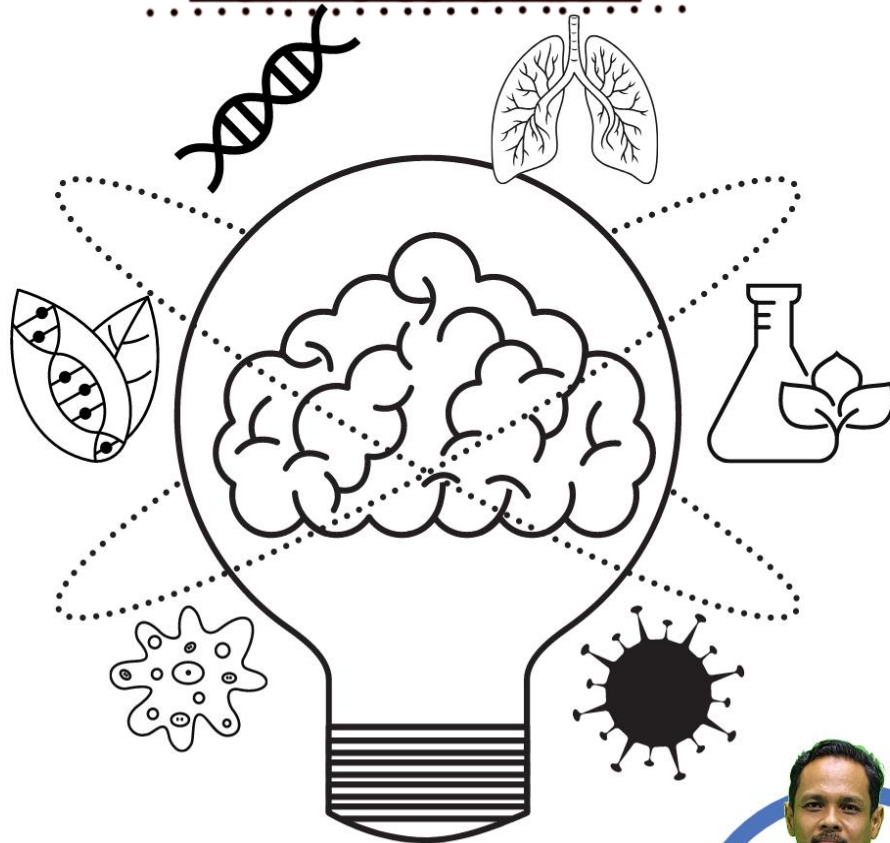


BENGKEL TEKNIK MENJAWAB BIOLOGI KERTAS 2 SPM 2022

BIO SMART A+ WORKSHOP

PERKASA SPM 2022

#JOMBANGKIT



SECTION A, B & C

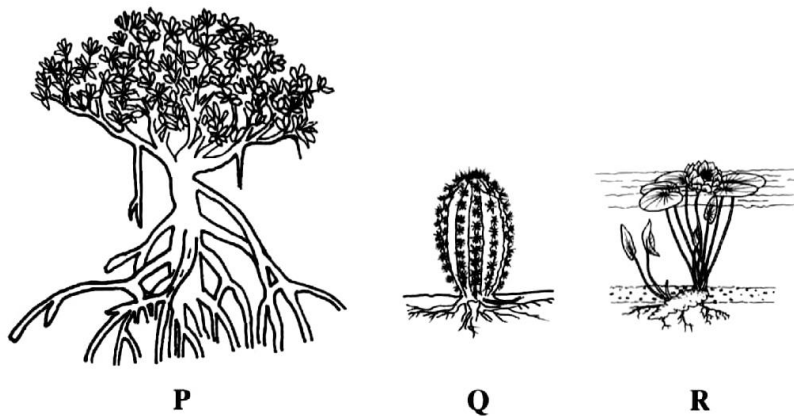
BY FAZLIE BIOSENSEI



BIOLOGY PAPER 2 (4551/2)
SECTION A (STRUCTURE-BASED)

- 1 Tumbuhan boleh dikelaskan berdasarkan habitatnya. Rajah 1 menunjukkan tiga contoh tumbuhan iaitu **P**, **Q** dan **R**.

*Plants can be classified according to their habitat. Diagram 1 shows three examples of plants which are **P**, **Q** and **R**.*



Rajah 1
Diagram 1

- (a) Berdasarkan Rajah 1, nyatakan **satu** contoh habitat untuk tumbuhan **P**.

*Based on Diagram 1, state **one** example of habitat for plant **P**.*

.....
[1 markah]
[1 mark]

- (b) Kelas bagi tumbuhan **P** berdasarkan habitatnya adalah halofit.

