Class	Name	Index No.

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END-OF-YEAR EXAMINATION 2019

BIOLOGY **6093/1**
Paper 1 Multiple Choice

Date of Exam: 8 October 2019
Level: Secondary 3 Express Duration: 40 minutes

Additional Materials: Multiple Choice Answer Sheet

READ THESE INSTRUCTIONS FIRST

Write in soft pencil.
Do not use staples, paper clips, glue or correction fluid.
Write your class, index number and name on the Answer Sheet in the spaces provided unless this has been done for you.

There are **forty** questions on this paper. Answer **all** questions. For each question there are four possible answers **A, B, C** and **D.**
Choose the **one** you consider correct and record your choice in **soft pencil** on the separate Answer Sheet.

Read the instructions on the Answer Sheet very carefully.

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.
Any rough working should be done in this booklet.
The use of an approved scientific calculator is expected, where appropriate.

Set by: Mrs Rosanne Jung

Checked by: Miss Charlotte Chng

This paper consists of 14 printed pages including the cover page.

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1 What is the basic unit of all living organisms called?

A cytoplasm
B protoplasm
C nucleus
D cell

2 Why does active transport require an energy supply?

A Water molecules move from a region of higher water potential to a region of lower water potential.
B Solute molecules move from a region of lower water potential to a region of higher water potential.
C Solute molecules move from region of lower concentration to a region of higher concentration.
D Solute molecules move from a region of higher concentration to a region of lower concentration.

3 Which process(es) can take place in a root hair cell when oxygen is not available?

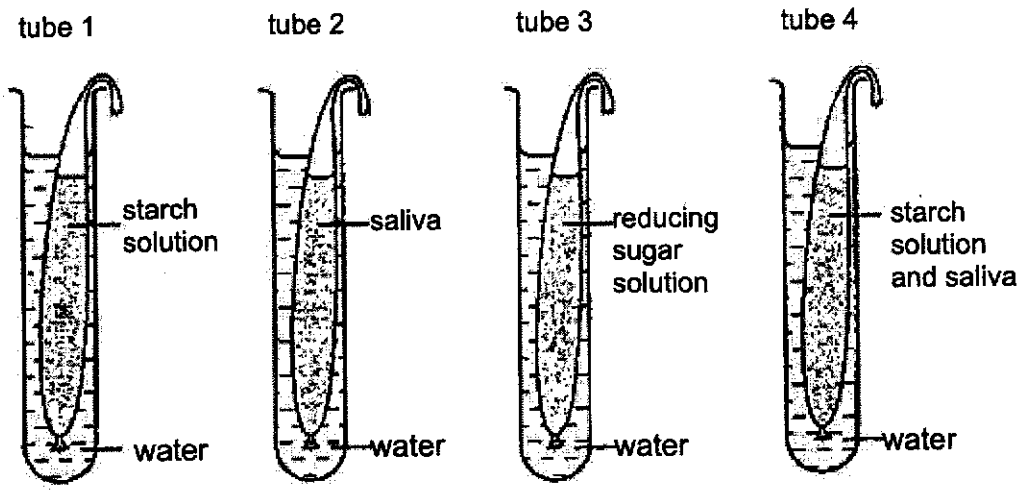
A active transport only
B diffusion only
C diffusion and osmosis
D active transport and osmosis

4 If the pancreatic duct of a mammal became blocked, which one of the following symptoms would the mammal show?

A increased bile in the blood
B increased blood sugar level
C decreased blood insulin level
D decreased protein digestion

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5 Four bags made of partially permeable membrane are placed in tubes as shown in the diagram.



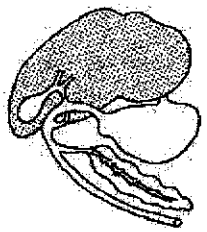
After 20 minutes at 35 °C, a sample of water from each tube, outside the bag, is heated with Benedict's solution.

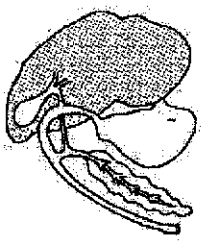
What are the results?

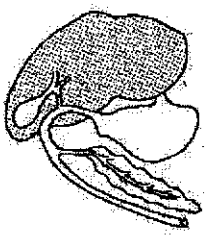
	tube 1	tube 2	tube 3	tube 4
A	blue solution	blue solution	orange precipitate	orange precipitate
B	blue solution	blue solution	blue solution	blue solution
C	orange precipitate	orange precipitate	blue solution	orange precipitate
D	orange precipitate	blue solution	orange precipitate	blue solution

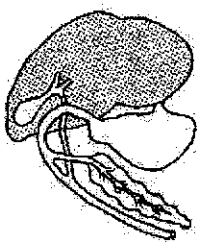
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6 Which one of the following diagrams shows the correct position of the various organs in man?

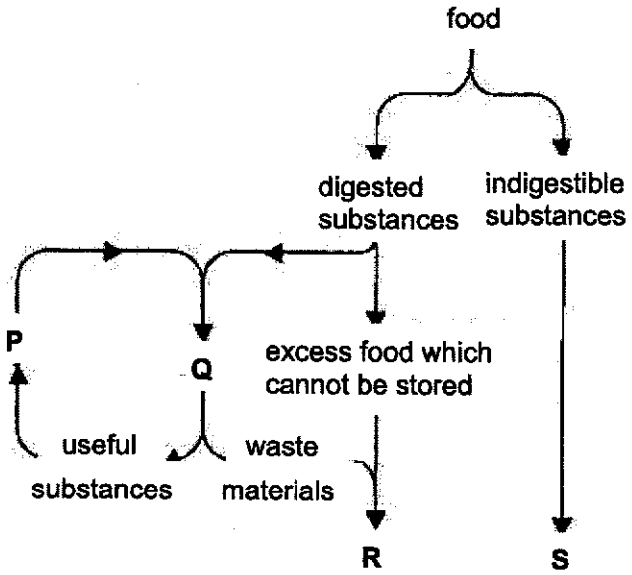
A 

B 

C 

D 

7 The diagram shows the fate of ingested food materials.



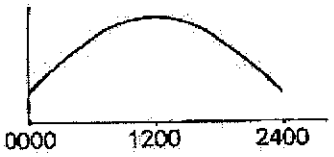
Which one of the following correctly identifies the processes **P**, **Q**, **R** and **S**?

