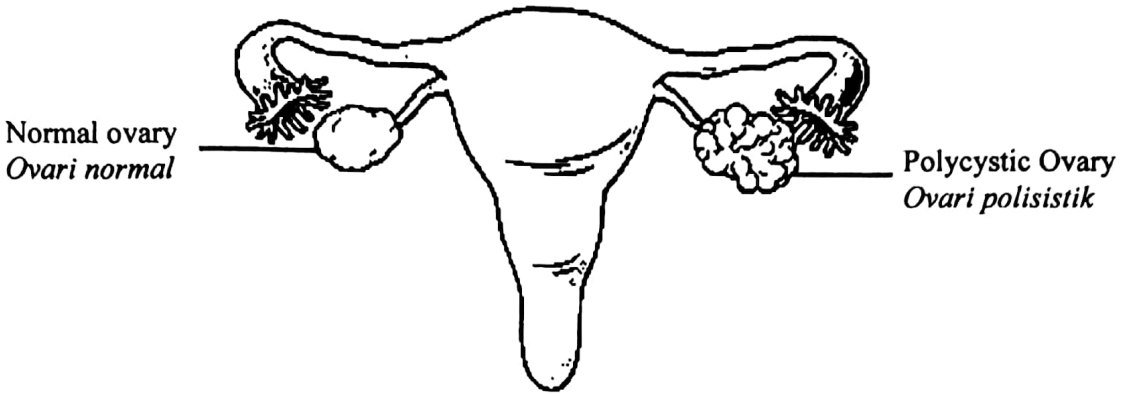



Diagram 30
*Rajah* 30

Which of the following is the symptom of the disease?

*Antara berikut yang manakah simptom penyakit tersebut*?

**A** Miscarriage

*Keguguran*

**B** High blood pressure

*Tekanan darah tinggi*

**C** Irregular menstrual cycle

*Haid yang tidak teratur*

**D** Frequent ovulation

*Ovulasi yang kerap*

46 Diagram 31 shows the root tip of a paddy plant.

*Rajah* 31 *menunjukkan hujung akar pokok padi.*

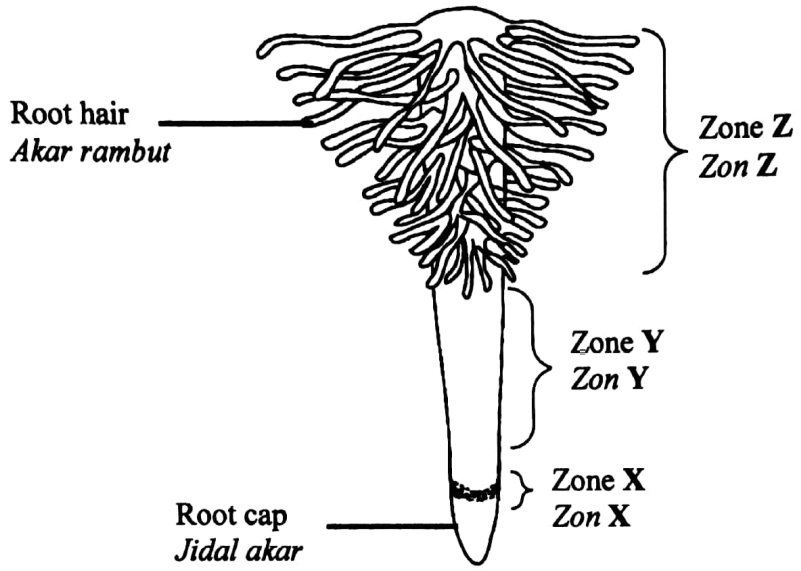
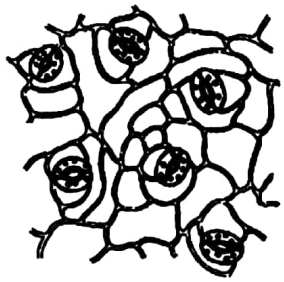


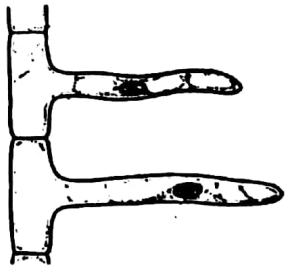

Diagram 31
*Rajah* 31

Which of the following shows the tissue present at Zone X?
*Yang manakah antara berikut menunjukkan tisu yang hadir di Zon* X?