Nyatakan kelas bagi tumbuhan **Q** dan tumbuhan **R**, berdasarkan habitatnya.

*Class for plant **P** based on their habitat is halophyte.*

*State the class of plant **Q** and **R** based on their habitat.*

Q :

R :

[2 markah]
[2 marks]

- (c) Tumbuhan memerlukan air untuk pertumbuhan dan metabolisme. Tumbuhan **Q** banyak dijumpai di gurun.

Terangkan bagaimana tumbuhan **Q** beradaptasi untuk mendapatkan air di kawasan tersebut.

*Plants need water for growth and metabolism. Plant **Q** is found mainly in the desert.*

*Explain how plant **Q** is adapted to obtain the water in the area.*

.....

.....

.....

[2 markah]

[2 marks]

- (d) Tumbuhan **R** mempunyai daun yang lebar dan tisu aerenkima yang banyak.

Nyatakan peranan adaptasi ini kepada tumbuhan tersebut.

*Plant **R** has broad leaves and a lot of aerenchyma tissues.*

State the role of this adaptation to the plant.

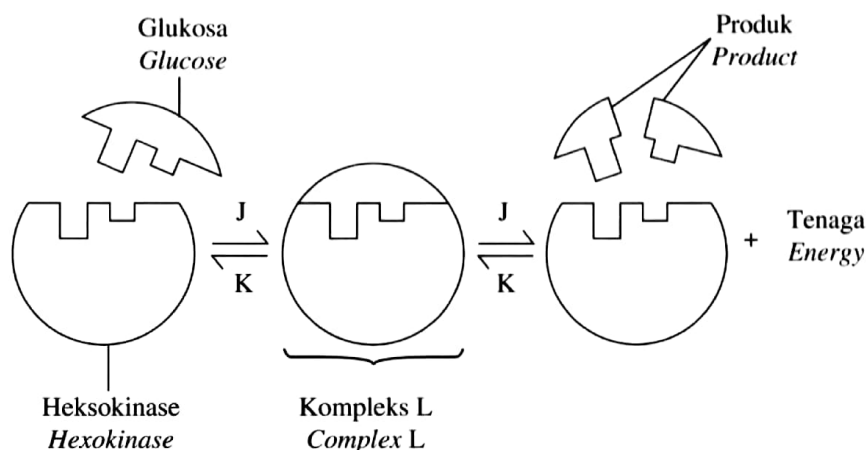
.....

[1 markah]

[1 mark]

- 2 Rajah 2 menunjukkan metabolisme J dan metabolisme K dalam sel yang dimangkin oleh enzim.

Diagram 2 shows metabolism J and K in a cell that are catalysed by an enzyme.



Rajah 2
Diagram 2

- (a) (i) Nyatakan nama bagi kompleks L.

State the name of complex L.

.....

[1 markah]

[1 mark]

- (ii) Nyatakan jenis enzim heksokinase.

State the type of hexokinase enzyme.

.....
[1 markah]
[1 mark]

- (b) Berdasarkan Rajah 2, nyatakan jenis metabolisme J dan metabolisme K.

Based on Diagram 2, state the types of metabolism J and K.

J :

K :

[2 markah]
[2 marks]

- (c) Pernyataan berikut adalah tentang sifat umum enzim.

The following statement is about the general characteristic of enzyme.

Merkuri adalah logam berat paling toksik yang merencat fungsi enzim.

Mercury is the most toxic heavy metal which inhibits the function of enzyme.

Terangkan kesan merkuri ke atas aktiviti enzim heksokinase.

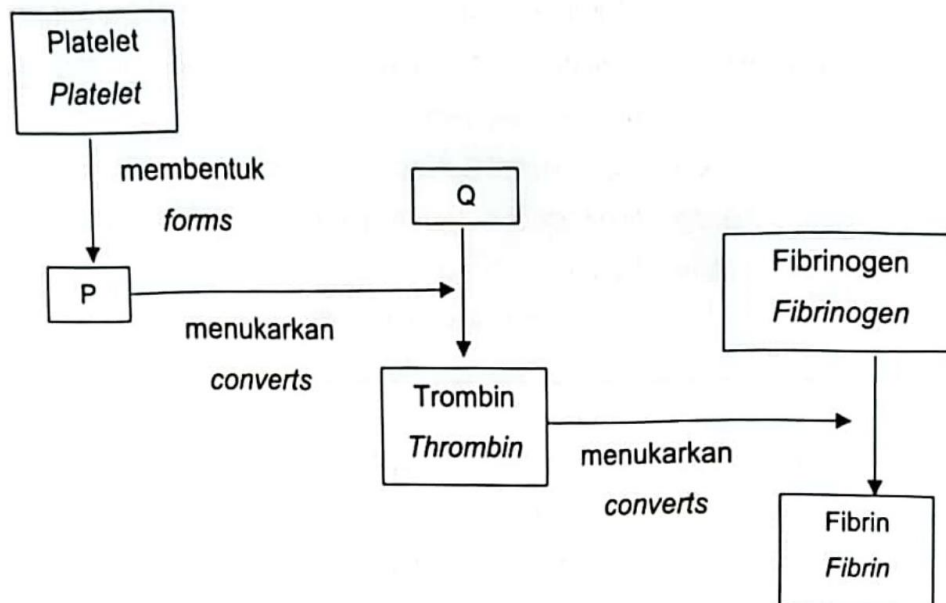
Explain the effects of mercury on the activity of hexokinase enzyme.