	P	Q	R	S
A	metabolism	secretion	defecation	excretion
B	secretion	metabolism	excretion	defecation
C	excretion	defecation	secretion	metabolism
D	defecation	excretion	metabolism	secretion

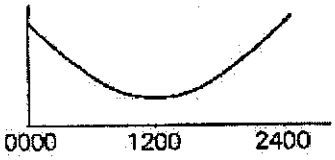
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8 If there are only Hydrillas (a water plant) in a freshwater pond, which of the following curves best illustrates the change in carbon dioxide concentration in water with time?
(x- axis: time of the day; y- axis: carbon dioxide concentration)

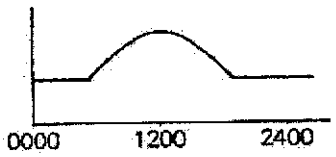
A



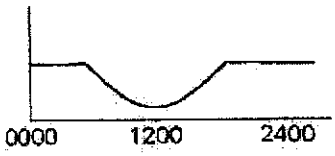
B



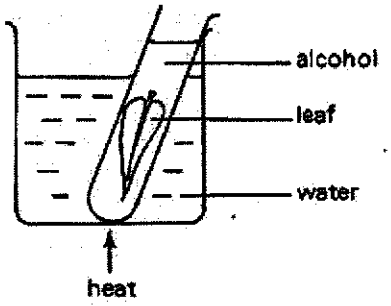
C



D



9 The diagram shows another step in an experiment that demonstrates the presence of starch in a freshly de-starched green leaf.

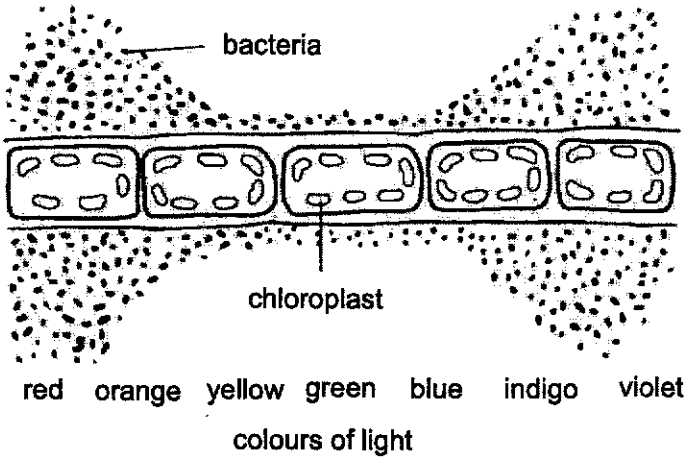


The reason for heating the alcohol in a water bath is to avoid

A decolourizing the leaf.
B overheating the leaf.
C evaporation of the volatile alcohol.
D alcohol vapour catching fire.

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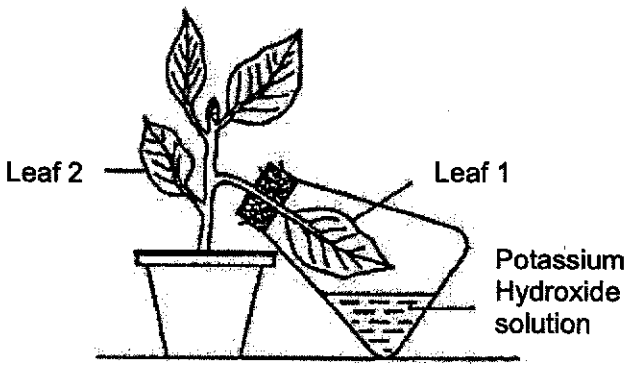
10 Green algae were used to conduct an experiment. Before the experiment, the algae and the bacteria were kept in the dark. After 24 hours, light which had passed through a prism was shone at the cells of the algae. The diagram shows the results after 24 hours.



In which light would the algae probably release the least amount of oxygen?

A red
B orange
C green
D violet

11 In an experiment, the apparatus shown in the diagram was left in the light for two days. Leaf 1 and leaf 2 were then tested for starch.

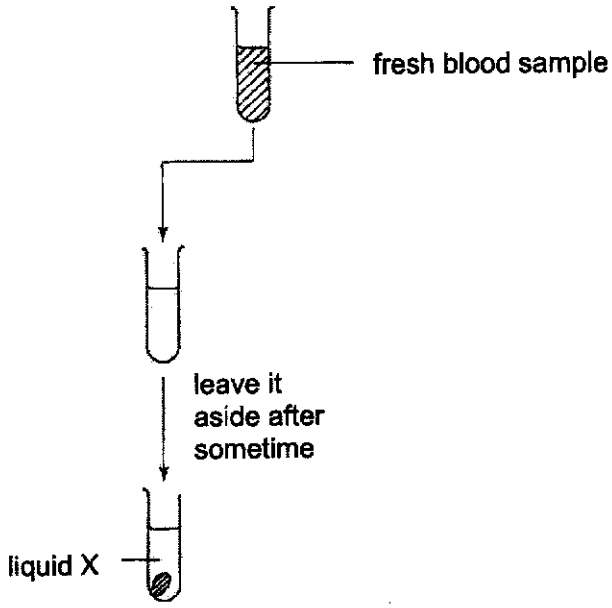


Starch is formed in

A leaf 1 only.
B leaf 2 only.
C leaf 1 and 2.
D none of the leaves.

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Questions **12** and **13** refer to an experiment on different treatments of a fresh sample of blood, as shown in the diagram.



12 The purpose of centrifugation is to

A separate blood cells from the liquid.
B precipitate the insoluble particles.
C catalyse the breakdown of blood cells.
D speed up the formation of blood clot.

13 The colour of liquid X is

A red.
B purple.
C yellow.
D colourless.

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14 The table shows the composition of blood in persons A, B and C.

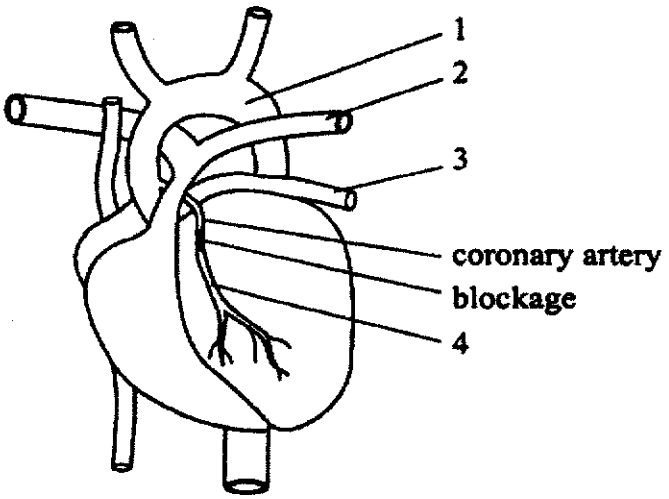
	person A	person B	person C
red blood cells per mm^3	2 000 000	7 500 000	5 000 000
white blood cells per mm^3	10 000	500	5 000
platelets per mm^3	255 000	250 000	500

Which are conclusions that can be drawn from the table given?

