



聖嬰中學
HOLY INNOCENTS' HIGH SCHOOL

Name of Student

Class Index Number

100

END OF YEAR EXAMINATION 2016
SECONDARY 3 EXPRESS
BIOLOGY

5158

Date: 10 Oct 2016

Duration: 2 HR 15 MIN

Time: 1100-1315

Additional Materials: 1 Multiple Choice Answer sheet
1 graph paper
2 sheets of writing paper

READ THESE INSTRUCTIONS FIRST

Write your name, class and index number 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 paper clips, glue or correction tape/fluid.

Section A

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 very carefully the instructions on the answer sheet.

Section B

Answer **all** questions in the spaces provided.

Section C

Answer **all** questions, the last question is in the form either/or.
Write your answers on the separate writing paper provided.

At the end of the examination, hand in the answer sheets to Sections A, B and C separately. Do not detach Section B from the Question Paper.

	For Examiner's use
Section A	
Section B	
Section C	
Total	

Information for Candidates

For Section A, each correct answer will score one mark.

For Sections B and C, the number of marks is given in brackets [] at the end of each question or part question.

Set by: Mrs Susan Tan

Vetted by: Mr Martin Lee

This document consists of 24 printed pages (including this cover page).

Section A: Multiple-Choice Questions [35 marks]

There are thirty-five questions on this paper. Answer all the 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.

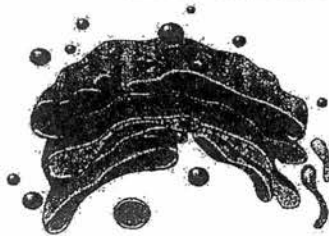
- 1 A student made the following observations about two cells he viewed under the microscope.

cell A	cell B
a dark and dense structure at the side of the cell	a dark and dense structure at the side of the cell
large sap-filled portion	small fluid-filled cavities
thick outer covering surrounding the cells	thin outer covering surrounding the cells
several membrane-like organelles scattered all over	several membrane-like organelles scattered all over

Which could be the correct identity for the cells he viewed?

	cell A	cell B
A	spongy mesophyll cell	red blood cell
B	onion epidermal cell	cheek cell
C	muscle cell	root hair cell
D	root hair cell	spongy mesophyll cell

- 2 The organelle in the diagram below is a _____.



- A rough endoplasmic reticulum
 B smooth endoplasmic reticulum
 C golgi apparatus
 D mitochondrion
- 3 Red blood cells have a solute concentration of around 0.9%. Which of the following statements correctly describes the fate of these cells when immersed in a 1% salt solution?

- A The cells will burst.
 B The cells will shrink.
 C The cells will expand but not burst.
 D The cells will remain unaffected.

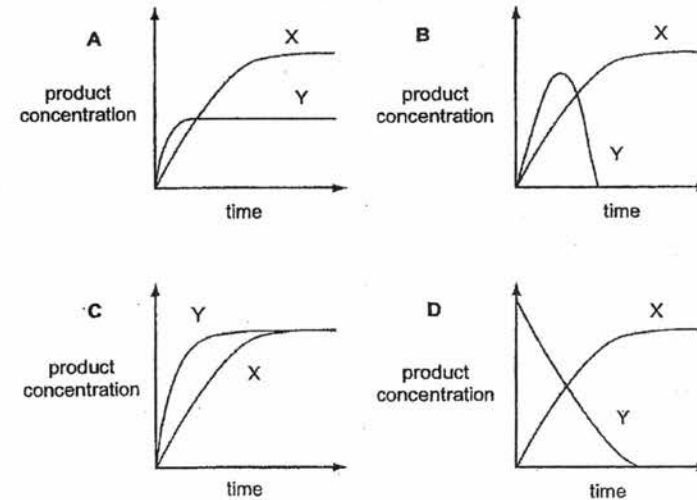
- 4 The table below shows the mass of four particular nutrients (P, Q, R and S) absorbed by the roots of a plant in the presence and absence of oxygen in one hour.

nutrient	mass absorbed in the presence of oxygen/ g/hr	mass absorbed in the absence of oxygen/ g/hr
P	3.5	3.6
Q	4.4	0.9
R	0.8	0.7
S	2.4	1.5

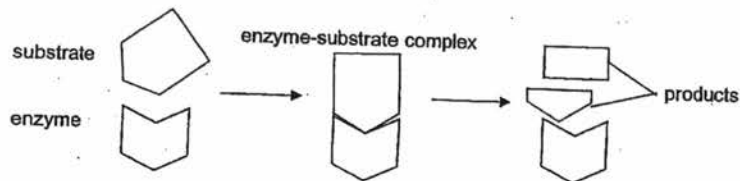
Which of the following conclusions can be made from the data?

- A Nutrients P and R are absorbed mainly through diffusion.
 B Nutrients Q and S are absorbed through active transport only.
 C Nutrients P, Q, R and S are absorbed through both diffusion and active transport.
 D Nutrients P, Q, R and S are absorbed only through active transport.
- 5 Two enzyme experiments were carried out. The first, experiment X, was carried out at a constant temperature of 37°C. During the second experiment Y, the temperature was increased from 37°C to 80°C over time. No product was removed throughout the experiments.

Which graph shows the correct results?



