

New exam format for SPM biology (4551) starting 2021

FORMAT INSTRUMEN PEPERIKSAAN SPM MULAI TAHUN 2021 MATA PELAJARAN FIZIK (4531)/ KIMIA (4541)/ BIOLOGI (4551)/ SAINS TAMBAHAN (4561)

BIL	PERKARA	KERTAS 1 (4531/1)/(4541/1)/(4551/1)/(4561/1)	KERTAS 2 (4531/2)/(4541/2)/(4551/2)/(4561/2)	KERTAS 3 (4531/3)/(4541/3)/(4551/3)/(4561/3)
1	Jenis Instrumen	Ujian Bertulis		Ujian Amali
2	Jenis Item	Objektif Aneka Pilihan	<ul style="list-style-type: none">• Subjektif Berstruktur• Subjektif Respons Terhad• Subjektif Respons Terbuka	Tugasan Amali Berpandu dan Tidak Berpandu
3	Bilangan Soalan	40 soalan (40 markah) (Jawab semua soalan)	Bahagian A: <ul style="list-style-type: none">• 8 soalan (60 Markah) (Jawab semua soalan) Bahagian B: (20 Markah) <ul style="list-style-type: none">• 2 soalan (Jawab 1 soalan) Bahagian C: (20 Markah) <ul style="list-style-type: none">• 1 soalan	2 Tugasan Amali
4	Jumlah Markah	40 markah	100 markah	30 markah
5	Konstruk	<ul style="list-style-type: none">• Mengingat• Memahami• Mengaplikasi• Menganalisis	<ul style="list-style-type: none">• Mengingat• Memahami• Mengaplikasi• Menganalisis• Menilai• Mencipta	<ul style="list-style-type: none">• Mengingat, Memahami, Mengaplikasi / Mencipta• Kemahiran proses sains• Kemahiran manipulatif
6	Tempoh Ujian	1 jam 15 minit	2 jam 30 minit	1 jam 45 minit
7	Cakupan Konteks	Standard kandungan dan standard pembelajaran dalam Dokumen Standard Kurikulum dan Pentaksiran (DSKP) KSSM (Tingkatan 4 dan 5)		
8	Aras Kesukaran	Rendah : Sederhana : Tinggi 5 : 3 : 2		
9	Kaedah Penskoran	Dikotomus	Analitik	
10	Alat Tambahan	Kalkulator saintifik		

CHAPTER 2

1. Diagram 1.1 shows a root hair cell.

Rajah 1.1 menunjukkan satu sel rambut akar.

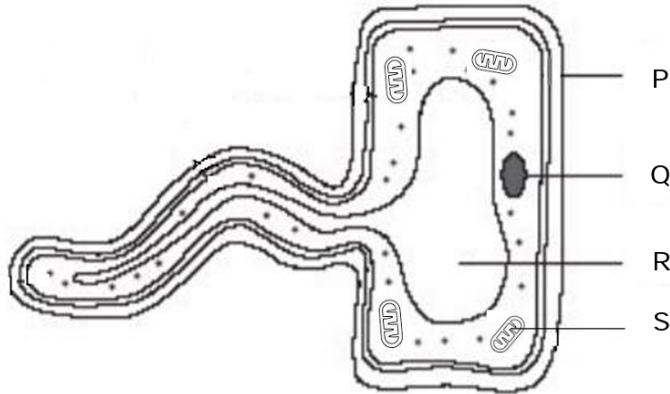


Diagram 1.1

Rajah 1.1

- (a) (i) Name P and Q.

Namakan P and Q.

P:

Q:

[2 marks/2 markah]

- (ii) State the function of R.

Nyatakan fungsi R.

.....
.....

[1 mark/1 markah]

- (b) The cell in Diagram 1.1 cannot carry out photosynthesis.

Why?

Sel dalam Rajah 1.1 tidak dapat menjalankan fotosintesis.

Mengapa?

.....
.....

[1 mark/1 markah]

- (c) Explain the importance of root hair cell contain more organelle S.

Terangkan kepentingan sel rambut akar mempunyai lebih organel S.