1 Person A is likely to be suffering from an infection of the blood.
2 Person B is likely to live in high altitude.
3 Person C's blood is least likely to clot efficiently.

A 1 and 2
B 1 and 3
C 2 and 3
D 1, 2 and 3

15 The diagram shows an external view of the heart of a patient with a blockage of the coronary artery. This could be treated by inserting a tube to by-pass the blockage.

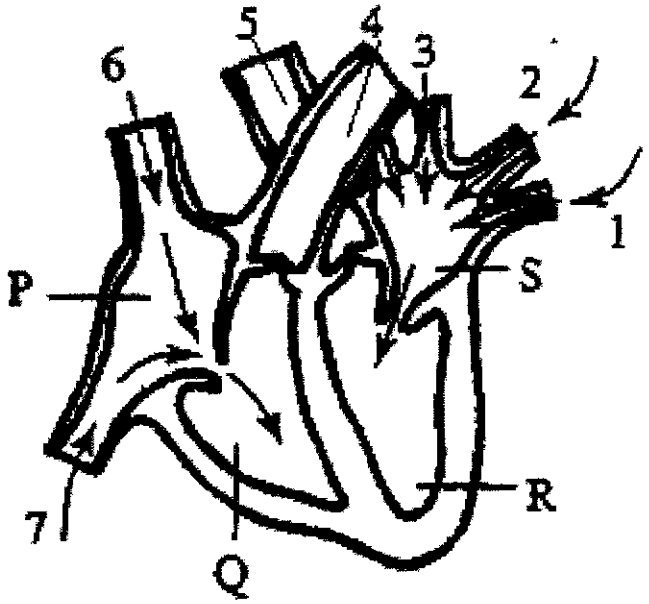


Which two vessels would be joined by this tube?

A 1 and 2 **B** 1 and 4 **C** 2 and 4 **D** 3 and 4

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Examine the diagram, and then answer questions **16** to **18**. Numbers 1 to 7 are labels for the blood vessels of the heart. Letters P to S are labels for the chambers in the heart.



16 The diagram above shows the heart with its main blood vessels during ventricular diastole. Which of the following blood vessels carry oxygen-enriched blood?

A 4, 6 and 7
B 1, 2, 3 and 5
C 4 and 5
D 1, 2, 3, 4 and 5

17 Which chamber of the heart pumps blood to the lungs?

A P **B** Q **C** R **D** S

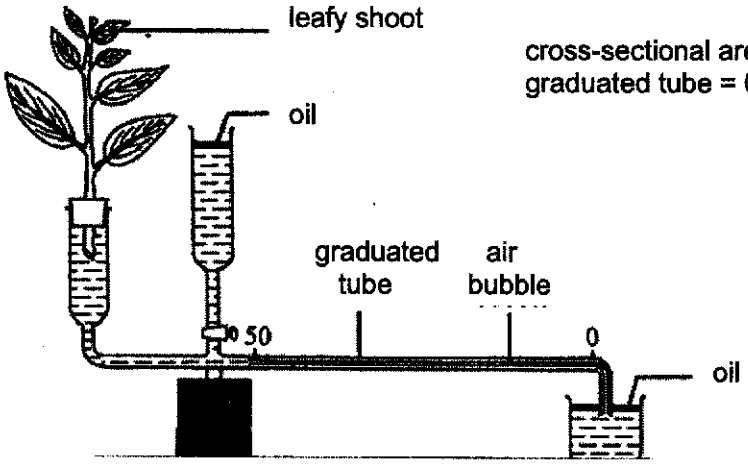
18 The walls of chambers Q and R are seen to be thicker than those of P and S. This difference indicates that

A chambers Q and R are able to exert a greater force than P and S.
B chambers Q and R are not able to expand as much as P and S.
C chambers P and S are enlarged parts of the blood vessels.
D chambers P and S are more elastic than chambers Q and R.

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Questions **19** and **20** refer to the diagram which shows a set-up used to measure the rate of water absorption and transpiration of a leafy shoot.



The position of the air bubble and the weight of the set-up are shown in the table.

	initial reading	reading after 30 minutes
position of air bubble (cm)	5	15

19 How much water is absorbed by the shoot in 30 minutes?
(1cm³ of water has a mass of 1g)

A < 0.5 g
B 0.5 g
C < 1.0 g
D 1.0 g

20 The distance moved by the bubble in 30 minutes is the greatest when the set-up is put under

A a humid, cold and bright condition.
B a humid, warm and dark condition.
C a dry, cold and dark condition.
D a dry, warm and bright condition.

21 What are the functions of water in plants?

1 as raw material for respiration
2 as raw material for photosynthesis
3 as a medium for food transport

A 1 and 2 only
B 1 and 3 only
C 2 and 3 only
D 1, 2 and 3

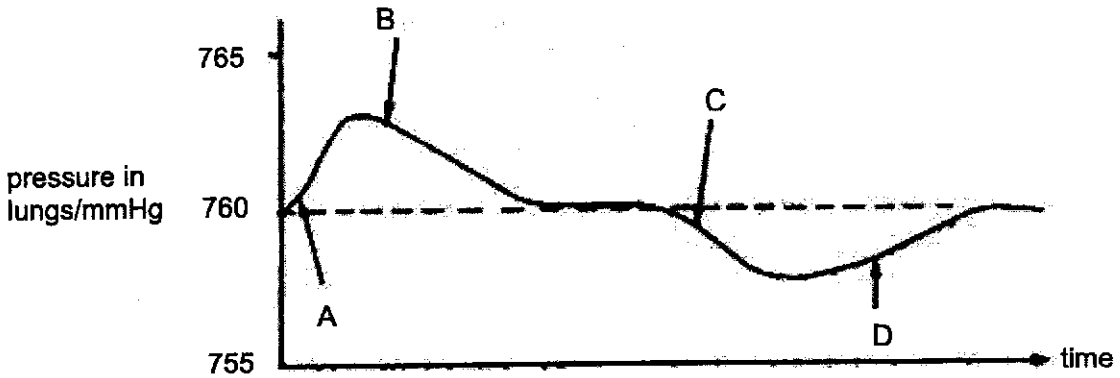
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22 Which of the following does not help bring about exhalation?

A Relaxing of diaphragm muscles
B Relaxing of external intercostal muscles
C Ribs moving downwards and inwards
D Diaphragm moving downwards

23 The diagram illustrates changes in air pressure taking place inside the lungs during a complete cycle of breathing. Atmospheric pressure is 760 mm of mercury (mm Hg).