6 Which property of an enzyme is **not** illustrated in the figure below?

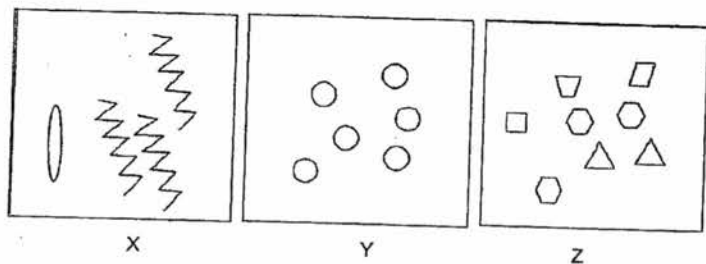


- A Enzyme activity increases as metabolic rate increases.
- B Enzyme-substrate complex needs to be formed for a reaction to occur.
- C Enzymes can be reused as they remain unchanged at the end of a reaction.
- D The enzyme can only break down the substrate at its active site.

7 What occurs when sucrose is broken down to monosaccharides?

- A condensation of reducing sugars releasing water
- B condensation of reducing sugars using water
- C hydrolysis, releasing reducing sugars and releasing water
- D hydrolysis, releasing reducing sugars and using water

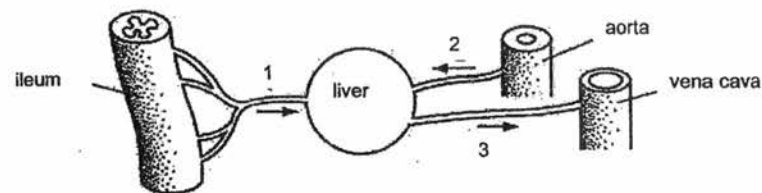
8 The diagram below shows the basic units of three biological molecules.



Which of the following correctly names the complex molecules formed by the above basic units?

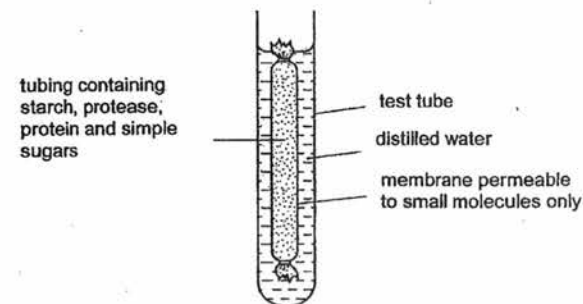
	X	Y	Z
A	oil	glycogen	trypsin
B	oil	trypsin	glycogen
C	trypsin	glycogen	oil
D	glycogen	trypsin	oil

9 The diagram shows the blood supply of the liver. Match the numbers on the blood vessels to the correct name of the blood vessel.



	1	2	3
A	hepatic artery	hepatic portal vein	hepatic vein
B	hepatic artery	hepatic vein	hepatic portal vein
C	hepatic portal vein	hepatic artery	hepatic vein
D	hepatic portal vein	hepatic vein	hepatic artery

10 The diagram shows an experiment kept at room temperature.



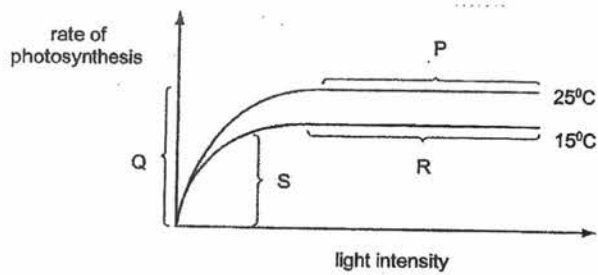
What is present in the water surrounding the membrane after 45 minutes?

- A amino acids and simple sugars
- B protein and amino acids
- C protein and simple sugars
- D starch and simple sugars

11 Several food tests were conducted on a sample of pancreatic juice. Which of the following would be the expected results?

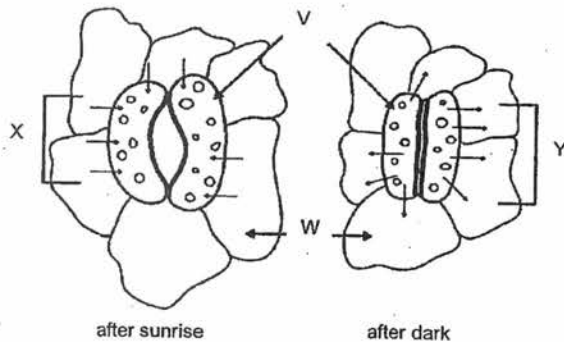
	food test	result
A	Benedict's test	brick-red precipitate formed
B	Biuret test	solution turned violet
C	Ethanol-emulsion test	white emulsion obtained
D	Iodine test	Iodine solution turned blue-black

- 12 The graph shows how the rate of photosynthesis varies with light intensity and temperatures. Other variables are kept the same.



In which sections of the graph is light intensity limiting the rate of photosynthesis?

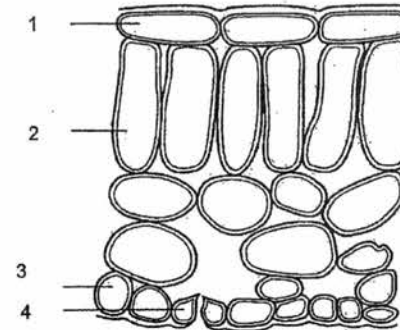
- A P and R
 B Q and S
 C R and Q
 D S and P
- 13 The following diagram shows a portion of the under-surface of a leaf at two different times of the day.



In the diagram, the arrows indicated by _____.

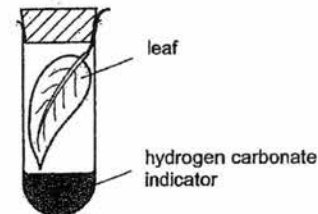
- A label V, point to the non-respiring cells
 B label W, point to photosynthetic cells
 C label X, show the direction of movement of water molecules
 D label Y, show the direction of movement of starch molecules

- 14 The diagram shows cells in a section through a leaf of a green plant.



