Name:	Target Grade:	Actual Grade:

BRIGHT CULTURE

CELL STRUCTURE AND ORGANISMS
MCQ and STRUCTURED QUESTIONS

READ THESE INSTRUCTIONS FIRST

INSTRUCTIONS TO CANDIDATES

1. Find a quiet, comfortable spot free place from distractions.

2. Spend one minute on each mark.

3. Time yourself for every single question.

4. Every chapter has their own question types. Ensure that you know the different question type for each chapter.

5. Make a conscientious effort to remember your mistakes, especially in terms of answering techniques. E.g Take a picture for the mistakes that you made, keep it in a photo album, and revise it over and over again.

6. Highlight question types that you tend to keep making mistakes and review them nearing exams.

7. Always review the common questions and question type that you tend to make mistakes nearing exams.

8. During exams, classify the question type and recall what you have learnt, how you need to analvse the questions for the different question type, what you need to take note of and answer with the correct answering techniques!

✨ **Wishing you all the best for this test!**

You've got this!

💡 **With lots of love,**
Bright Culture 💛

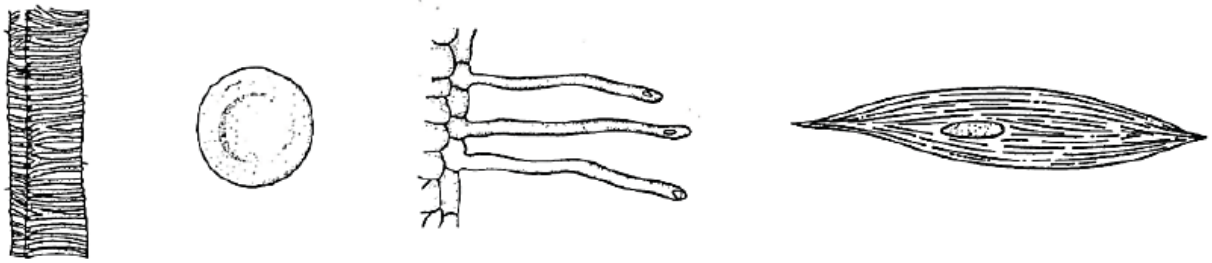
GOOD LUCK FOR YOUR EXAM!

MARKS

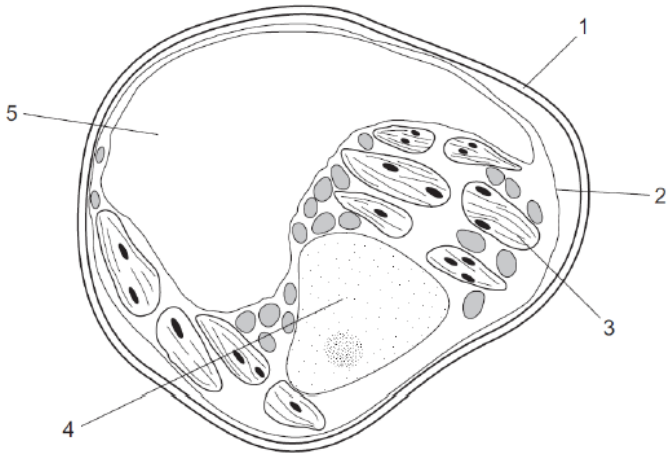
CELL STRUCTURE AND ORGANISMS MCQ

1 The diagram shows four types of cells. Which cell does not contain cytoplasm?

A B C D



2 The diagram shows a plant cell.



Which features are **not** found in animal cells?