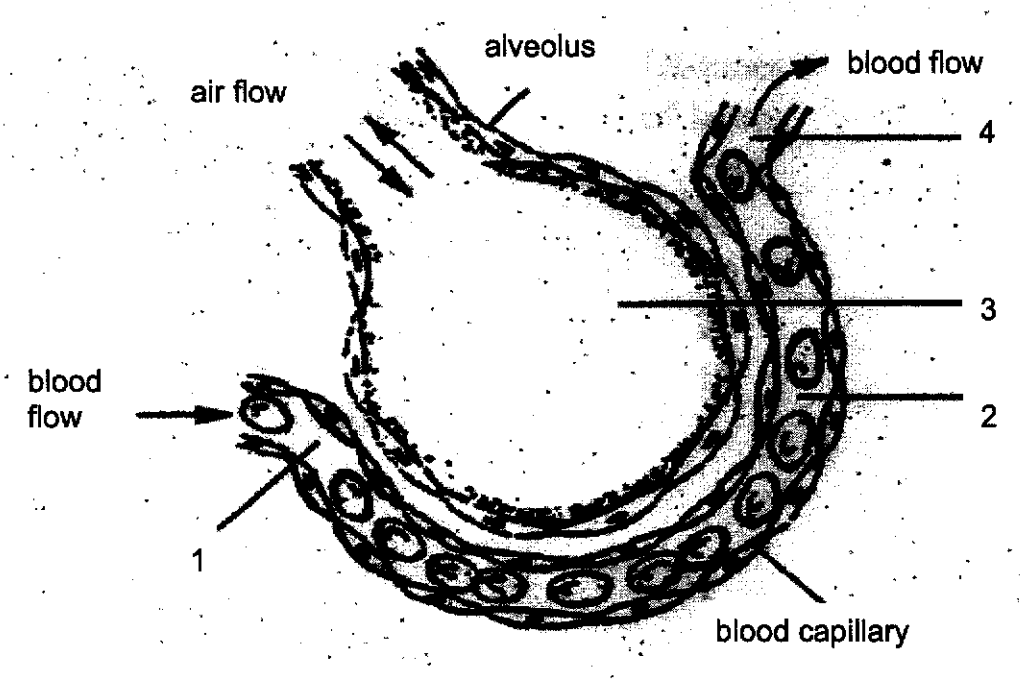


Which one of the positions A, B, C or D on the graph corresponds to the point at which the ribs are beginning to be raised?

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24 The diagram shows a cross-section of an alveolus.



Which numbered parts have the highest and lowest oxygen concentrations?

	highest oxygen concentration	lowest oxygen concentration
A	3	1
B	1	4
C	4	1
D	3	2

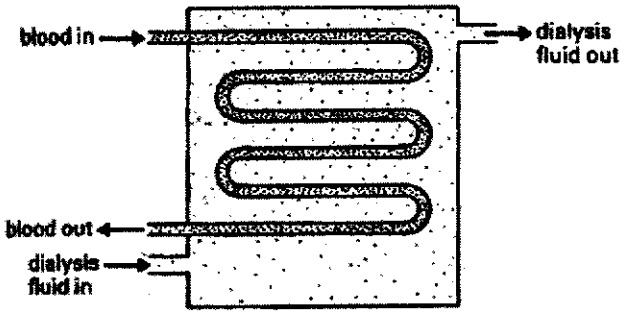
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25 Which of the following is an example of excretion?

A release of insulin from the pancreas
B release of saliva from salivary glands
C removal of carbon dioxide from the lungs
D removal of faeces from the alimentary canal

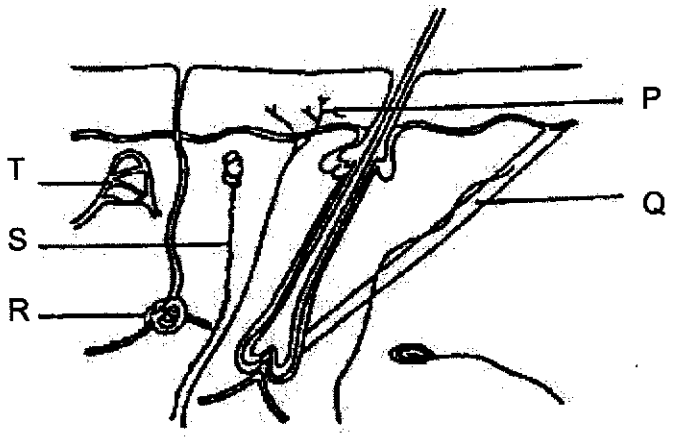
26 The diagram represents a kidney dialysis machine.



Which substances in the dialysis fluid should be at a lower concentration than in the blood?

A amino acids and glucose
B glucose and salts
C glucose and urea
D salts and urea

Questions **27** and **28** refer to the diagram that represents a vertical section through a mammalian skin.



27 When the body is too hot, the blood supply increases in two structures which help to return the temperature to normal. Which labelled structures are they?

A P and Q
B P and R
C R and T
D S and T

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28 Which structure secretes a dilute solution of sodium chloride and urea?

A P
B R
C Q
D T

29 Which of the following are caused by adrenaline?

1 an increase in blood flow to skeletal muscles
2 an increase in blood pressure
3 an increase in glucose level in blood
4 an increase in digestive secretion

A 1 and 2
B 2, 3 and 4
C 1, 2 and 3
D 1, 2, 3 and 4

30 Where are hormones destroyed?

A adrenal glands
B kidneys
C liver
D pancreas

End of Paper

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END-OF-YEAR EXAMINATION 2019

BIOLOGY **6093/2**
Paper 2

Date of Exam: 4 October 2019
Level: Secondary 3 Express Duration: 1 hour 30 minutes

READ THESE INSTRUCTIONS FIRST

Write your class, index number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.

Section A
Answer **all** questions in the space provided.
Write your answers in the spaces provided on the Question Paper.

Section B
Answer **all** questions in the space provided.
Write your answers in the spaces provided on the Question Paper.

The use of an approved scientific calculator is expected, where appropriate.

You are advised to spend no longer than one hour on Section A and no longer than 45 minutes on Section B.
At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

For Examiner's Use	
Section A	/40
Section B	/30
Total	/70

Set by: Mrs Rosanne Jung
Checked by: Miss Charlotte Chng

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Section A

Answer all questions.

Write your answers in the spaces provided.