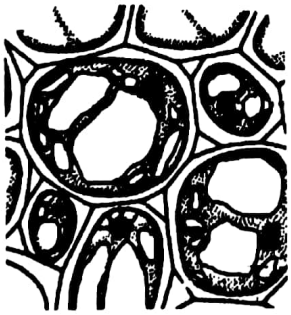
A



C



B



D

47 Mendel conducted an experiment to study the inheritance in pea plants. Which of the following characteristics was studied by Mendel?

*Mendel telah menjalankan eksperimen untuk mengkaji perwarisan pada pokok kacang pis. Antara ciri-ciri manakah yang berikut telah dikaji oleh Mendel?*

**A** The size of the fruit

*Saiz buah*

**B** The colour of the stem

*Warna batang*

**C** The number of leaves

*Bilangan daun*

**D** The shape of pea pod

*Bentuk kacang pea*

48 A lady needs a blood transfusion after experiencing car accidents. She has the antibody anti-A and anti-B in her blood plasma. Which blood group is compatible to her blood?

*Seseorang wanita memerlukan pemindahan darah selepas mengalami kemalangan jalan raya. Dia mempunyai antibodi anti-*A *dan anti-*B *di dalam plasma darahnya. Kumpulan darah manakah yang sesuai untuknya*?

**A** Blood group O

*Kumpulan darah* O

**B** Blood group A

*Kumpulan darah* A

**C** Blood group AB

*Kumpulan darah* AB

**D** Blood group B

*Kumpulan darah* B

49 The allele for black eyes is dominant to allele blue eyes. Mr. X has heterozygous allele for black eyes while his wife has blue eyes. What is the probability of getting a child with blue eyes?

*Alel bagi warna mata hitam merupakan alel dominan kepada alel warna mata biru. Encik X mempunyai warna mata hitam yang diwakili oleh alel heterozigus manakala* isterinya mempunyai warna mata biru. *Apakah kebarangkalian bagi mereka untuk mendapat anak bermata biru?*

**A** 100%

**B** 25%

**C** 75%

**D** 50%

50 Diagram 32(a) shows a normal gene sequence of a nucleotide base while Diagram 32(b) shows a nucleotide base that has undergo gene mutation.

*Rajah* 32(a) *menunjukkan urutan gen normal pada bes nukleotida manakala Rajah* 32(b) *menunjukkan bes nukleotida yang mengalami mutasi gen.*

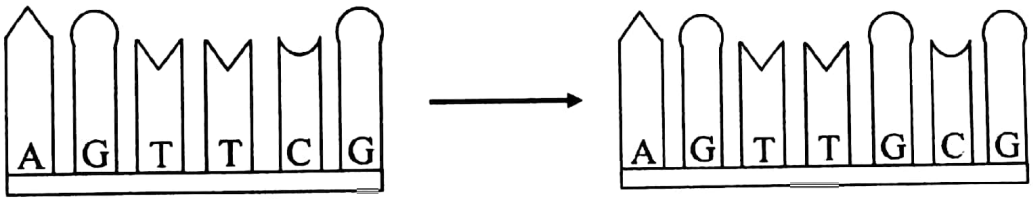



Diagram 32(a)
*Rajah* 32(a)

Diagram 32(b)
*Rajah* 32(b)

What causes of this gene mutation?

*Apakah yang menyebabkan mutasi gen ini?*

**A** Addition
*Penambahan*

**B** Deletion
*Pelenyapan*

**C** Insertion
*Penyisipan*

**D** Substitution
*Penggantian*

**END OF QUESTION PAPER**
***KERTAS PEPERIKSAAN TAMAT***