Which cells contain chloroplasts?

- A 1 and 2
 B 1 and 4
 C 2 and 3
 D 2 and 4
- 15 A green leaf is picked at time 0700 hours and immediately placed in a sealed test-tube containing hydrogen carbonate indicator solution. The tube is kept near a window for 24 hours. The table shows how the indicator changes in colour.

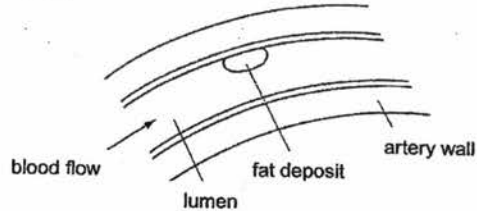


colour	amount of carbon dioxide compared to average atmospheric concentration
purple	less than normal
red	normal
yellow	more than normal

Which colour will the hydrogen carbonate indicator be at times 1200 hours and 2400 hours?

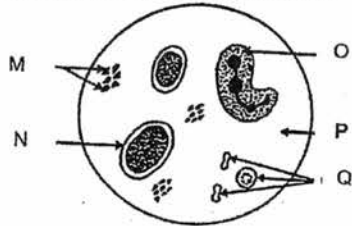
	at 1200 hours	at 2400 hours
A	purple	yellow
B	red	purple
C	yellow	purple
D	yellow	red

- 16 The following diagram shows a section of coronary artery with deposition of fat that may result in a heart attack.



Which of the following best describes the events that could lead to a heart attack?

- A further fat deposits followed by platelet destruction
 B further fat deposits followed by red blood cell destruction
 C restriction of artery lumen causing reduced oxygen supply
 D hardening of the artery wall preventing diffusion across the artery wall
- 17 The diagram shows human blood smear through a microscope. Which of the following statements that describes the blood components is **incorrect**?



- A P contains amino acids, hormones and glucose.
 B M, parts of P and Q are required for the clotting of blood.
 C O is responsible for producing antibodies.
 D Carbonic anhydrase is found in Q.
- 18 The table below lists a few structures of blood vessels P, Q and R.

P	Q	R
carries deoxygenated blood	thick muscular walls	very small lumen
thin muscular walls	carries oxygenated blood	very thin walls

Based on the features listed in the table, identify P, Q and R.

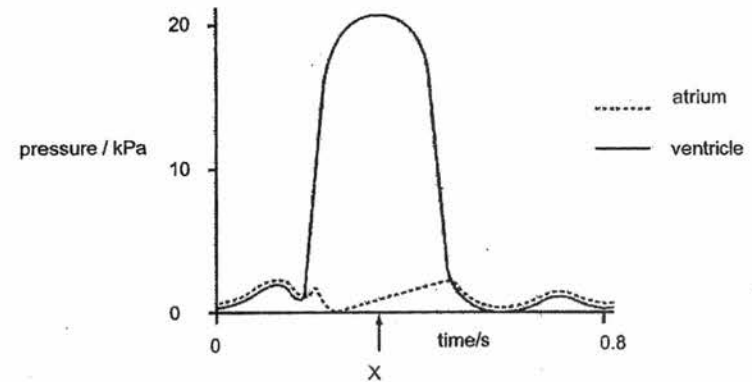
	P	Q	R
A	artery	vein	capillary
B	vein	artery	capillary
C	capillary	artery	vein
D	capillary	vein	artery

- 19 The table below shows the blood groups of four people and the type of blood each received in a blood transfusion.

	blood type of receiver blood	blood type of donor blood
W	A	O
X	B	AB
Y	AB	O
Z	O	AB

Which of the two scenarios causes the agglutination of blood in the recipient?

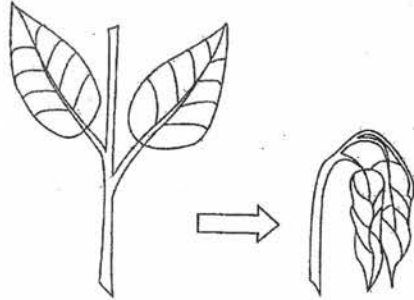
- A W and Z
 B W and Y
 C X and Z
 D Y and Z
- 20 The graph shows pressure changes in the left atrium and in the left ventricle during one heartbeat.



What is the state of the valves in the heart at time X?

	bicuspid valve	semi-lunar valve (in aorta)
A	closed	closed
B	closed	open
C	open	closed
D	open	open

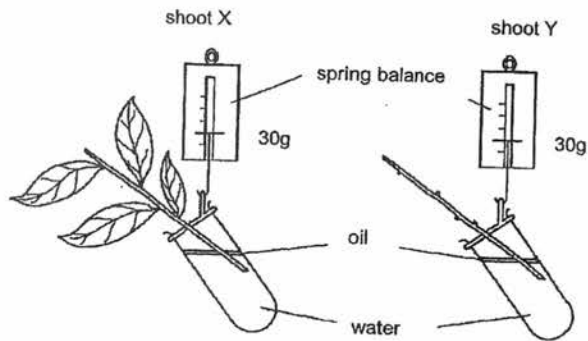
- 21 The diagram below shows how a seedling changes in appearance a few hours after planting.



Which of the following sets of conditions would have brought about the above change?

	humidity	light intensity	temperature
A	high	high	low
B	high	low	high
C	low	high	high
D	low	low	low

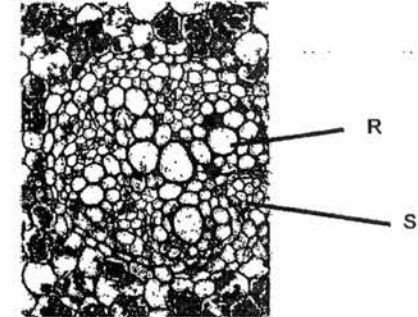
- 22 The diagram shows two shoots, X and Y at the start of an experiment on transpiration.



