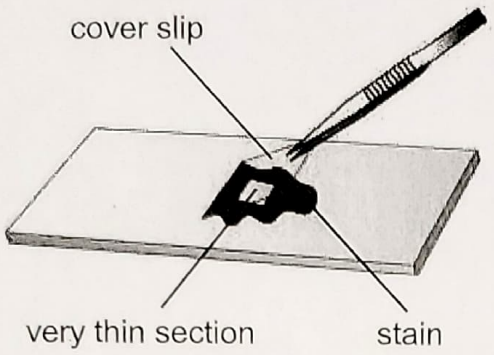
Ex. (1) Ans

S.3____ Name:_____( ) No.:_____

S.3 IS(Bio) Ch.2 The Cells Ex. ANSWER

The diagram below shows how a section of plant tissue is mounted for observation under a microscope.



a Why a very thin section is necessary for observation under the microscope? (1 mark)

b Give ***one*** reason for mounting the section in a drop of stain. (1 mark)

c Give ***two*** reasons why a cover slip is used. (2 marks)

d The slide should first be viewed under low power magnification even if we want to make high power observation. Why? (2 marks)

-- ans --

a A very thin section consists of fewer layers of cells through which light can pass through to resolve the cell structures. 1m

b To make certain cell structures more distinct. 1m

c It flattens the section for easy observation. /

It reduces water loss from the section. /

It protects the section from mechanical damage. /

It prevents the objective lens from getting wet with the stain. (any 2) 1m x 2

d It enables us to locate the part of tissue we want to observe in detail 1m

by moving it to the centre of the view under low power magnification. 1m

Ex. (2) Ans

Ch 2 The cell as the basic unit of life

Exercise

Multiple-choice questions (*p. 2-33*)

1	D	2	C	3	B	4	B
5	C	6	C	7X	D	8X	B

Short questions (*p. 2-34*)

9 HKCEE Biology 2008 I Q4

a. Cell membrane and cytoplasm

b. (i) To make different cellular structures more distinguishable/obvious to observe.

(ii) Place a cover-slip on the specimen.

10 a

Eyepiece lens magnification	Objective lens magnification	Total magnification
7X	10X	X 70
7X	20X	X 140
7X	40X	X 280

0.5 × 2

b i 0.1 mm 1

ii Plant cells are larger than animal cells. 1

11 HKALE Biology 2011 I Q3a, b

Structured questions (*p. 2-35*)

12 **a** Advantages:

It can be used to see ultra-structures. /
It can produce images with higher magnifications. /
It can produce images with higher resolution. / It has a higher resolving power. (any 2) 1 × 2

Disadvantages:

The cost is high. /
It is difficult to operate. /
The preparation of specimens is complex. /
Living material cannot be viewed. (any 2) 1 × 2

Ex. 3 ANS

Light microscopes and electron microscopes are commonly used to study the structures of cells.

a i What is the difference in the way that the two kinds of microscopes form images? (2 marks)

Light microscopes use light to form images, [1]

while electron microscopes use electron beams to form images. [1]

ii What are the advantages and disadvantages of an electron microscope compared to a light microscope? (4 marks)

Advantages:

An electron microscope can produce images with higher magnifications and resolution than a light microscope. [1]

More details of the specimen can be seen. [1]

Disadvantages:

An electron microscope is very expensive / can only be used to study dead specimens / produces black and white images. (any 2) [1 × 2]

b There are two types of electron microscopes, the transmission electron microscope and the scanning electron microscope. State ***one*** difference between the images produced by the two microscopes. (2 marks)

The images produced by the transmission electron microscope are two-dimensional, [1]

while the images produced by the scanning electron microscope are three-dimensional. [1]

~ END ~

(Please refer to p. i for the suggested answers.)