1 Fig 1.1 shows some food as it enters the stomach and the same food as it leaves the stomach 4 hours later.

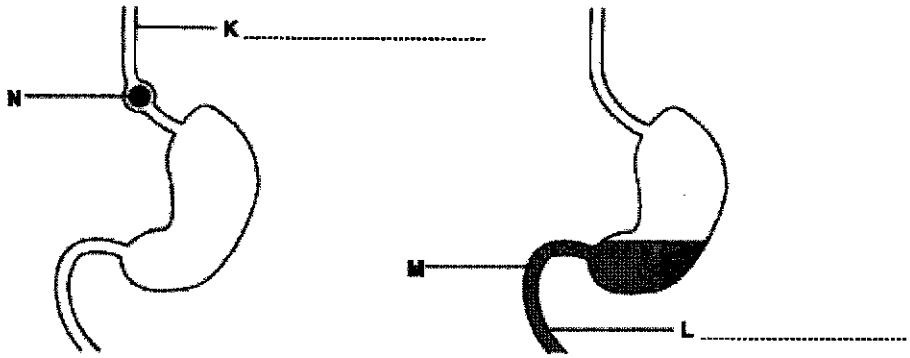


Fig 1.1

(a) On Fig 1.1, label structures **K** and **L**. [2]

(b) The food consists solely of meat and potatoes. By placing crosses (×) in the appropriate boxes in Table 1.2, show how the major components of the food compare at positions **M** and **N**. [3]

Table 1.2

	more at **M** than at **N**	less at **M** than at **N**	almost the same at **M** and **N**
starch			
proteins			
fats			

(c) **(i)** Using the letter "P", label on Fig 1.3, the structure whose main function is the absorption of ingested water and mineral salts into the blood. [1]

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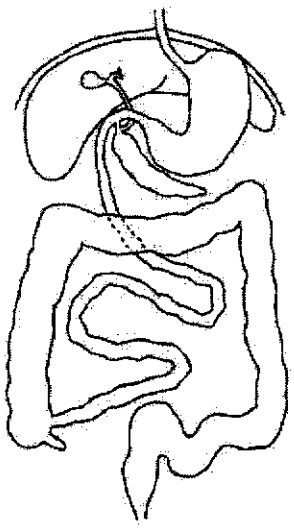


Fig 1.3

(ii) The bacterium, *Vibrio cholera,* produces a toxin that directly stimulates the excessive secretion of ions into the lumen of the region labelled in **(c)(i)**. Explain how this toxin can result in diarrhoea and hence dehydration in a human being. [3]

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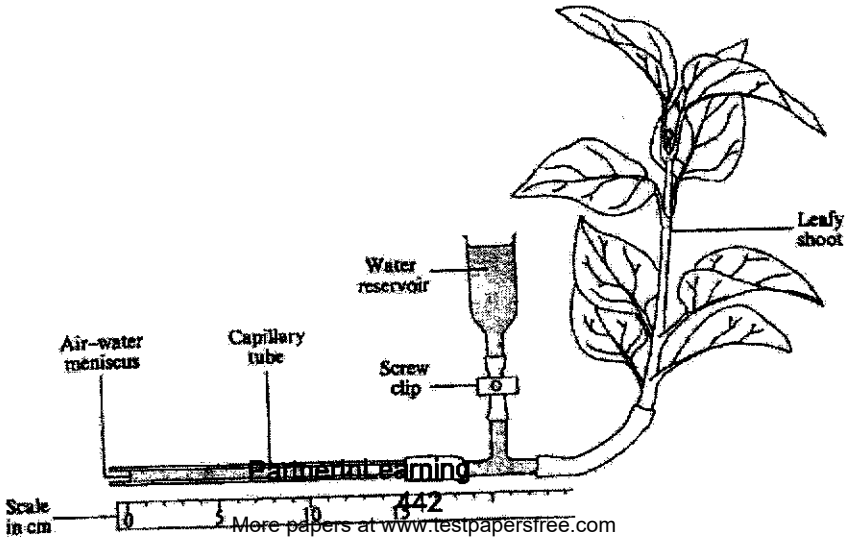
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2 Fig 2.1 shows an apparatus used to measure the rate of



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water loss from a plant.

Fig 2.1

(a) What assumption should be made before carrying out the above experiment when measuring rate of water loss? [1]

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Table 2.2 shows the results obtained when the apparatus is put under three different conditions.

Table 2.2

experiment	treatment	position of the meniscus in the capillary tube/ cm	
		at the start of the experiment	after 30 minutes
A	normal room conditions	0.4	2.5
B	the apparatus is put 10cm away from a 100watt lamp	0.5	5.3
C	the apparatus is put inside a closed chamber filled with water vapour	0.3	0.9

(b) **(i)** Calculate the rate of water loss in experiment A. [2]

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(ii) Compare and explain the difference in water loss between Experiments A and B. [2]

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(iii) Compare and explain the difference in water loss between Experiments A and C. [2]

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(c) Why is transpiration important for a plant? [2]

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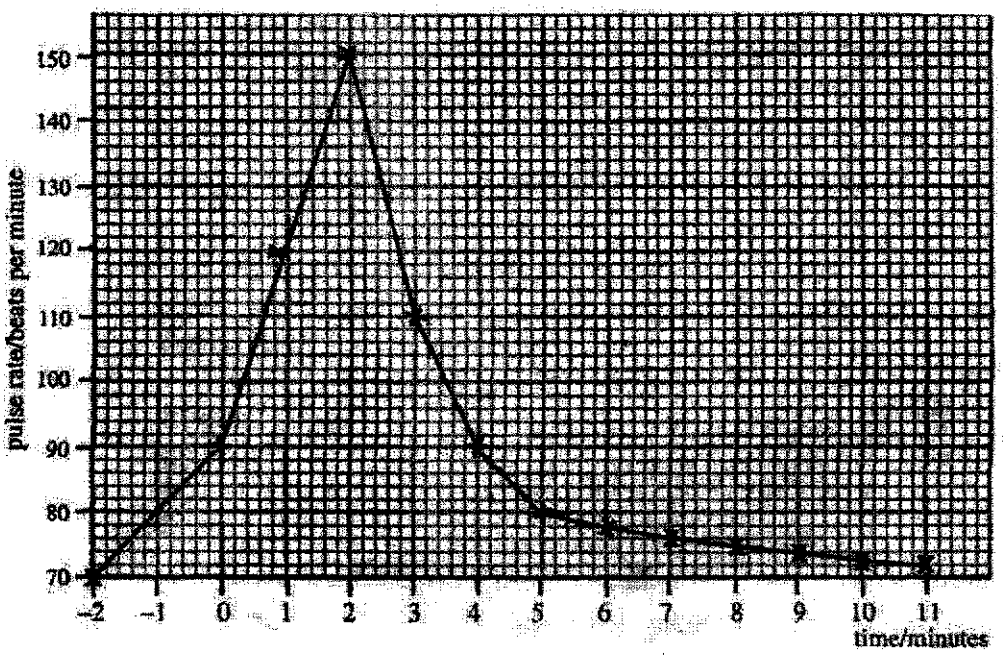
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3 The graph shows the pulse rate of an athlete before, during and after a race. The race started at 0 minutes. Study the graph and answer the following questions.