What are the likely readings on the spring balances after three days?

	shoot X / g	shoot Y / g
A	30	30
B	30	25
C	25	30
D	25	25

- 23 The photomicrograph shows part of a section of a plant.



Samples of the contents of cell R and S were tested. What results are expected?

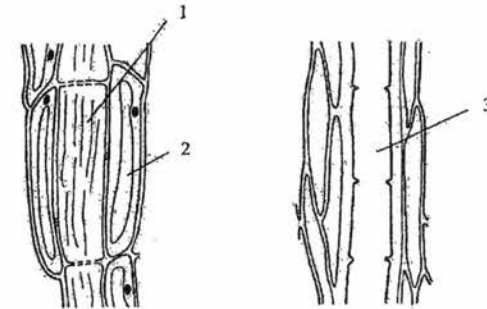
Key

"+" = positive

"-" = negative

	Benedict's reagent		iodine test	
	cell R	cell S	cell R	Cell S
A	+	+	-	+
B	-	+	-	+
C	+	-	+	-
D	-	-	-	-

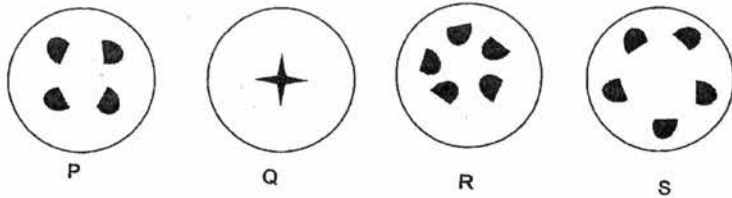
- 24 The diagrams represent some plant cells seen in a section of a stem.



Which cells have the functions shown?

	1	2	3
A	support of young stem	transport of water	transport of sucrose
B	transport of amino acids	supply of energy to surrounding cells	transport of minerals
C	transport of sucrose	transport of water	transport of amino acids
D	transport of water	supply of energy to surrounding cells	support of young stem

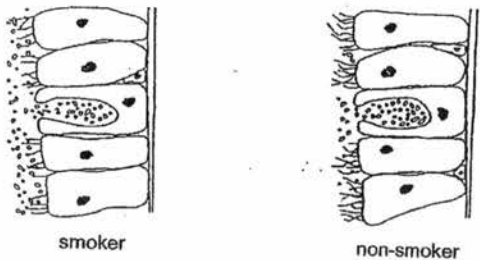
- 25 A dicotyledonous plant is exposed to radioactive $^{14}\text{CO}_2$ for 4 hours. Thin sections were cut across the stem and root and these sections were put on photographic films. Which of the following correctly represents the distribution of radioactivity in the stem and in the root?



	root	stem
A	P	R
B	P	S
C	Q	R
D	Q	S

- 26 An athlete ran a 100m sprint race. Which of the following occur(s) inside his body during the run?
- Lactic acid builds up in his muscles.
 - Glucose is converted into glycogen in his muscles.
 - Anaerobic respiration takes place in his muscle cells.
 - Aerobic respiration takes place in his muscle cells.
- A I only
 B I and III only
 C I, III and IV only
 D All of the above

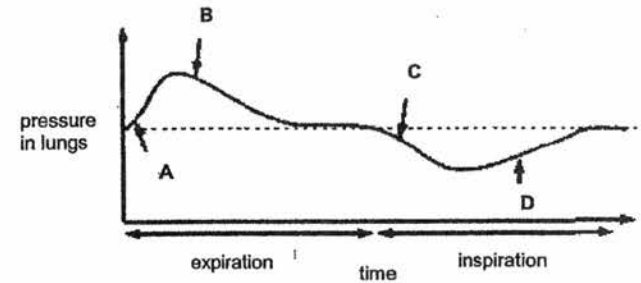
- 27 The diagrams below show the epithelium lining a bronchiole of a smoker and of a non-smoker.



Based on the diagrams, which statement explains why there is a higher tendency for smokers to have their mucus drained down into their lungs?

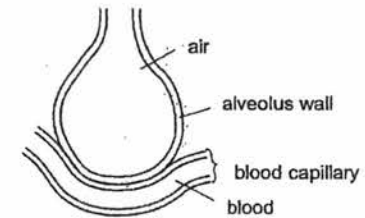
- A A non-smoker has more active mucus secretion.
 B A smoker has fewer cilia on the epithelial cells.
 C Epithelial cells divide more in a non-smoker.
 D The cells burst in the bronchiole of a smoker.

- 28 The following graph shows the pressure in the lungs in a complete breathing cycle.



At which point does the muscles in the diaphragm start to contract?

- 29 The diagram below shows a gaseous exchange surface and part of a nearby capillary in the lung.



What would increase the rate of absorption of oxygen into the capillary?

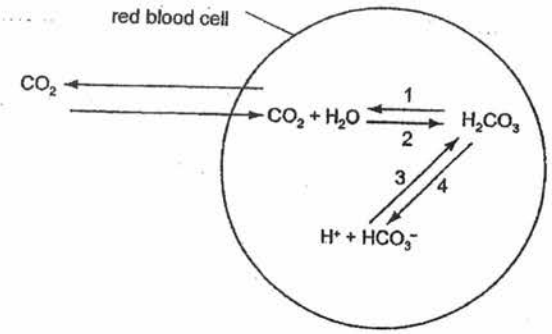
- A reducing the flow of blood in the blood in the capillary
 B increasing the thickness of the alveolar wall
 C increasing the surface area of the alveolar wall
 D lowering the concentration of oxygen in the alveolus
- 30 The four structures listed below are parts of the human excretory system.