.....
.....
.....

[2 markah]
[2 marks]

2 Rajah 2.1 ialah rajah skema yang menunjukkan mekanisme pembekuan darah pada manusia.

Diagram 2.1 is a schematic diagram showing the mechanism of blood clotting in humans.



Rajah 2.1
Diagram 2.1

(a) (i) Namakan P dan Q.

Name P and Q.

P :

Q :

[2 markah/2 marks]

(ii) Apakah nutrien yang diperlukan untuk menukarkan Q kepada trombin?

What nutrients are needed to convert Q to thrombin?

.....

[1 markah/1 mark]

- (b) Encik S mempunyai kumpulan darah A dan isterinya mempunyai kumpulan darah B. Isteri Encik S kemalangan dan memerlukan pemindahan darah. Encik S bercadang untuk mendermakan darah kepada isterinya.

Wajarkan.

Mr. S has blood group A and his wife has blood group B. Mr. S's wife had an accident and needed a blood transfusion. Mr. S plans to donate blood to his wife. Justify.

.....

.....

.....

.....

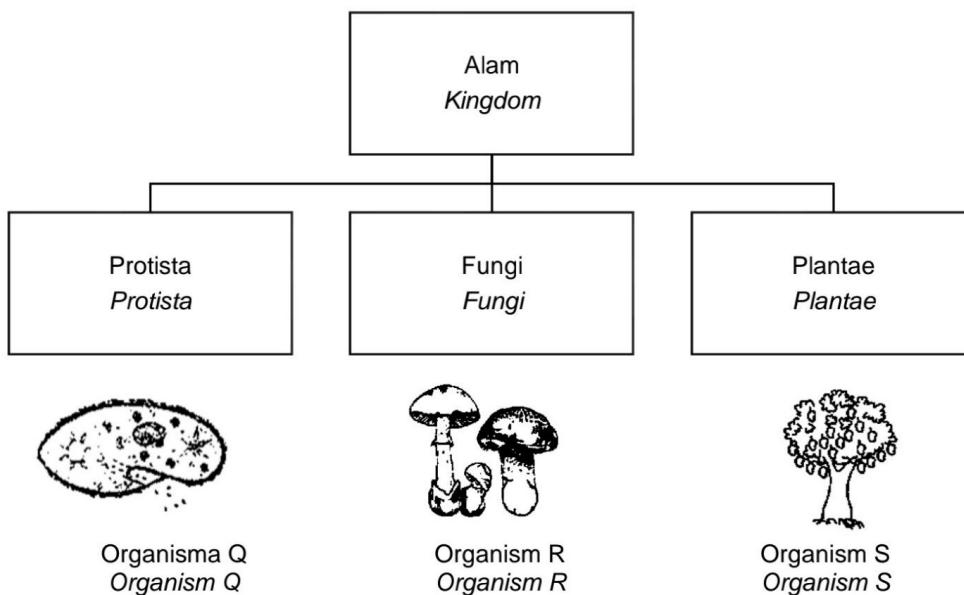
.....

.....

[3 markah/3 marks]

3. Rajah 3 menunjukkan tiga jenis organisma Q, R dan S daripada alam yang berlainan.

Diagram 3 shows three types of organisms Q, R and S from different kingdom.



Rajah 3
Diagram 3

- (a)(i) Berdasarkan Rajah 3, namakan satu organisma lain yang tergolong dalam alam yang sama dengan Organisma Q.

Based on Diagram 3, name another organism that belongs to the same kingdom as Organism Q.

.....

[1 markah/1 mark]

- (ii) Nyatakan dua ciri organisma yang dinyatakan di 3(a)(i).