(a) How long did it take to run the race? [1]

.....

(b) Suggest what caused the increase in pulse rate from -2 to 0 minutes. How does this increased pulse rate help the athlete in preparation for the race? [4]

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(c) Explain why the pulse rate takes a long time to return to normal after the race. [2]

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(d) Predict and explain how the pulse rate of a smoker would differ from that of the athlete during exercise. [3]

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.....

[Total:10]

4 Table 4.1 shows the concentration of some of the constituents in the blood plasma, the kidney glomerular filtrate and the urine of the man.

Table 4.1

constituents	plasma (g/ cm^3)	glomerular filtrate (g/ cm^3)	urine (g/ cm^3)
protein	7.00	0.00	0.00
urea	0.03	0.03	2.00
glucose	0.10	0.11	0.00
sodium	0.32	0.33	0.60

(a) (i) Describe the way in which the glomerular filtrate is produced in the kidney tubule. [3]

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(II) Explain why the concentration of sodium ions in the urine differs from that in the filtrate. [1]

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(b) Kidney failure can be treated by the use of a kidney dialysis machine. Describe one similarity and one difference between the dialysis machine and the kidney tubule. [2]

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[Total:6]

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5 (a) The sounds associated with the beating of the heart are commonly known as the 'lub' and 'dub' sounds. Describe and explain what happens in the heart to produce the 'lub' sound. [2]

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(b) Some heart conditions are a result of defects during prenatal development, while others are caused by poor lifestyle choices. The questions below relate to two different types of heart conditions- atrial septal defect as a result of poor prenatal development, and coronary heart disease, a consequence of poor lifestyle choice.

(i) Atrial septal defect is a hole in the wall of the heart in between the two atria. Explain why doctors advise patients with atrial septal defect to not engage in vigorous sports. [2]

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(ii) Coronary heart disease is a result of atherosclerosis or clogged arteries. Explain the link between diet and atherosclerosis. [2]

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[Total:6]

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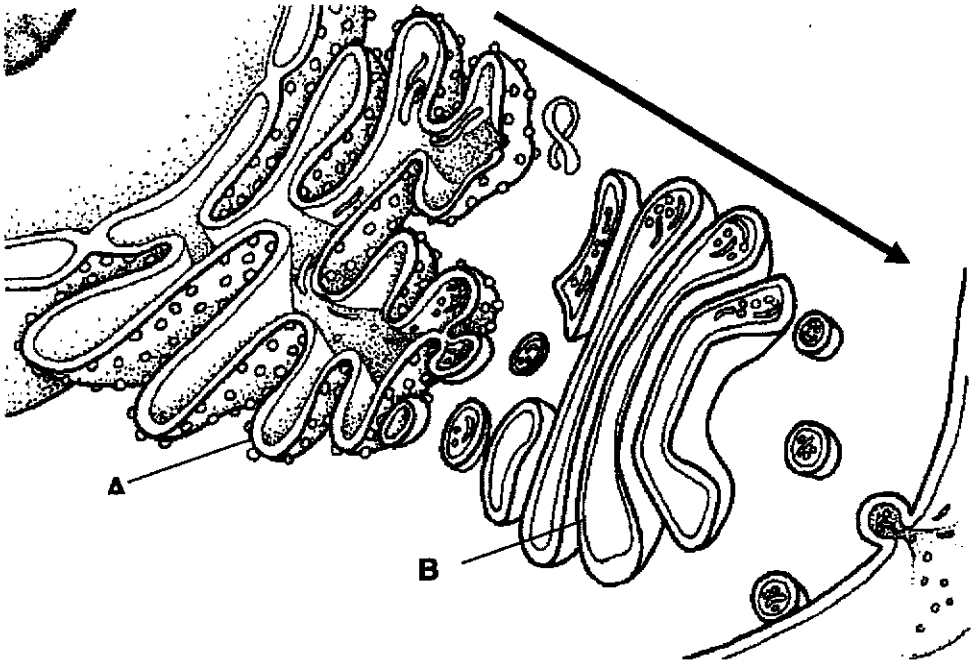
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Section B

Answer **all** questions.

Write your answers in the spaces provided.

6 The diagram shows the process of protein synthesis occurring in a cell.



(a) Name structures **A** and **B** and describe the role they play in protein synthesis. [4]

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(b) An example of a protein produced by the process shown above is prothrombin. Describe the process that involves the protein, prothrombin. [4]

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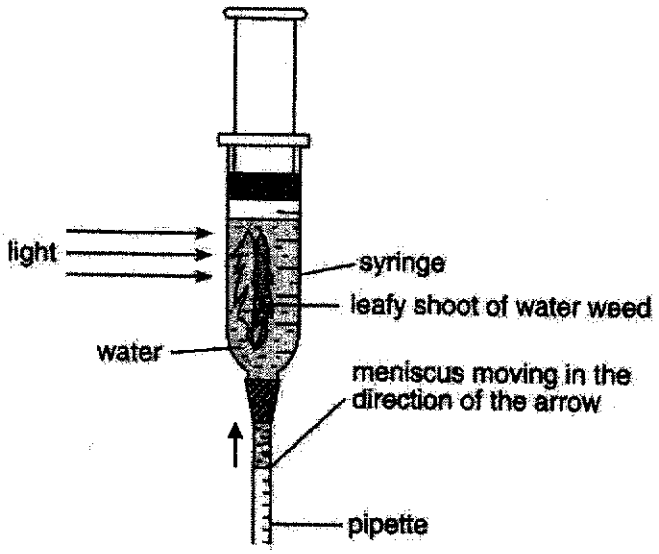
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7 The set-up is used to measure the rate of photosynthesis of a water weed.



(a) Suggest, with reasons, a correction that should be made to improve the experiment. [2]

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The above set-up was designed to find out the effect of light intensity on the rate of photosynthesis. A table lamp was placed 10 cm away from the set-up and the position of the meniscus in the pipette was recorded at intervals of 5 minutes for 30 minutes. The experiment was repeated with the lamp placed at 20 cm and 30 cm away from the set-up.
The results of the experiments are shown in Table 7.1.