- bladder
- kidney
- ureter
- urethra

In which order does a molecule of urea pass through these structures?

	First		Last
A	1	2	3
B	1	4	3
C	2	1	3
D	2	3	1

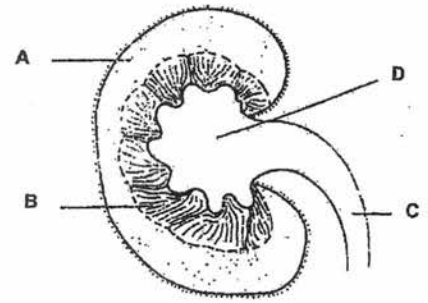
31 The diagram shows some of the reactions which occur in a red blood cell.



Which numbered reaction(s) involve carbonic anhydrase?

- A 1 only
- B 4 only
- C 1 and 2
- D 3 and 4

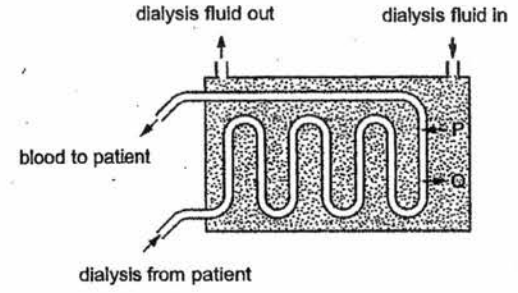
32 In which part does water get reabsorbed into the blood?



33 Which of the following is an example of excretion?

- A release of insulin from the pancreas
- B release of urea from the liver
- C removal of faeces from the alimentary canal
- D removal of carbon dioxide from the lungs

34 The diagram shows a dialysis machine.



In a person whose health problems affect only the kidneys, which substances will move as shown at P and Q?

	P	Q
A	glucose	protein
B	glucose	urea
C	salts	urea
D	salts	protein

35 A woman runs a marathon, sweats profusely and drinks little fluid. Which line in the table correctly summarises the events that result from this behaviour?

	ADH production	water absorption	urine output
A	increase	increase	decrease
B	increase	decrease	decrease
C	decrease	decrease	Increase
D	decrease	increase	Increase

Section B: Structured Questions [35 marks]

Answer all questions in this section. Write your answers in the spaces provided.

- 1 A student carried out an investigation using milk, lipase and bile salts. Three test tubes are set up as follows and the results are shown in Table 1.1.

Test tube A – Milk incubated with lipase only
Test tube B – Milk incubated with lipase and bile salts
Test tube C – Milk incubated with bile salts only

Time/mins	Average pH of solution		
	A	B	C
0	8.5	8.5	8.5
10	8.0	7.7	8.5
20	7.6	7.0	8.5
30	7.3	6.5	8.5
40	7.0	6.5	8.5
50	6.5	6.5	8.5
60	6.5	6.5	8.5

Table 1.1

- a The pH changed in Test tube A. Explain why this was so. [2]
- _____
- _____
- _____
- b The pH remained constant at 6.5 in Test tube A. Suggest one reason for this. [1]
- _____
- _____
- c The rate at which the pH fell in Test tube A was different from the rate at which the pH fell in Test tube B. Explain why the pH fell at a different rate. [2]
- _____
- _____
- _____
- _____
- d What is the purpose of Test tube C? [2]
- _____
- _____

[Total:7]

- 2 A student wanted to find out which surface of a leaf loses water more quickly. The student cut two similar shoots, A and B from the same plant. The upper surface of the leaves on shoot A and the lower surface of the leaves on shoot B were covered with oil. The ends of the shoots were each placed in two different measuring cylinders containing 100 cm³ of water as shown in Fig. 2.1. After standing for 48 hours on a laboratory bench the student removed the shoots from the measuring cylinders which are shown in Fig. 2.2.

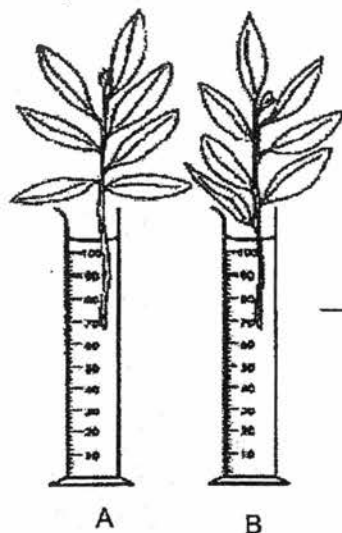


Fig 2.1

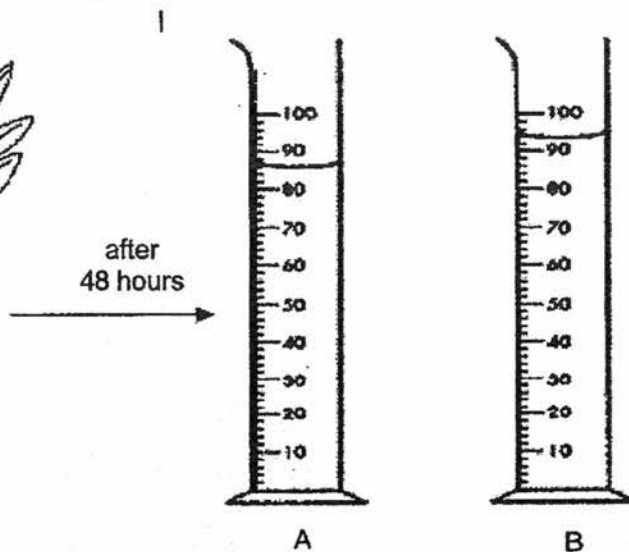


Fig 2.2

- a Complete the table below using information from the diagrams.