State two characteristics of organism stated in 3(a)(i).

.....

[2 Markah/2 marks]

- (b) (i) Organisma R menguraikan dahan pokok yang mati.

Nyatakan jenis interaksi di antara Organisma R dan dahan pokok tersebut.

Organism R decomposes dead tree branches.

State the type of interaction between Organism R and the branch of the tree.

.....
 [1 markah/1 mark]

- (ii) Penggunaan sejenis pestisid telah menyebabkan populasi pengurai dalam tanah berkurangan. Terangkan kesan penggunaan pestisid ini terhadap kesuburan tanah.

The use of pesticides has caused the population of decomposers in the soil to decrease. Explain the effect of using this pesticide on soil fertility.

.....

 [2 markah/2 marks]

- (c) Paku pakis juga adalah organisma dalam alam yang sama dengan Organisma S.

Nyatakan satu perbezaan antara kedua-dua organism ini.

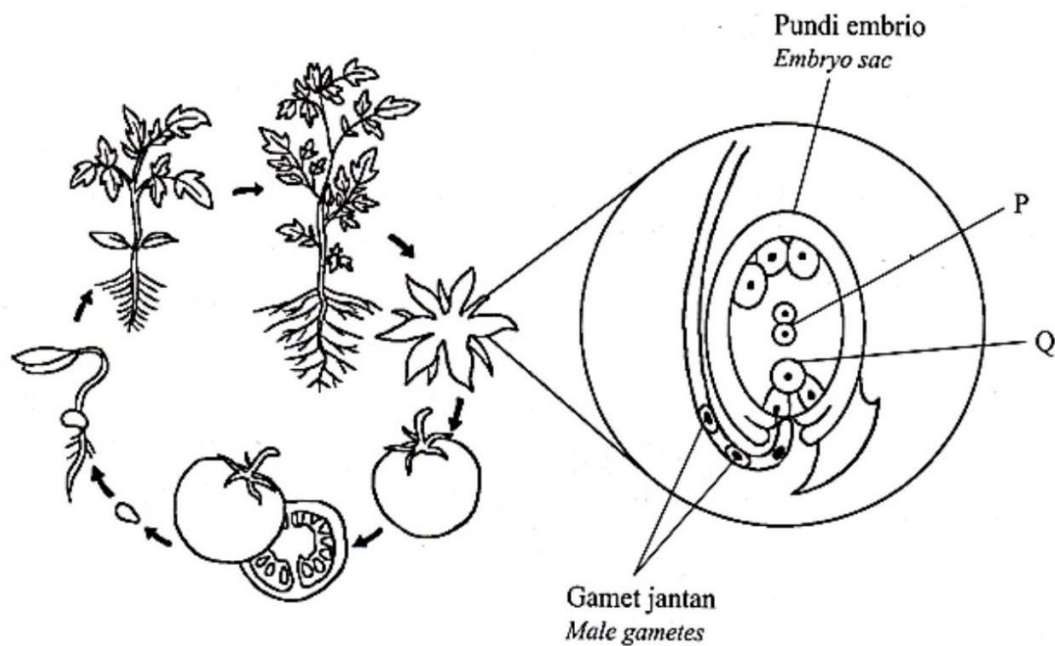
Fern is also an organism in the same kingdom as Organism S. State one difference between these two organisms.

.....

[1 markah/1 mark]

4. Rajah 4 menunjukkan proses persenyawaan ganda dua yang berlaku di dalam pundi embrio bagi pokok tomato.

Diagram 4 shows double fertilization process that occur in embryo sac of tomato plant.



Rajah 4
Diagram 4

- (a) Berdasarkan Rajah 4, namakan P dan Q.

Based on Diagram 4, name P and Q.

P :

Q :

[2 markah/2 marks]

- (b) Nyatakan bagaimana dua gamet jantan di dalam tiub debunga terbentuk.

State how two male gametes in a pollen tube formed.

.....

.....

[1 markah/1 mark]

- (c) Terangkan kesan ke atas pembentukan buah tomato sekiranya bunga bagi pokok gugur sebelum disenyawakan.

Explain the effect to the formation of tomato if the flower of the tomato plant falls off before being fertilised.

.....

.....

.....

[3 markah/3 marks]

- (d) Nyatakan perbezaan ke atas pembentukan buah tomato sekiranya buah tomato disembur dengan hormon auksin.

State the difference in formation of tomato if the flower is sprayed with auxin hormone.