Table 7.1

	distance from the light source/ cm		
	10	20	30
time/ min	position of meniscus in the pipette/ cm^3		
5	0.05	0.03	0.01
10	0.08	0.06	0.02
15	0.13	0.09	0.03
20	0.18	0.12	0.04
25	0.24	0.15	0.05
30	0.27	0.18	0.06

(b) Explain why the meniscus changes its position with regards to the distance from the light source as shown in the results. [2]

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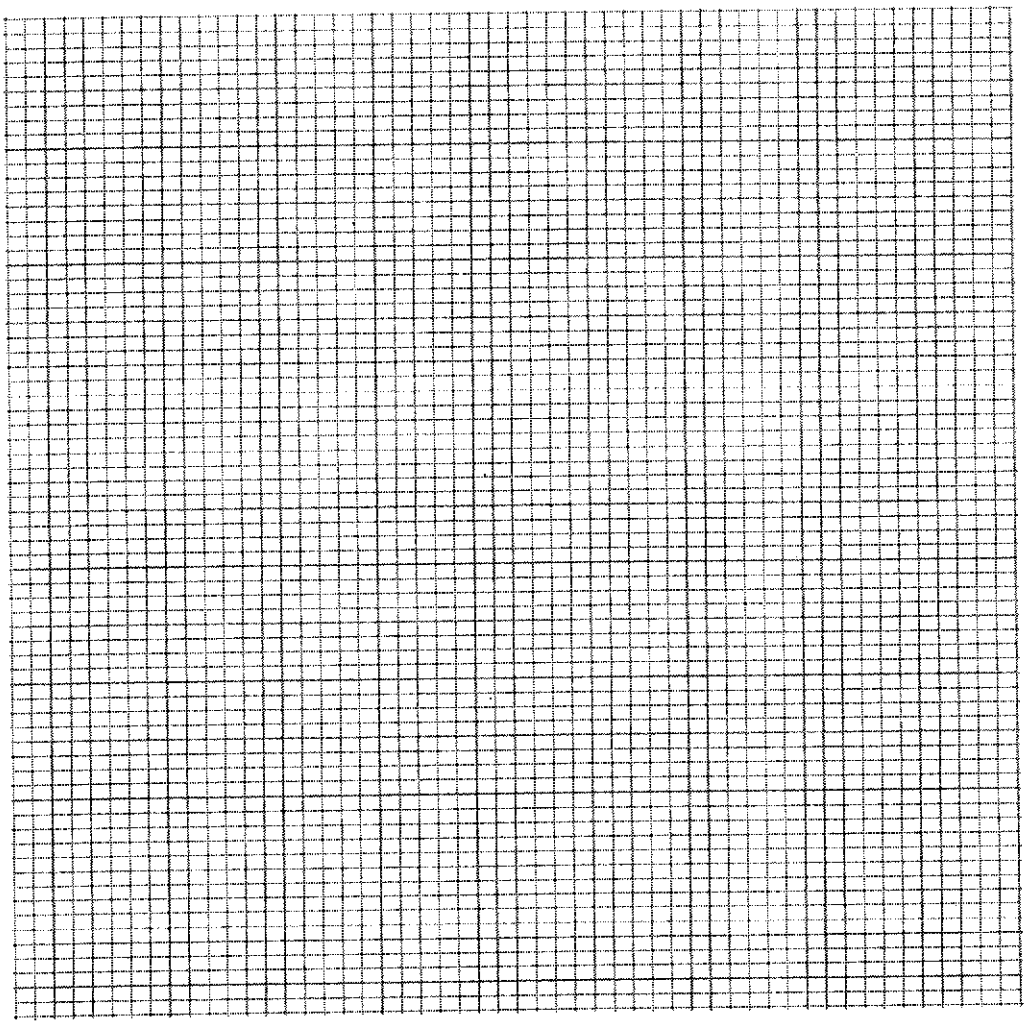
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(c) Using the results shown, plot a graph on the grid provided to show the position of meniscus in the pipette against time. [4]



(d) State and explain the effect on the rate of photosynthesis of the water weed when the distance between the lamp and the plant decreased? [2]

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(e) If the rate of respiration of the water weed is 0.001 cm^3 O_2 min^{-1}, calculate the rate of photosynthesis of the water plant when the lamp is 30 cm way from the set-up. The change in the level of meniscus is solely due to the oxygen released from the plant and carbon dioxide absorbed has no effect on level of meniscus. [2]

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[Total:12]

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8 (a) Define the term 'homeostasis'. [2]

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(b) Explain the following using your knowledge of homeostasis:

(i) A girl starts to shiver as she walks out into the cold. [2]

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(ii) The concentration of glucose in the blood is kept within narrow limits. [6]

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[Total:10]

End of Paper

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2019 Sec 3 Biology EOY Answers

Paper 1

1	2	3	4	5	6	7	8	9	10
D	C	C	D	B	B	B	B	D	C
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
B	A	C	C	B	B	B	A	B	D
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
C	D	C	A	C	D	C	B	C	C

Paper 2
Section A

Qn	Answers	Marks
1(a)	K- oesoghagus (rej: gullet) L- duodenum/ small intestine	1 1
(b)	<table><tr><th></th><th>More at **M** than at **N**</th><th>Less at **M** than at **N**</th><th>Almost the same at **M** and **N**</th></tr><tr><td>Starch</td><td></td><td></td><td>X</td></tr><tr><td>Proteins</td><td></td><td>X</td><td></td></tr><tr><td>Fats</td><td></td><td></td><td>X</td></tr></table>	1m each
(c)i)	Large intestine	1-
(c)ii)	Excessive secretion of ions **lowers** the **water potential** of the lumen. This **decreases the amount of water moving into the bloodstream by osmosis** OR **water moves into the lumen from the blood by osmosis instead of from the lumen into the blood** This results in an **increased volume of water** being passed out of the body together with the faeces, resulting in diarrohea and hence dehydration.	1 1 1
2(a)	Rate of water absorbed is proportional to the rate of water lost.	1
b) i)	(2.5-0.4)/30= 0.07 **cm/ min**	Working[1] Ans [1] No units -1
b)ii)	Rate of water loss in B is **higher** than in A due to the fact that it **received more light**/ had **greater light intensity**. As the **rate of photosynthesis increases**, the guard cells **open wider**,	½ ½