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

[2 marks/2 markah]

Brought to you by:

CHAPTER 4

2. Diagram 2.1 shows the formation of lipid molecule.

Rajah 2.1 menunjukkan pembentukan satu molekul lipid.

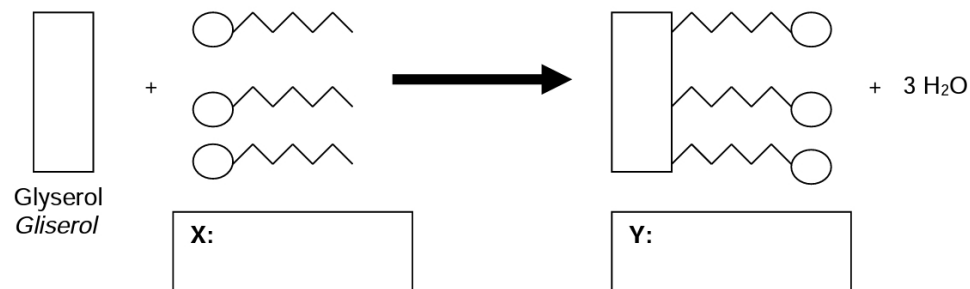


Diagram 2.1/Rajah 2.1

(a) On Diagram 2.1, label X and Y.

Pada Rajah 2.1 labelkan X dan Y.

[2 marks/2 markah]

(b) Explain the formation of molecule Y.

Terangkan pembentukan molekul Y.

.....

.....

.....

[2 marks /2 markah]

(c) Diagram 2.2 shows two types of fatty acid P and Q.

Rajah 2.2 menunjukkan dua jenis asid lemak P dan Q.

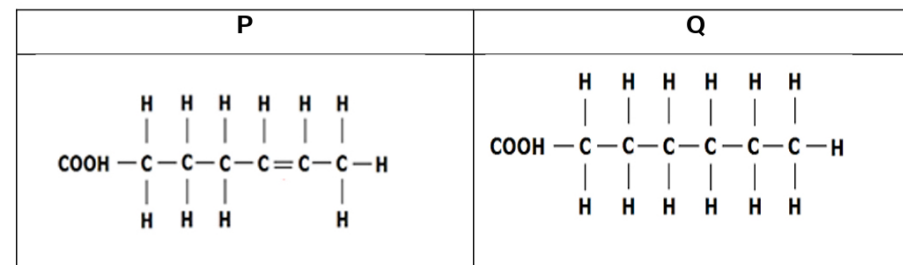


Diagram 2.2 / Rajah 2.2

State two differences between two types of fatty acid.

Nyatakan dua perbezaan antara dua jenis asid lemak.

P	Q

[2 marks /2 markah]

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CHAPTER 7

3. Respiration is a process that occurs in all living organisms. Diagram 3 shows two individuals, P and Q in two different situations. P is sitting down while Q is running in a 200 metre sprint event.

Respirasi ialah proses yang berlaku di dalam semua organisma hidup. Rajah 3 menunjukkan dua individu P dan Q dalam dua situasi yang berbeza. P sedang duduk manakala Q sedang berlari dalam acara pecut 200 meter.



Individual P
Individu P



Individual Q
Individu Q

Diagram 3 / Rajah 3

- (a) Based on Diagram 3, identify the type of respiration for P and Q.
Berdasarkan pada Rajah 3, kenal pasti jenis respirasi bagi P dan Q.

P :

Q :

[2 marks / 2 markah]

- (b)(i) State two differences between the type of respiration that occurred in P and Q.
Nyatakan dua perbezaan di antara jenis respirasi yang berlaku dalam P dan Q.

.....

.....

[2 marks / 2 markah]

- (ii) Write the **word equation** for the type of respiration that occurred in P.
Tuliskan **persamaan perkataan** bagi jenis respirasi yang berlaku dalam P.

.....

[1 mark / 1 markah]

- (c) At the end of the 200 metre sprint event., the man in situation Q experienced painful leg cramps due to muscle fatigue.
Pada akhir acara lumba lari jarak jauh, lelaki dalam situasi Q mengalami kekejangan kaki yang amat sakit akibat kelesuan otot .