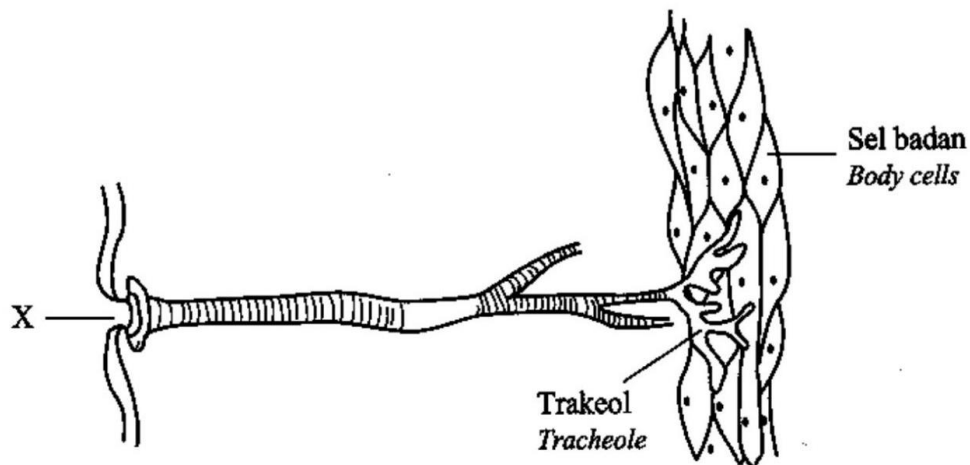
.....

.....

[1 markah/1 mark]

6. Rajah 6.1 menunjukkan struktur respirasi serangga.

Diagram 6.1 shows the respiratory structure of insects.



Rajah 6.1
Diagram 6.1

- (a) (i) Namakan X.

Name X.

.....

[1 markah/1 mark]

- (ii) Serangga mempunyai bilangan trakeol yang banyak. Apakah tujuannya?

Insects have a large number of tracheoles. What is the purpose?

.....

[1 markah/1 mark]

- (b) Struktur X terdapat pada toraks dan abdomen serangga. Terangkan perkaitan antara fungsi struktur X dengan kedudukannya.

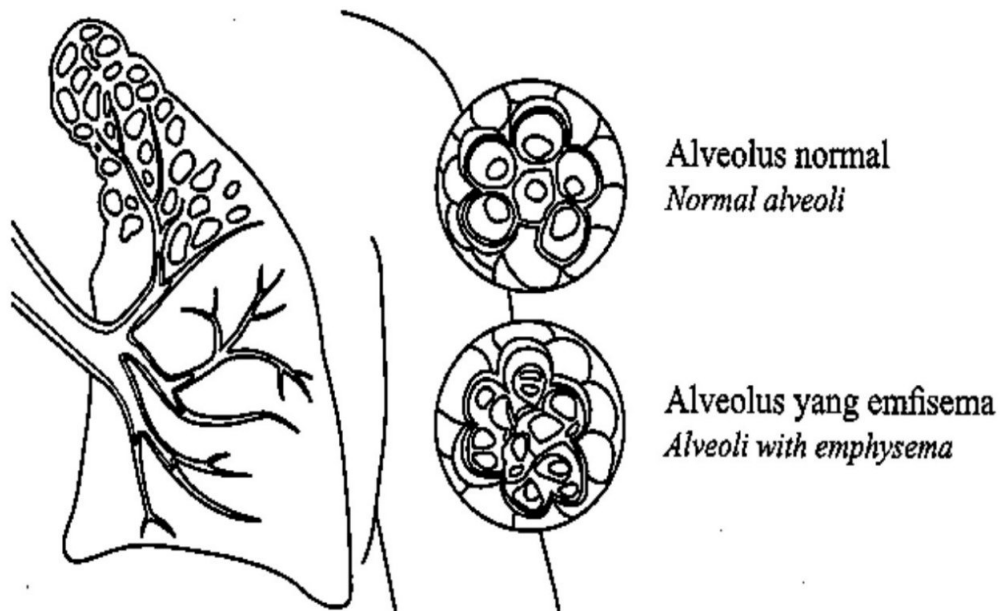
Structure X is found in the thorax and abdomen of insects. Explain the relationship between the function of structure X and its position.

.....
.....
.....

[3 markah/3 marks]

- (c) Rajah 6.2 menunjukkan alveolus individu yang sihat dan alveolus individu yang menghidap emfisema.

Diagram 6.2 shows alveoli of a healthy individual and alveoli of an individual with emphysema.



Rajah 6.2
Diagram 6.2

Emfisema adalah sejenis penyakit paru.

Emphysema is a type of lung disease.

- (i) Nyatakan satu faktor yang menyebabkan emfisema

State one factor that causes emphysema.