Ex.④ Ans

Lai King Catholic Secondary School
S.3 I.S. (Biology)

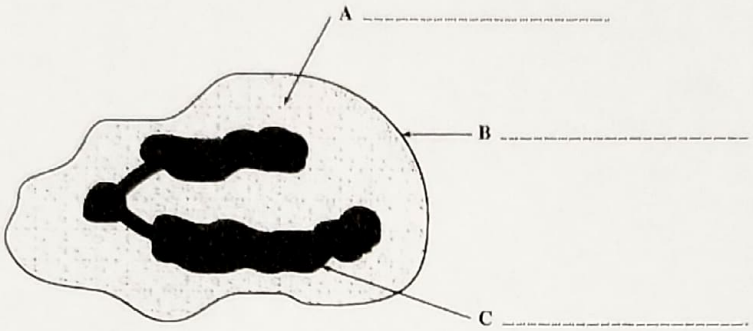
S.3____ Name:_____ ( ) No.:_____

S.3 IS(Bio) Ch.2 The Cells Ex. ANSWER

The diagram below shows a white blood cell.

a Use some of the following to label A, B and C. (3 marks)

nucleus, cell wall, cell membrane, cytoplasm, vacuole.



b State ***one*** function of a white blood cell. (1 mark)

c Name ***one*** other type of blood cell and give its function. (2 marks)

-- ans --

a A: cytoplasm 1m

B: cell membrane 1m

C: nucleus 1m

b Defence / kills bacteria / produces antibodies 1m

c Red blood cell / blood platelet 1m

It carries oxygen / helps in clotting. 1m

S.3____ Name:_____ ( ) No.:_____

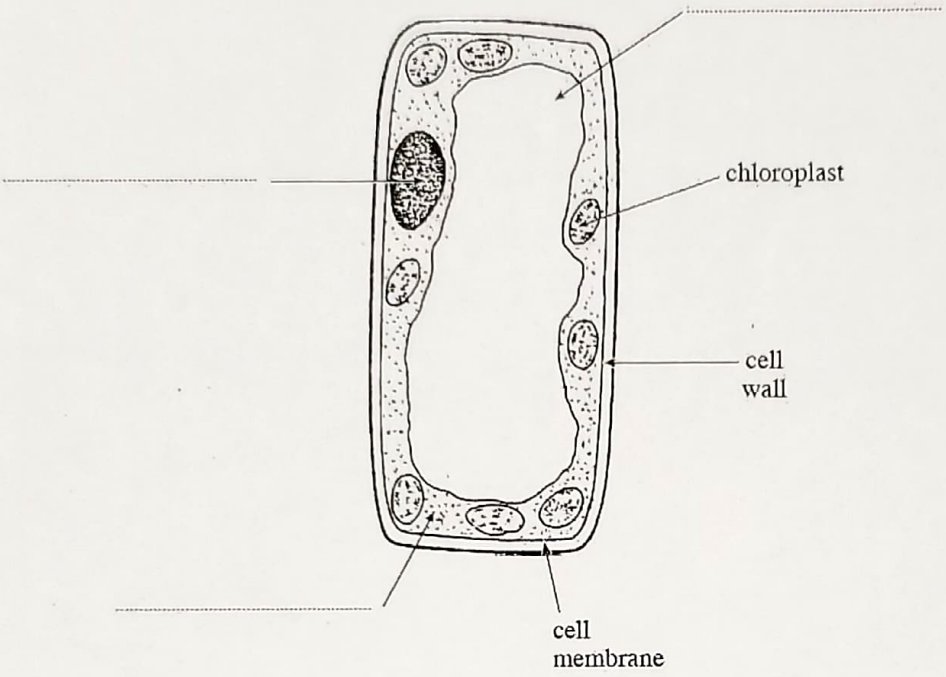
S.3 IS(Bio) Ch.2 The Cells Ex. ANSWER

A student is studying to be a forensic scientist.

She is given some slides to examine under a microscope.

One slide contains cells from a leaf.