[2]

	measuring cylinder	
	A	B
volume of water that remains in cylinder/cm ³		
volume of water that is absorbed by plant/cm ³		

Table 2.1

- b Based on the results, identify the leaf which loses more water.

[1]

- c State two forces which cause the water to move up the shoot.

[2]

- d Suggest how you would increase the rate of water moving up the shoot. Explain your answer.

[2]

[Total:7]

3 Fig 3.1 shows a vertical section through a pair of guard cells and some other cells on the lower surface of a leaf.

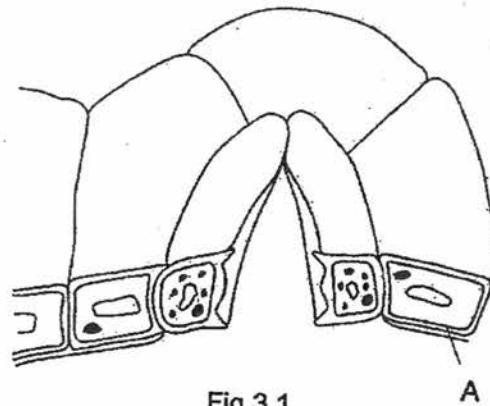
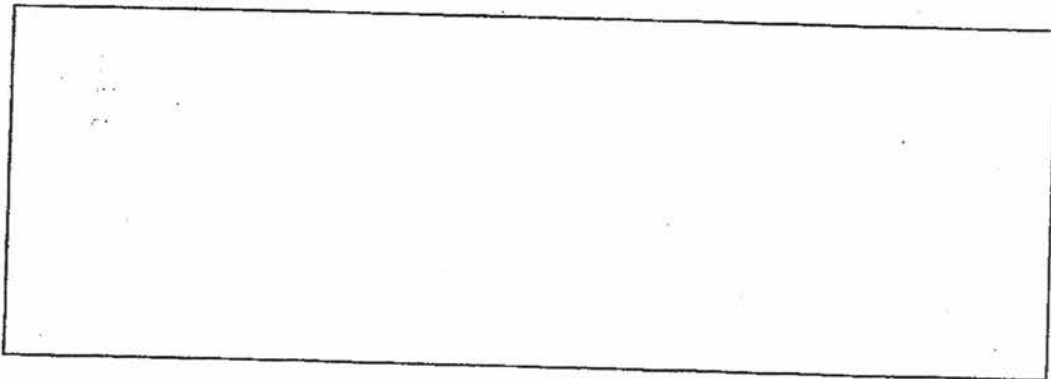


Fig 3.1

- a i Name the type of cell labelled A in the figure above. [1]

- ii Draw an **arrow** on the figure to show the position of the stoma. [1]
- b The figure above shows the guard cells as they appear at 1300 hours. In the space below, draw a diagram to show the guard cells, **in surface view**, as they would appear at 0100 hours. Label the structural features of one of the guard cells. [2]



c Explain the advantages to the plant of the difference in the guard cells at 1300 hours and at 0100 hours. [4]

1300 hours: _____

0100 hours: _____

4 Fig 4.1 shows a section of a heart.

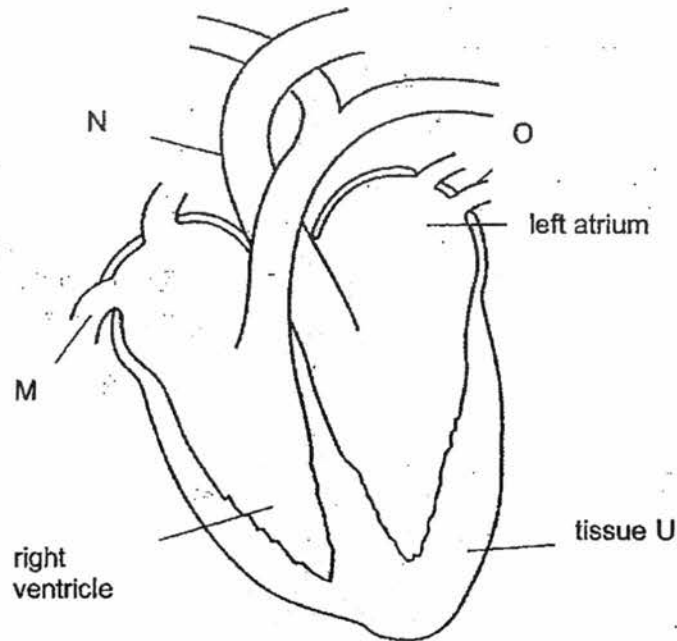


Fig 4.1

a Identify the blood vessels M, N and O in Fig 4.1. [3]

M: _____

N: _____

O: _____

b i State the purpose of tissue U in the functioning of the heart. [1]

ii Name the blood vessel which unless blocked would normally supply the heart with oxygen. [1]

c On Fig 4.1, **draw** in the correct position and label

i the tricuspid valve

ii the bicuspid valve [2]

d On Fig 4.1, **draw** at least three arrows to show the direction of the flow of oxygenated blood into and out of the heart. [1]

[Total:8]