.....
.....

[1 markah/1 mark]

- (ii) Terangkan perbezaan struktur alveolus yang normal dengan alveolus yang menghidap emfisema.

Explain the differences between the structure of normal alveoli and alveoli with emphysema.

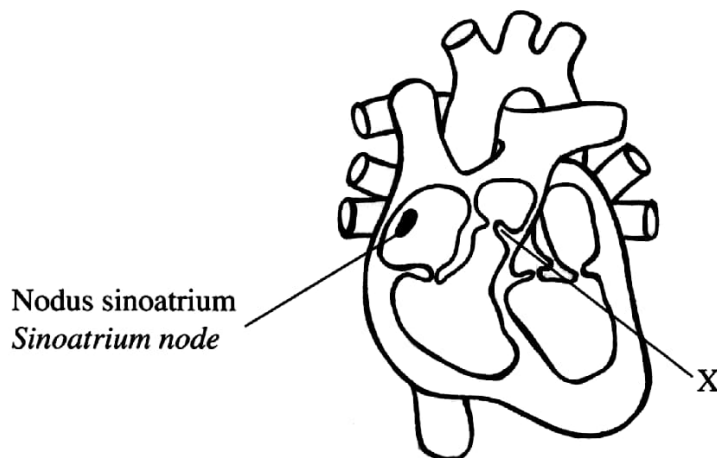
.....
.....
.....

[2 markah/2 marks]

SECTION B (CLOSED RESPONSE ESSAY)

- 9 Rajah 9.1 menunjukkan keratan membujur jantung manusia.

Diagram 9.1 shows a longitudinal section of a human's heart.

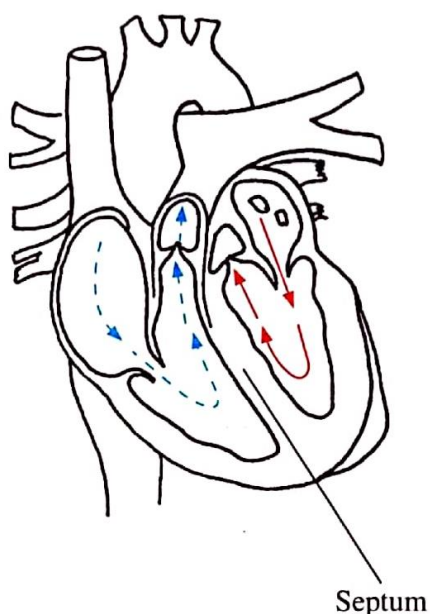


Rajah 9.1
Diagram 9.1

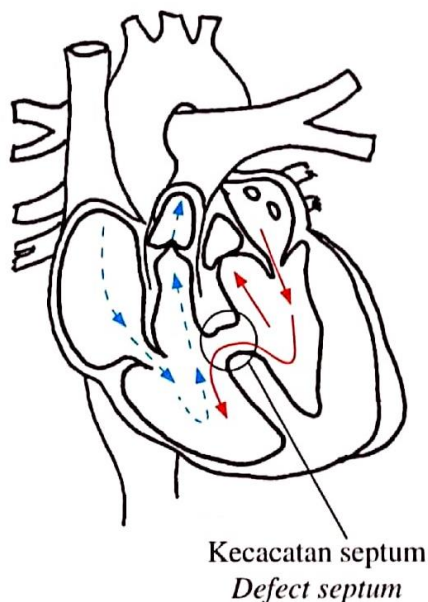
- (a) (i) Apakah struktur X dan peranannya? [2 markah]
What is structure X and its role? [2 marks]
- (ii) Bagi pesakit yang mengalami kegagalan nodus sinoatrium, doktor akan memasukkan 'Meditronic Micra' pada jantung tanpa menjalani pembedahan. Terangkan bagaimana alat tersebut berfungsi. [3 markah]
For patients with sinoatrium nodes failure, doctor will insert 'Meditronic Micra' to the heart by not undergoing surgery.
Explain how the device works. [3 marks]

- (b) Rajah 9.2(a) menunjukkan keratan membujur jantung normal seorang kanak-kanak. Rajah 9.2(b) menunjukkan keratan membujur jantung seorang kanak-kanak yang mengalami kecacatan pada septum ventrikel.

Diagram 9.2(a) shows a longitudinal section of a normal heart of a child. Diagram 9.2(b) shows a longitudinal section of a child's heart with defect at the septum of a ventricle.