- Explain why muscle fatigue occurs.
Terangkan mengapa kelesuan otot berlaku.

.....

.....

.....

[3 marks/3 markah]

Brought to you by:

CHAPTER 10

4. Diagram 4.1 shows the relationship between the blood circulatory system and the lymphatic system.
Rajah 4.1 menunjukkan hubungan antara sistem peredaran darah dan sistem limfa manusia.

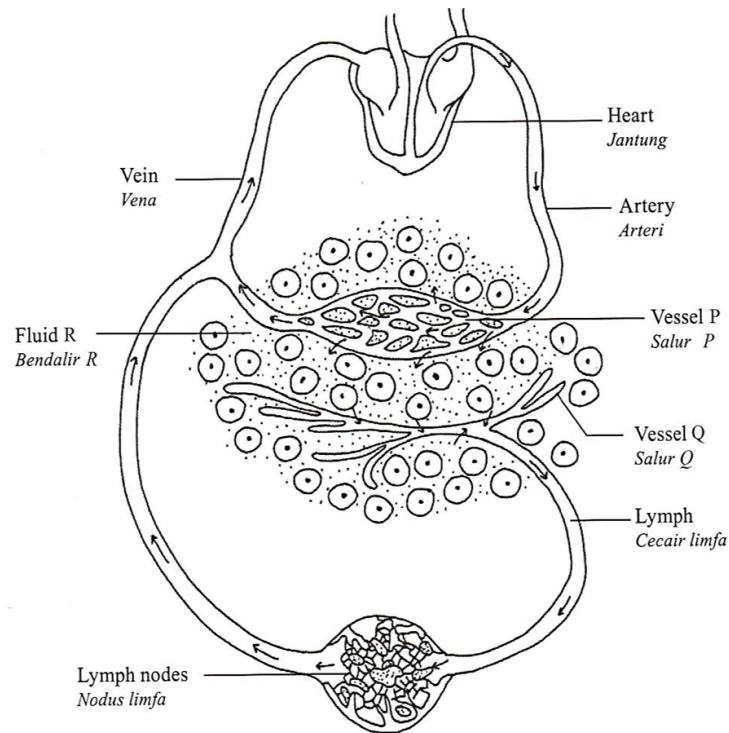


Diagram 4.1 / Rajah 4.1



- (a) Name the following :
Namakan yang berikut :

Vessel P / Salur P :

Vessel Q / Salur Q :

[2 Marks / 2 markah]

- (b) Explain the formation of fluid R
Terangkan pembentukan bendalir R.

.....

[3 marks / 3 markah]

- (c) 90% of the interstitial fluid leaves the blood must be returned to the blood circulatory system.
 Explain what will happen if the excess interstitial fluid failed to return to the vessel P.
90% cecair intertis antara sel yang keluar dari darah mesti dikembalikan ke system peredaran darah.
Terangkan apakah yang akan terjadi sekiranya cecair intertis tidak dapat dikembalikan ke salur P.

.....

[3 marks / 3 markah]

Brought to you by:

CHAPTER 10 - HOTS

Coronary or heart bypass surgery can relieve chest pain or angina. In the operation, the surgeon uses a blood vessel from the patient's leg, arm or chest to bypass a narrowed section of a coronary artery.

Pembedahan koronari atau pintasan jantung boleh mengatasi sakit dada atau angina. Semasa pembedahan, doktor mengambil salur darah daripada kaki, lengan atau dada pesakit sebagai pintasan kepada bahagian arteri koronari yang sempit

Diagram 4.2 shows the human heart after the bypass surgery.

Rajah 4.2 menunjukkan jantung manusia selepas pembedahan pintasan.