A cell from the leaf is shown in the diagram below.



a Label the following parts of the cell:

cytoplasm, vacuole, nucleus. (3 marks)

b When she looked at animal cells under the microscope, they were different.

State ***three*** differences she would see. (3 marks)

-- ans --

a Top left: nucleus 1m

Bottom left: cytoplasm 1m

Top right: vacuole 1m

b Animals cells have no cell wall, no chloroplast, no large vacuole. 1m x 3

Ex.⑥ Ans

Exercise

a	A: Chloroplast	1m
	B: Rough endoplasmic reticulum	1m
	C: Nucleus	1m
	D: Smooth endoplasmic reticulum	1m
b	It is a plant cell.	1m
	Reason: Any two from:	1m × 2
	It contains chloroplasts.	
	It has a cell wall.	
	It has a large vacuole.	
c	Any two from:	1m × 2
	It has a true nucleus.	
	It has endoplasmic reticulum / The ribosomes are attached to the endoplasmic reticulum.	
	It has organelles bounded by a double membrane / chloroplasts.	
d	Mitochondrion	1m

Ex. (7) ANS

(12 marks)

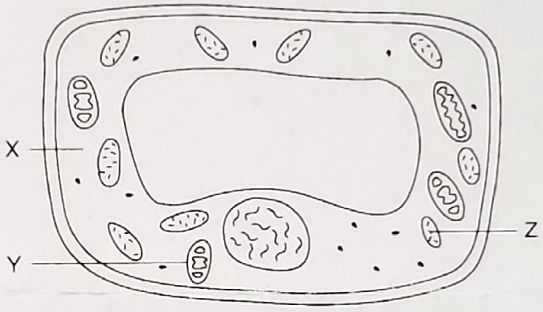
1. State ***three*** structural differences between a bacterial cell and a palisade mesophyll cell. (3 marks)

A bacterial cell does not have a true nucleus, but a palisade mesophyll cell does. / The DNA of a bacterial cell lies free in the cytoplasm, but the DNA of a palisade mesophyll cell is enclosed within the nucleus. [1]

The cell wall of a bacterial cell does not contain cellulose, but the cell wall of a palisade mesophyll cell does. [1]

A bacterial cell does not have endoplasmic reticulum / organelles bounded by a double membrane, but a palisade mesophyll cell does. [1]

2. The diagram below shows a cell.



a i Identify structures X and Y. (2 marks)

X: cytoplasm [1]; Y: mitochondrion [1]

ii State ***one*** function for each. (2 marks)

X (cytoplasm) holds the organelles / is a site for many chemical reactions. [1]

Y (mitochondrion) is the main site where the energy-releasing stage of respiration takes place. [1]

b Structure Z can only be found in some cells. Name structure Z and state ***one*** kind of cell where it can be found. (2 marks)

Chloroplast [1]

Palisade mesophyll cells / guard cells (or other cells that contain chloroplasts) [1]

c Is the cell a prokaryotic cell or eukaryotic cell? Give ***two*** reasons to support your answer. (3 marks)

The cell is a eukaryotic cell. [1]

It has a true nucleus. / Its nucleus is surrounded by a nuclear membrane. [1]

It contains mitochondria / chloroplasts. [1]

(It has ? have ? X

Ex (8) Ans

S.3____ Name:_____( ) No.:_____

S.3 IS(Bio) Ch.2 The Cells Ex. ANSWER

Use YES or NO to complete the following table, to show the structures present in animal and plant cells. The first one has been done for you. (5 marks)

Structure	Plant cell	Animal cell
Nucleus	YES	YES
Cell wall		
Cytoplasm		
Cell membrane		
Chloroplast	( )	
Vacuole containing cell sap		( )

-- ans --

Structure	Plant cell	Animal cell
Nucleus	YES	YES
Cell wall	YES	NO
Cytoplasm	YES	YES
Cell membrane	YES	YES
Chloroplast	(YES)	NO
Vacuole containing cell sap	YES	(NO)

1m for each correct row 5m