5 Fig. 5.1 shows a kidney tubule.

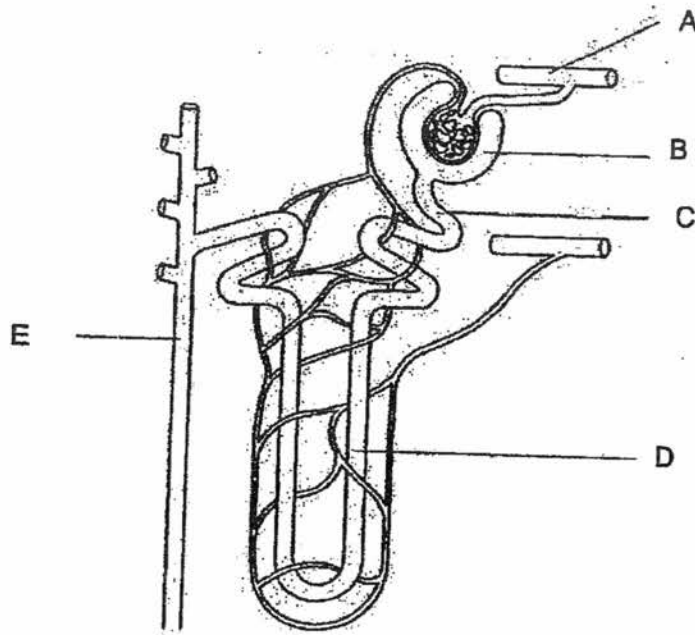


Fig 5.1

a Name two components of the blood found in A but not in B. [2]

Component 1 _____

Component 2: _____

b Name one substance, other than water, present at parts A, B, C, D and E. [1]

c Explain why glucose is present in part B but not at part D. [2]

[Total:5]

Section C Free Response Questions [30 marks]

Answer three questions on the writing papers provided. Answer each question on a new sheet of writing paper.

Question 8 is in the form of an **Either/Or** question. Only one part should be answered.

- 6 Table 6.1 below shows the results of an investigation to find out how temperature affects the activity of a protease enzyme.

temperature/ °C	0	10	20	30	40	50	60
mass of product formed/ mg	1.8	6.2	14.0	31.6	40.0	17.4	0.8

Table 6.1

- a Plot a graph of these data on a graph paper. [4]
- b Describe the relationships between the enzyme activity and temperature. [3]
- c Explain the results above 40°C. [3]
- [Total:10]
- 7 a Write the word and chemical equations for aerobic respiration. [2]
- b "During vigorous exercise, one's breathing rate and heart rate increases. Soon after, the muscles begin to experience intense pain and fatigue. During the period of resting, the intake of oxygen continues to be high for some time." Account for the information given. [4]
- c Name two respiratory diseases and explain how they can be caused by long term smoking. [4]
- [Total:10]
- 8 **Either**
- a Name two components of blood which protect the body from the entry of microorganisms. [2]
- b Describe how the loss of blood from a small cut is reduced naturally. [4]
- c A man suffers from intestinal cancer and had 90 percent of his ileum removed. Outline the importance of the ileum. [4]
- [Total:10]
- 8 **Or**
- a Describe the roles of the liver in carbohydrate and amino acid metabolism. [3]
- b Capillaries are found in the circulatory system. Describe the structure and function of a capillary. [4]
- c Alveoli are found in the respiratory system. Describe the structure and function of an alveolus. [3]
- [Total:10]

End of Paper

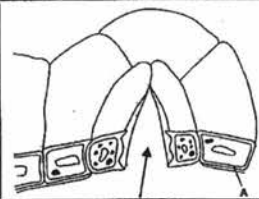
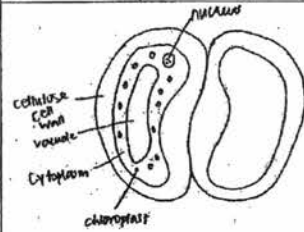
Sec 3 Biology EOY Answer Scheme

Section A [35]

1	2	3	4	5	6	7	8	9	10
B	C	B	A	A	A	D	A	C	A
11	12	13	14	15	16	17	18	19	20
B	B	C	D	A	C	C	B	C	B
21	22	23	24	25	26	27	28	29	30
C	C	D	B	B	C	B	C	C	D
31	32	33	34	35					
C	B	D	C	A					

Section B [35]

1a	Lipids/fats in milk digested by lipase; Fatty acids produced results in fall in pH;	[2]											
b	All lipids have been digested, no more fatty acids produced; OR Lipase denatured at pH 6.5, no more lipid digestion;	[1]											
c	Bile emulsifies fats / increases surface area to volume ratio; Increase rate of digestion of lipids;	[2]											
d	Control experiment; to show that the enzyme breaks down the fats;	[2]											
2a	<table border="1"> <tr> <td rowspan="2">Volume of water in cm³</td> <td colspan="2">measuring cylinder</td> </tr> <tr> <td>A</td> <td>B</td> </tr> <tr> <td>Remaining in cylinder</td> <td>86 (0.5)</td> <td>94 (0.5)</td> </tr> <tr> <td>Absorbed by plant</td> <td>14 (0.5)</td> <td>6 (0.5)</td> </tr> </table> <p>[½ mark each]</p>	Volume of water in cm ³	measuring cylinder		A	B	Remaining in cylinder	86 (0.5)	94 (0.5)	Absorbed by plant	14 (0.5)	6 (0.5)	[2]
Volume of water in cm ³	measuring cylinder												
	A	B											
Remaining in cylinder	86 (0.5)	94 (0.5)											
Absorbed by plant	14 (0.5)	6 (0.5)											
b	Leaf A	[1]											
c	Capillary action; Transpiration pull;	[2]											
d	<p>Decrease the humidity of air around the leaves: the greater the water vapour concentration gradient between the leaf and atmosphere, Rate of transpiration increases which increases the rate of transpiration pull to draw water up the shoot;</p> <p>Increase the light intensity: stomata open and become wider, increase in photosynthesis lead to increased rate of transpiration in the leaves increase in rate of transpiration pull;</p> <p>temperature: the greater the rate of evaporation, Rate of transpiration increases which increases the rate of transpiration pull to draw water up the shoot;</p> <p>wind movement: the lower the amount of water vapour that accumulates outside stomata, Rate of transpiration increases which increases the rate of transpiration pull to draw water up the shoot;</p> <p>[factor + reason]</p>	[2]											
3ai	(lower) epidermal cell	[1]											