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	hence more water vapour can escape through the stoma.	1
b)iii)	Rate of water loss is **lower** in C than in A because in C the apparatus was placed in a chamber with **higher humidity/ higher concentration of water vapour.** This **reduces the water vapour concentration gradient** between the leaf and the external environment, hence less water vapour diffuses out of the stoma during transpiration.	½ ½ 1
c)	**Latent heat** is removed when water **evaporates** from the plant, preventing it from being scorched by heat. Transpiration creates a suction force called **transpiration pull**, which draws **water** and mineral salts up the plant for to carry out chemical reactions, for example **photosynthesis**.	½ ½ ½ ½
3(a)	2 minutes	1
(b)	• Increase in pulse rate was due to the secretion of **adrenaline** by the **adrenal medulla / adrenal gland**. This results in: • An increased pulse rate means heart beats faster, **oxygen** and **glucose** is brought to the body cells and muscles more **quickly**. • Having more glucose, **respiration** occurs at a **faster rate**, **releasing a larger amount of energy** for more **vigorous muscular contractions** for the race.	1 1 1 1
(c)	**Anaerobic respiration** occurred during the race and **lactic acid** accumulated in the muscles. Pulse rate remains high to clear/repay the **oxygen debt** incurred- lactic acid needs to be brought to the **liver** to be **oxidised** to release energy, which is used to **convert the remaining lactic acid into glucose**.	1 ½ ½
(d)	The pulse rate of a smoker would be **higher** than the athlete. His **cilia are paralyzed** and **mucus** in the airway cannot be removed OR Alveolar **walls break down, reducing surface area to volume ratio** for gaseous exchange. With the reduced amount of oxygen taken in, the **heart has to beat faster** in order to supply sufficient oxygen to the muscles. OR **Nicotine** in cigarette **smoke** stimulates the **release of adrenaline** which **increases** the **rate of heart beat.**	1 1 1 OR 1 1 1

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4 (a)(i)	The glomerular filtrate is produced by **ultrafiltration.** **Afferent arteriole** has a **wider lumen** than the **efferent arteriole.** This creates a high **hydrostatic blood pressure** which forces **small molecules** like **glucose, amino acids and urea** out of the glomerulus The basement membrane is **partially permeable** which allows these small molecules to pass through, while large molecules are retained in the blood capillaries.	 1 ½ 1 ½
(ii)	As the glomerular filtrate passes through the kidney tubule, a lot **more water than sodium ions is reabsorbed into the blood** This **increases the concentration** of sodium ions in the urine as compared to the filtrate.	½ ½
(b)	Similarities: - Both contain a **partially permeable membrane** that allows small molecules like urea, glucose, amino acids to pass through. - Both processes involve **diffusion** of substances down a concentration gradient. Differences: - Ultrafiltration in kidney is assisted by **high hydrostatic pressure** created in the glomerulus, in the dialysis machine it is mainly by **passive diffusion.** - **Selective reabsorption** of useful substances occurs in the kidney, while **reabsorption does not occur** in the dialysis machine. - **Water potential of the blood** can be **controlled by the action of hormones**, ADH, on the kidney tubule, while **hormones do not act** in the dialysis machine.	Any 1-1m Any 1-1m
5(a)	'Lub' sound is produced by the **closing** of the **bicuspid and tricuspid/mitral/atria-ventricular** valves. This is a result of **ventricular contraction**, as the pressure in the ventricles increases, the valves close to **prevent backflow** of blood into the atria.	1 1
(b)(i)	With a hole in the heart, there will be **mixing of deoxygenated** and **oxygenated blood**, which **lowers** the amount of **oxygen** transported to the body cells for respiration. During vigorous exercise, **oxygen demand increases due to increased muscular contractions**, and the heart has to work much harder to supply this oxygen. Heart patients may not be able to cope with this demand.	1 1
(ii)	A diet high in **saturated fats** will lead to atherosclerosis as the fats will **deposit** along/ on the **inner walls** of the blood vessels, narrowing their	1 1

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	lumen.	

Section B

Qns	Answer	Marks
6(a)	A: rough endoplasmic reticulum **Transports protein** made by the ribosomes **to the golgi apparatus.** B: Golgi apparatus/body **Modifies** and **packs** proteins into vesicles for **secretion** out of the cell.	1 1 1 1
(b)	When a **tissue** is **damaged** it produces **thrombokinase.** Thrombokinase will use **convert prothrombin** (inactive) to **thrombin (active) in the presence of calcium ions.** Thrombin will convert **soluble fibrinogen to insoluble fibrin threads.** The fibrin threads will form a mesh to **trap blood cells** and a blood clot is formed.	1 1 1 1
7(a)	**Sodium hydrogencarbonate (or any soluble carbonate)/ baking soda should be added** to the water inside the syringe. This **provides carbon dioxide for photosynthesis.** It maintains the level of carbon dioxide inside the syringe throughout the experiment. OR Temperature should be measured and **maintained at the optimum temperature.** **Photosynthesis is carried out by enzymes** and maintaining the optimum temperature would give the molecules maximum kinetic energy and the **rate of photosynthesis is maximised.**	1 1 1 1
(b)	Under **bright light**, the **rate of photosynthesis of the plant is greater than that of the rate of respiration.** There is a **net production of oxygen** by the plant. Oxygen evolved **pushes the water down** the pipette.	1 ½ ½
(c)	Correctly labelled x-axis and y-axis Correctly plotted and best-fit graph for set-up 10 cm away Correctly plotted and best-fit graph for set-up 20 cm away Correctly plotted and best-fit graph for set-up 30 cm away	1 1 1 1 Fail to label graphs -1m
(d)	The **rate of photosynthesis increased as the distance between plant and lamp decreased.** The **rate of photosynthesis increases as light intensity increased.**	1 1

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(e)	The rate of oxygen production of plant 30 cm away = 0.06/30 = 0.002 cm^3 O_2 min^{-1} The rate of photosynthesis of the plant = 0.002 + 0.001 = 0.003 cm^3 O_2 min^{-1}	1 1
8(a)	Homeostasis is the **maintenance of a constant internal environment** **through a series of corrective mechanisms involving negative feedback** OR **Regulation of blood glucose concentration/ blood pH/ internal body temperature**.	1 1
(b)(i)	When the external temperature drops, it is detected by the **thermoreceptors in the skin** which sent the signal to the **hypothalamus**. Shivering, which is the **involuntary contraction /spasmodic contraction** of the muscles occurs as increased **respiration** in these muscle cells **releases** heat.	1 1
(ii)	Blood glucose concentration can be kept within narrow limits by the actions of insulin and glucagon. When blood glucose concentration **increases above normal**, it is detected by the **pancreas** which secretes **insulin**. Insulin **stimulates the liver** to **convert excess glucose to glycogen**. This **causes the blood glucose concentration to drop**. When blood glucose concentration **decreases** below normal, it is detected by the **pancreas**, which secretes **glucagon**. Glucagon **stimulates the liver to convert glycogen to glucose**. This **causes the blood glucose concentration to rise**.	½ 1 1 ½ ½ 1 1 ½

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