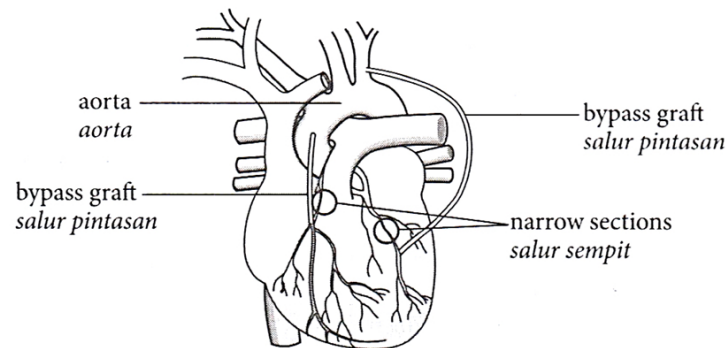


Diagram 4.2 / Rajah 4.2

Based on your biological knowledge, explain how the narrow section of the coronary artery occurs.

Berdasarkan pengetahuan biologi anda, terangkan bagaimana salur sempit pada arteri koronari terbentuk.

.....

.....

[2 Marks / 2 markah]

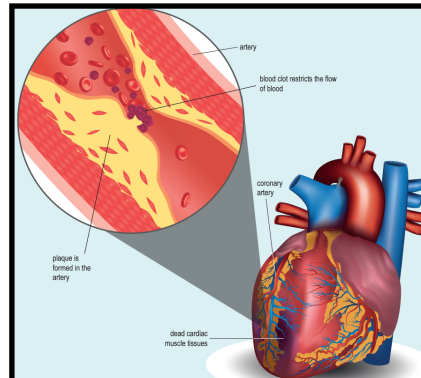
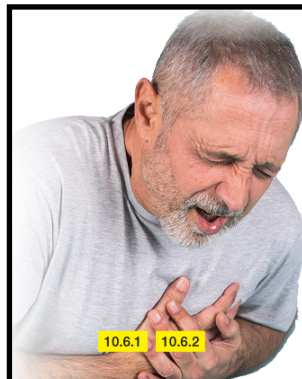
Suggest ways that the patients should do to reduce the risk of heart failure.

Cadangkan langkah-langkah yang perlu diambil oleh pesakit untuk mengurangkan risiko kegagalan jantung.

.....

.....

[2 Marks / 2 markah]