aii		[1]
b	 <p>[1 mark for drawing; 1 mark for any two correct structures]</p>	[2]
c	<p>1300 hours: Open to allow carbon dioxide to enter leaf; Into mesophyll cells for photosynthesis to occur; To allow oxygen to enter leaf for respiration; To allow transpiration to occur to pull water and mineral salts up the plant / to cool down plant;</p> <p>0100 hours: Closes to reduce transpiration; To prevent wilting;</p>	[4]
4a	<p>M posterior vena cava;</p> <p>N aorta / aortic arch / systemic arch;</p> <p>O pulmonary artery;</p>	[3]
bi	When it contracts, blood is pumped out of the heart	[1]
ii	Coronary artery	[1]

c	<p>[1 mark for correct labelling 1 mark for correct drawing]</p>	[2]
d	Refer to the arrow	[1]
5a	1 - red blood cell / white blood cell; 2- plasma protein; platelets/ fats	[2]
b	Urea; salts	[1]
c	During the process of ultra-filtration at the glomerulus, glucose together with other small enough molecules in the blood are forced out by the high blood pressure into part B (Bowman's capsule); At part C (proximal convoluted tubule), glucose is selectively reabsorbed back into the blood in the surrounding blood capillaries by diffusion and;	[2]

Section C – Essay Questions [30]

6a		[4]
b	As temperature increases from 0 °C to 40 °C, enzyme activity increases; At 40 °C, enzyme activity is at its highest showing that this is the optimum temperature of the protease enzyme; Beyond 40 °C, the enzyme activity gradually decreases until it completely stops at about 61 °C;	[3]

c	<p>Being protein in nature, enzymes are sensitive to heat/temperature in its environment + At temperatures above its optimum 40 °C, the enzyme is slowly denatured;</p> <p>This causes the active site of the enzyme to change / enzyme to lose its 3D shape / surface configuration such that it does not fit that of the substrate/ enzyme-substrate complex cannot be formed;</p> <p>As a result, It cannot act on the substrate anymore / the enzyme cannot catalyse the digestion of protein; or</p> <p>As more and more of the enzyme gets denatured, less products are formed / enzyme activity decreases; or</p> <p>Beyond 60 °C, enzyme activity ceases when all the enzymes are completely denatured;</p>	[3]
7a	$\text{Glucose} + \text{oxygen} \longrightarrow \text{carbon dioxide} + \text{water} + \text{energy}$ $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \longrightarrow 6\text{CO}_2 + 6\text{H}_2\text{O} + \text{energy}$	[2]
b	<p>During vigorous exercise, the rate of respiration increases and more carbon dioxide is released; Increased carbon dioxide concentration stimulates breathing; Heart rate increases to transport more oxygen to muscles; Muscles respire anaerobically in addition to aerobic respiration and releases lactic acid to cause pain; Oxygen remains high after exercise to repay oxygen debt; Oxygen is used to oxidise/convert lactic acid into glucose;</p>	[4]
c	<p>Chronic Bronchitis; Bronchi becomes inflamed; Irritants in smoking paralyzes cilia. Dust and mucus cannot be removed; Emphysema; Persistent coughing causes alveoli partition walls break down; Lung Cancer; Tar causes uncontrolled cell division;</p>	[4]
8Eai	Phagocytes; Lymphocytes or platelets;	[2]
ii	<p>Damaged tissue and platelets produce an enzyme, thrombokinase; In the presence of calcium ions, thrombokinase catalyses the conversion of prothrombin (blood plasma) to thrombin; Thrombin converts soluble fibrinogen to insoluble fibrin threads; Fibrin threads traps the red blood cells and a blood clot is formed to stop the blood flow at the cut;</p>	[4]
b	<p>ileum is where <u>completion of digestion</u> occurs in the body +all classes of food (proteins as amino acids, carbohydrates as glucose, fats a fatty acids and glycerol); <u>Absorption of digested food</u> + occurs in the ileum; It has a large <u>surface area to volume ratio</u> due to the presence of villi, microvilli, and folding of the inner surface of the ileum; the ileum is long and coiled to <u>extended time for digestion and absorption to be completed</u>;</p>	[4]
8Oa	Liver cells convert excess glucose to glycogen under the influence of insulin;	[3]

	Liver cells convert stored glycogen to glucose under the influence of glucagon; deamination of amino acids by removing amino group and convert it to urea;	
b	Capillary transports oxygen and nutrients to cells or allow exchange of gases like oxygen and carbon dioxide between the cells and the blood; Capillary has one cell thick wall + easier for diffusion; Capillary wall has gaps (squamous endothelium) so that plasma can easily leak into interstitial spaces/tissue fluid + easier for diffusion;	[3]
c	Alveolus is location where <u>gas exchange takes place/occur</u> on alveolar wall between the air in the lungs and the blood in the capillaries; Inner wall of alveolus has a layer of <u>moisture for oxygen to dissolve in</u> before <u>diffusing</u> into blood capillaries; Wall of alveolus is on cell thick + efficient for diffusion; Wall surrounded by network of blood capillaries which <u>continuously transport blood laden with oxygen away</u> , maintain a steep concentration gradient of oxygen for efficient diffusion;	[4]