Rajah 9.2(a)
Diagram 9.2(a)



Rajah 9.2(b)
Diagram 9.2(b)

Kekunci:
Key

---> Darah terdeoksigen
Deoxygenated blood

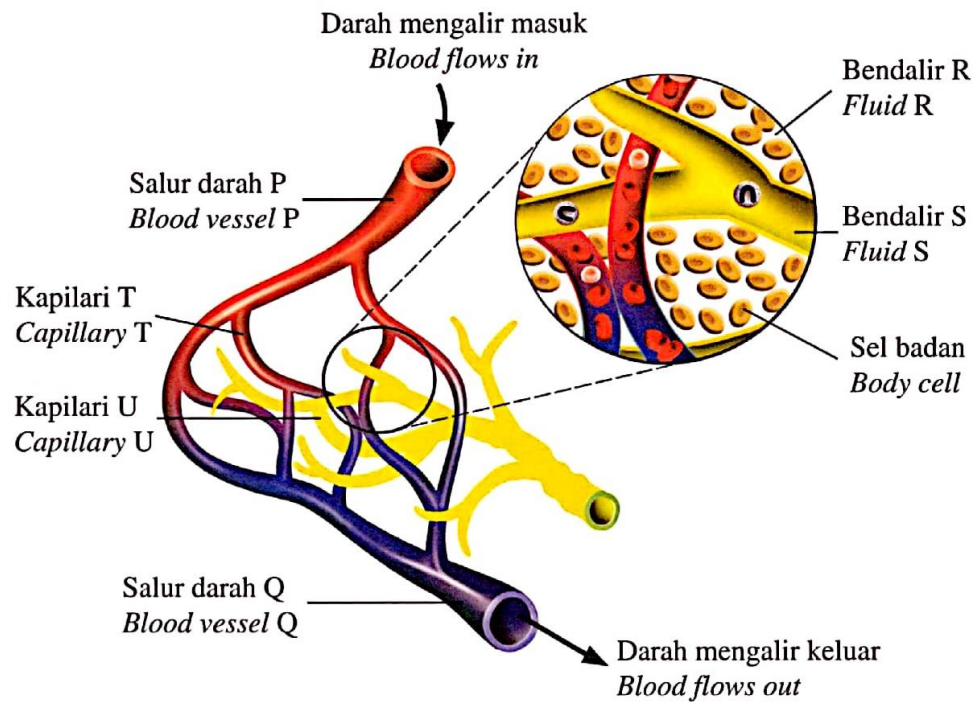
—> Darah beroksigen
Oxygenated blood

Berdasarkan Rajah 9.2(b), terangkan bagaimana kecacatan septum mempengaruhi sistem peredaran darah kanak-kanak itu. [5 markah]

Based on Diagram 9.2(b), explain how septum defect affects the blood circulatory system of the child. [5 marks]

- (c) Rajah 9.3 menunjukkan sebahagian daripada sistem peredaran darah dan sistem limfa dalam manusia.

Diagram 9.3 shows a part of blood circulatory system and lymphatic system in human.



Rajah 9.3
Diagram 9.3

Berdasarkan Rajah 9.3, bezakan antara:

Based on Diagram 9.3, differentiate between:

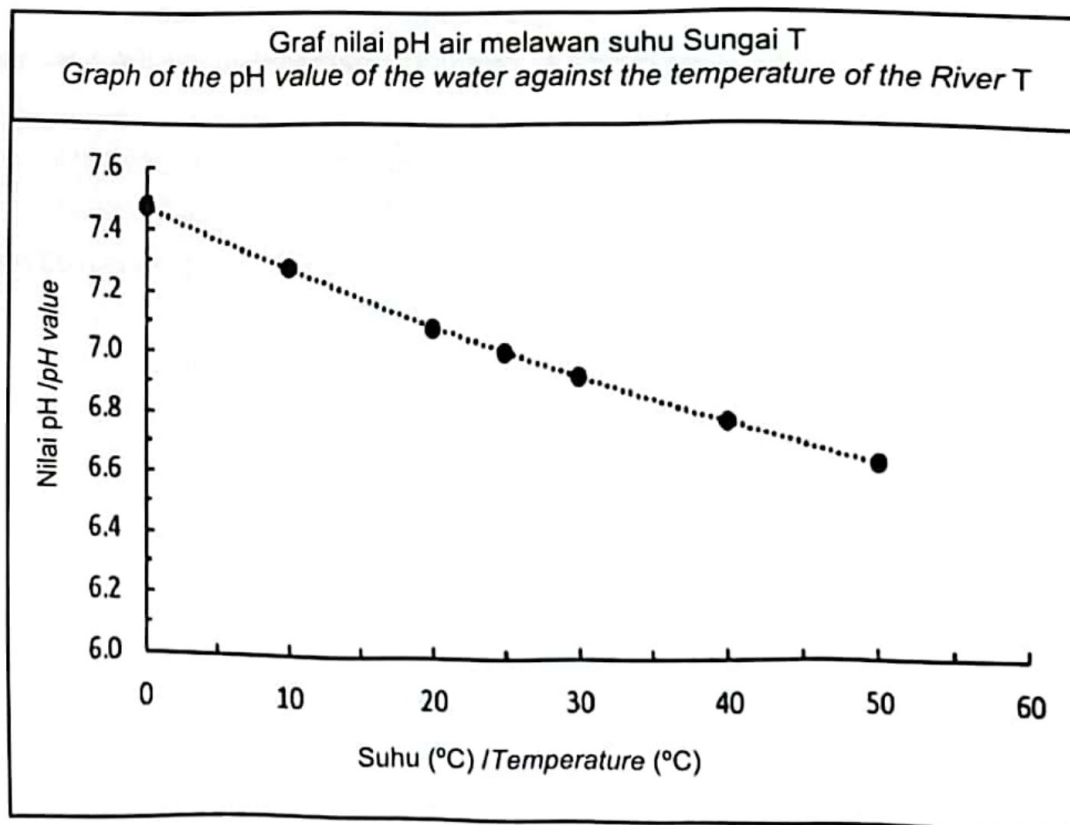
- Salur darah P dengan salur darah Q
Blood vessel P and blood vessel Q
- Bendalir R dengan bendalir S
Fluid R and fluid S
- Kapilari T dengan kapilari U
Capillary T and capillary U

[10 markah]
[10 marks]

SECTION C (OPEN RESPONSE ESSAY)

11. (a) Rajah 11. 1 menunjukkan nilai pH air melawan suhu Sungai T yang terletak berhampiran dengan stesen jana kuasa elektrik.

Diagram 11. 1 shows the pH value of the water against the temperature of the River T located near to electric power stations.



Rajah 11. 1

Diagram 11. 1

- (i) Keadaan ini boleh menyebabkan kemerosotan kepada kualiti air sungai T. Terangkan.

This situation can cause a deterioration in the water quality of the River T.

Explain.

[5 markah / 5 marks]

- (ii) Selepas enam bulan, didapati suhu air Sungai T semakin meningkat.
Ramalkan kesan jangka panjang keadaan ini kepada penduduk sekitar dan ekosistem sungai T.

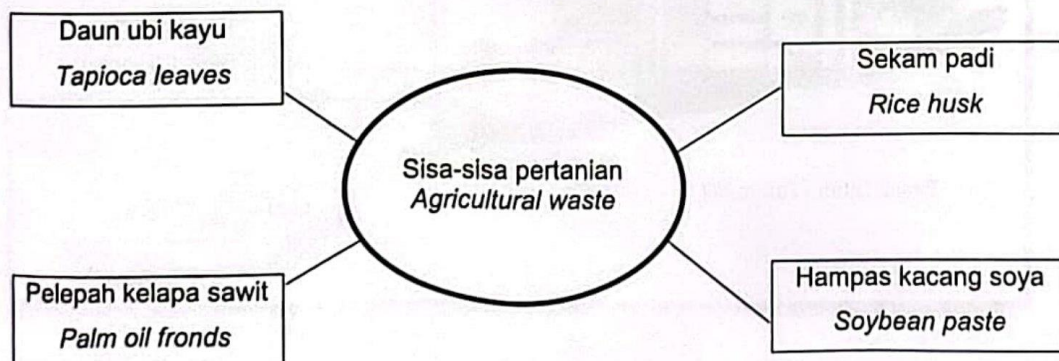
After six months, it was found that the water temperature of Sungai T was increasing.

Predict the long-term effects of this situation on the surrounding population and ecosystem of the river T.

[5 markah /5 marks]

- (b) Rajah 11. 2 menunjukkan jenis sisa-sisa pertanian yang dihasilkan oleh sektor pertanian di negara kita.

Diagram 11. 2 shows the types of agricultural waste produced by the agricultural sector in our country.



Rajah 11. 2
Diagram 11. 2

Berdasarkan Rajah 11. 2, wajarkan bagaimana amalan berkonsepkan teknologi hijau dapat dilakukan menggunakan sisa-sisa pertanian tersebut yang menyumbang kepada kelestarian alam sekitar.

Based on the Diagram 11. 2, justify how the concept of green technology practices can be done using agricultural residues that contribute to environmental sustainability.

[4 markah/4 marks]