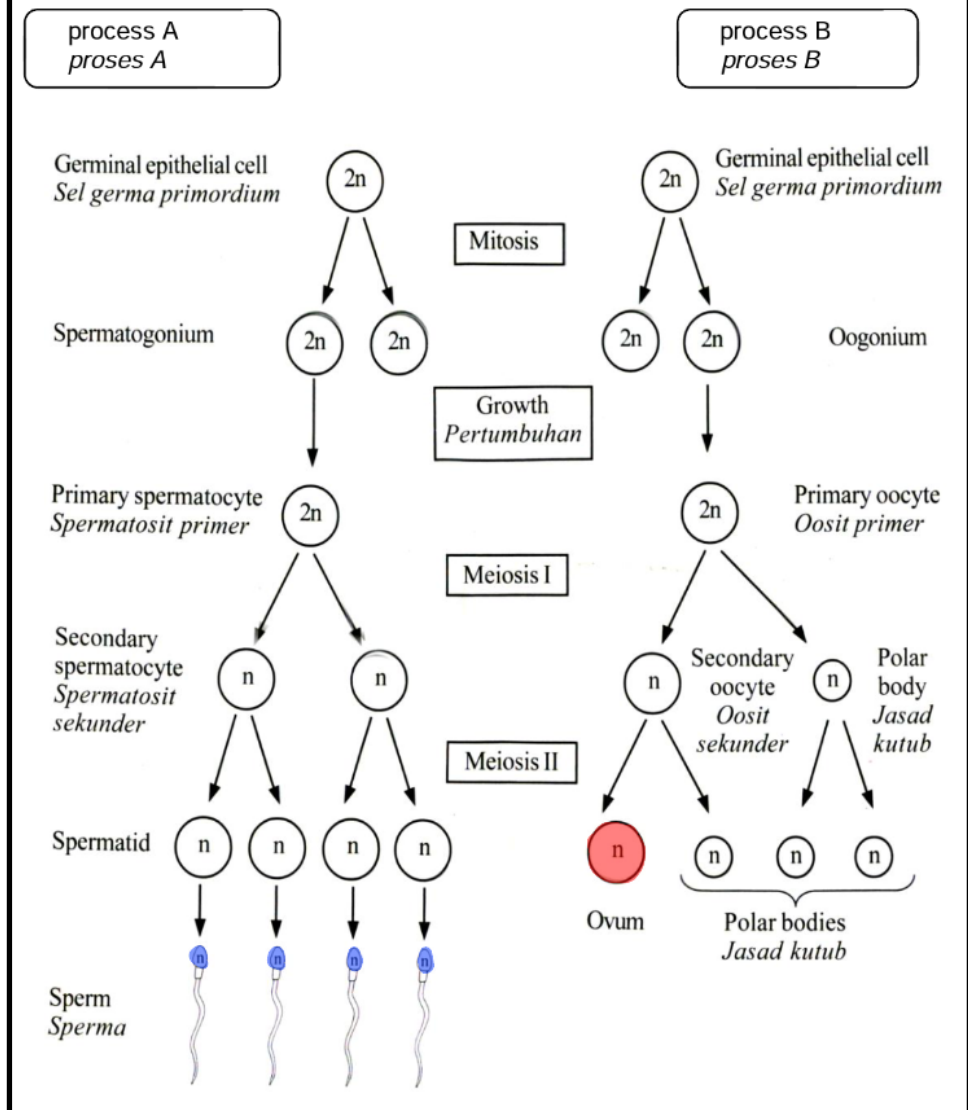


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CHAPTER 15

Diagram 5.1 shows the schematic diagram of gametogenesis process in human.

Rajah 5.1 menunjukkan rajah skema proses gametogenesis pada manusia.



(a) Name the process in diagram 5.1

Namakan proses dalam rajah 5.1

i) Process A / Proses A :

.....

ii) Process B / Proses B :

.....

[2 marks]
[2 markah]

(b) State two differences between process A and process B.

Nyatakan dua perbezaan antara proses A dan proses B.

.....

[2 marks]
[2 markah]

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The married women found that structure Z is blocked and she cannot get pregnant. Explain the technique that can be applied to overcome the problem above.

Seorang wanita yang berkahwin mendapati struktur Z telah tersumbat dan beliau tidak boleh hamil. Terangkan teknik yang boleh digunakan untuk mengatasi masalah ini.

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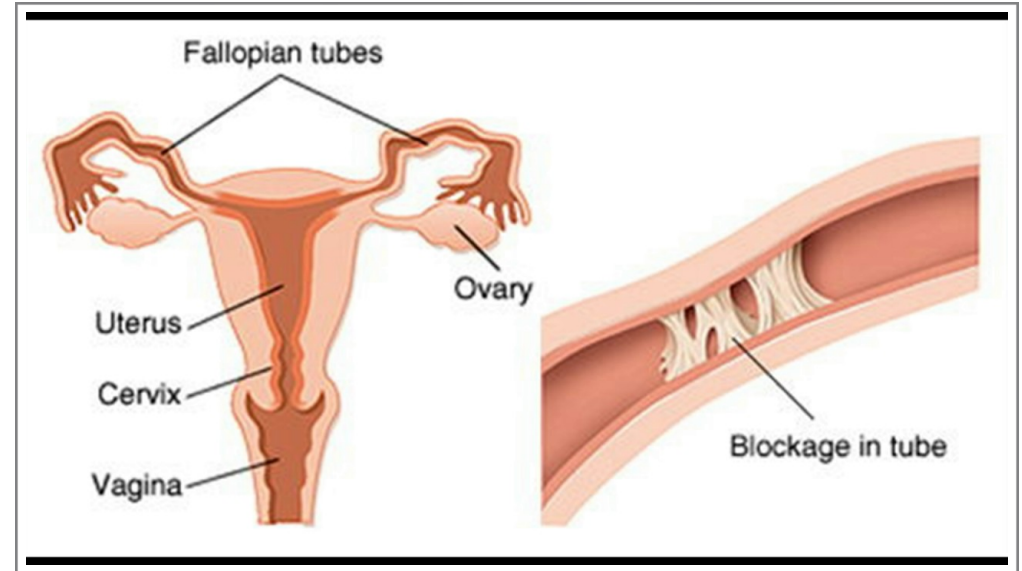
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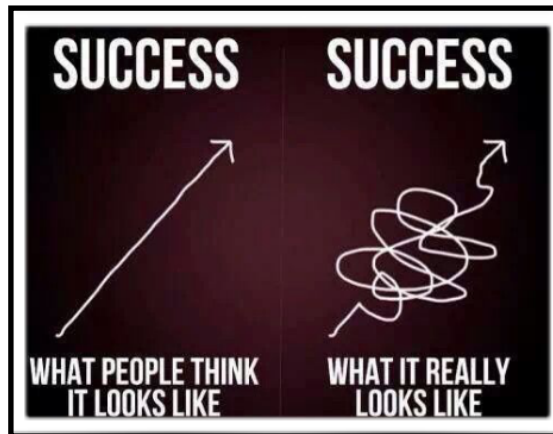
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[3 marks]
[3 markah]



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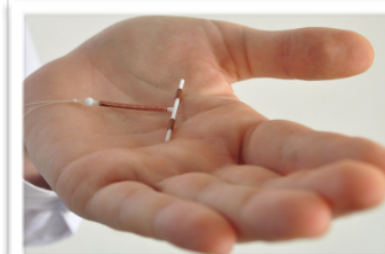
Table 5 shows the different methods of contraception and their functions.
Jadual 5 menunjukkan kaedah mencegah penghamilan yang berbeza dan fungsinya

Method <i>Kaedah</i>	Biological principle <i>Prinsip Biologi</i>
W	To prevent sperms from entering the reproductive system of a woman through the vagina <i>Untuk mencegah sperma daripada memasuki sistem pembiakan seorang wanita melalui faraj</i>
X	To prevent the release of an ovum from the ovary <i>Untuk mencegah pembebasan ovum dari ovari</i>
Y	To prevent the implantation of a zygote in the endometrium wall <i>Untuk mencegah penempelan zigot pada dinding endometrium</i>
Z	To prevent sperms from entering the uterus <i>Untuk mencegah sperma daripada memasuki uterus.</i>

Table 40 / *Jadual 40*

What are methods W, X, Y dan Z?
Apakah kaedah W, X, Y dan Z?

	W	X	Y	Z
A	IUD device <i>Alat IUD</i>	Contraceptive pills <i>Pil perancang</i>	Diaphragm <i>Diafragma</i>	Condom <i>Kondom</i>
B	Condom <i>Kondom</i>	Contraceptive pills <i>Pil perancang</i>	IUD device <i>Alat IUD</i>	Diaphragm <i>Diafragma</i>
C	Diaphragm <i>Diafragma</i>	Contraceptive pills <i>Pil perancang</i>	IUD device <i>Alat IUD</i>	Condom <i>Kondom</i>
D	Contraceptive pills <i>Pil perancang</i>	Condom <i>kondom</i>	Diaphragm <i>Diafragma</i>	IUD device <i>Alat IUD</i>



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CHAPTER 9

Diagram 7.1 shows transport of nutrients from small intestine to the liver.
Rajah 7.1 menunjukkan pengangkutan nutrient dari usus kecil ke hati.

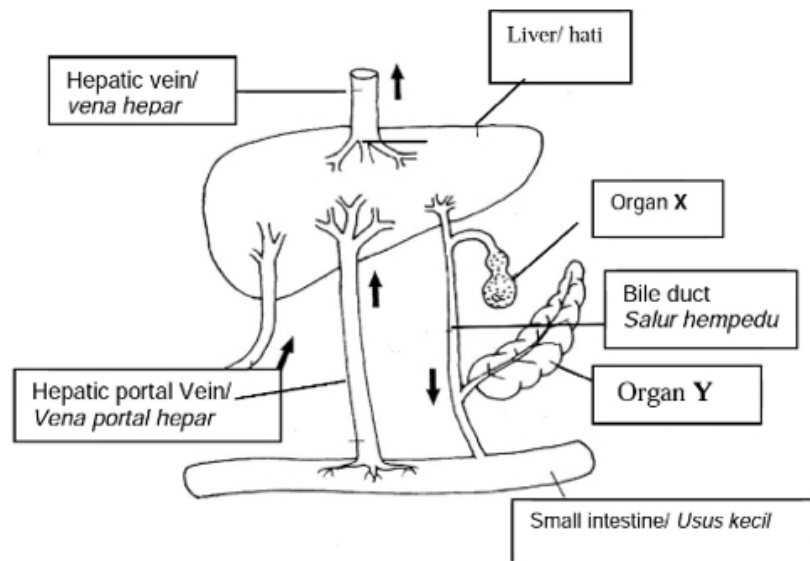


Diagram 7.1
Rajah 7.1

- (a) (i) Organ X and organ Y plays an important role in digestive system.
Explain the role of organ X and organ Y in digestion of lipid.

Organ X and organ Y memainkan peranan yang penting dalam sistem pencernaan.

Terangkan peranan organ X dan Y dalam pencernaan lipid

[6 marks]
[6 markah]

- Organ X is g____ b_____.
- G____ b_____ [produces / stores] bile.
- Bile e_____ lipid to tiny d_____.
- To [↑ / ↓] the total surf____ a____ of the lipid.
- Organ Y is pan_____.
- Pan_____ secretes pan_____ juice containing li_____.
- Li_____ [hydrolyses / digests] lipid into fatty a_____ and glycerol.

(ii) A man is suffering from cancer that requires his organ Y to be removed.

What he should do to control the health problems that may result from the removal of organ Y? [6 marks]



Seorang lelaki menghidap kanser yang memerlukan organ Y beliau perlu dibuang.

Apakah yang harus dilakukannya untuk mengawal masalah kesihatan yang mungkin timbul akibat pembuangan organ Y? [6 markah]

- F1: Y/ pancreas cannot secrete pancreatic juice
Y / pancreas tidak dapat merembes jus pancreas
- P1: there is no pancreatic amylase / trypsin / lipase enzyme
tiada enzim amilase pancreas/ tripsin / lipase
- P2: digestion of carbohydrate / protein / lipid is not completed
pencernaan karbohidrat / protein / lipid tidak lengkap
- P3: absorption of nutrient / glucose / amino acid/ fatty acids and glycerol will not happened // body cells will lack of nutrients
penyerapan nutrient / glukosa / asid amino/ asid lemak dan gliserol tidak akan berlaku // sel badan akan kekurangan nutrient
- F2: no secretion of insulin/glucagon hormone
tiada rembesan hormone insulin/glucagon
- regulation of blood sugar level will not occur
- P4: kawal atur aras glukosadalam darah tidak berlaku

he should;
dia seharusnya

- P5: consume less food that contain carbohydrate /protein/lipid/ /fatty food
kurangkan ambilan makanan yang mengandungi karbohidrat/protein/ lipid/makanan berlemak
- P6: insulin injection is needed if blood glucose level is too high
Suntikan insulin diperlukan jika aras glukosa dalam darah terlalu tinggi
- P7: injection of glucagon is needed if blood glucose level is too low
Suntikan glukagon diperlukan jika aras glukosa dalam darah terlalu rendah
- P8: pancreas transplant
pemindahan pankreas

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(b) Individuals with different health problems seek the nutritionist to get advise for their daily healthy meals.

Individual A - Heart problem

Individual B - Obese

Individual C - Cancer

As a nutritionist, plan suitable meals based on ,Pinggan sihat Malaysia' according to their specific health problems. Justify the option.

[8 marks]

👉 👉 tips 👉 👉

Excessive food intake that is rich in saturated fats can cause health problems such as obesity and cardiovascular diseases.

Cancer patients who are undergoing cancer treatment, need to modify their diet to ensure they receive sufficient energy, reduce the risk of infections and enable quick recovery.

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