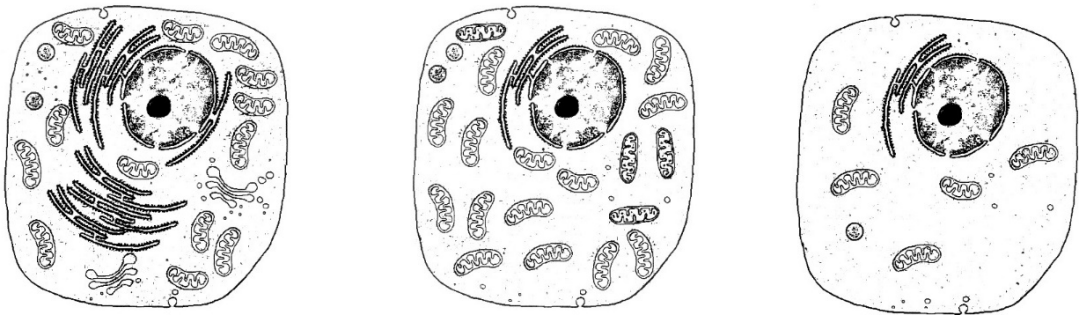
A 1 and 2

B 1 and 3

C 2 and 4

D 2 and 5

3 The following diagram shows three types of cells, X, Y and Z as seen under an electron microscope.

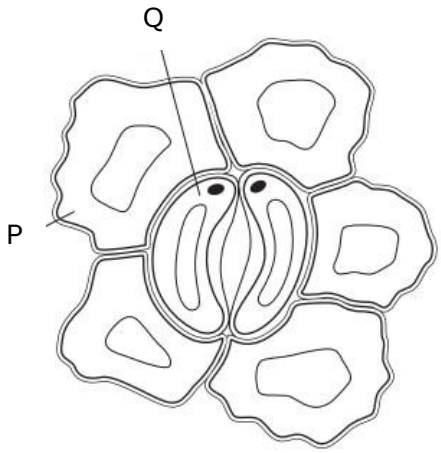


X Y Z

Which of the following options correctly identifies X, Y and Z?

	a cell on the skin	a cell that secretes digestive enzymes	a cell that absorbs food at the ileum
A	X	Y	Z
B	Y	Z	X
C	Z	Y	X
D	Z	X	Y

4 The diagram shows cells in the epidermis of a leaf.



To complete the diagram, which structural features should be added to the cells P and Q?

	P		**Q**	
	chloroplasts	nucleus	chloroplasts	nucleus
A	✓	✓	×	×
B	✓	×	✓	✓
C	×	✓	✓	×
D	×	×	✓	✓

key
√ = yes
X = no

5 A list of functions in cells is listed below. Match the functions with the structures stated in the table.

1 where carbon dioxide is reduced to carbohydrate
2 where glucose is oxidized and energy is released
3 a fully permeable outer layer
4 a selectively permeable outer layer
5 the site of protein synthesis

	1	2	3	4	5
A	chloroplast	mitochondrion	cell wall	cell membrane	ribosome
B	chloroplast	ribosome	cell wall	cell membrane	mitochondrion
C	mitochondrion	chloroplast	cell membrane	cell wall	nucleus
D	ribosome	mitochondrion	cell membrane	cell wall	nucleus

6 Using the high power lens of a laboratory microscope, a student observes and makes a drawing of an Amoeba, a unicellular organism.

The diameter of the drawing is 100 mm. The actual diameter of the Amoeba is 100 μm. What is the magnification of the drawing?

(1mm = 1 x 10^{-3}m; 1 μm = 1 x 10^{-6}m)

A 0.001
B 100
C 400
D 1000

7 A cell is being examined.

Which feature would identify it as either a plant cell or an animal cell?

A The cell can control the type of substances entering or exiting it.
B The cell contains centrioles.
C The cell contains rough endoplasmic reticulum.
D The cell contains stored proteins.

8 Telomerase is an enzyme which is found active in cancer cells. Its function is to extend the length of a DNA molecule.

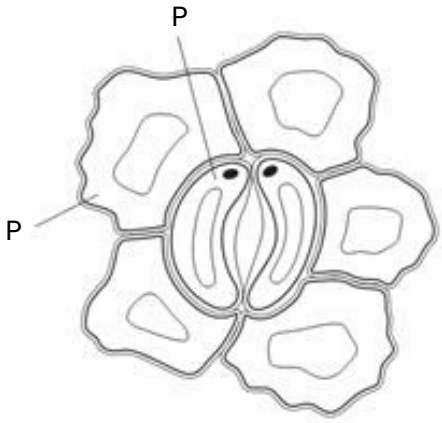
In which part of a cancer cell will telomerase be found?

A Cytoplasm
B Golgi bodies
C Mitochondria
D Nucleus

9 In which cell would the most amount of rough endoplasmic reticulum be found?

A companion cell in the phloem
B endothelial cell of the villus in the small intestine
C leaf cell involved in photosynthesis
D pancreatic cell that secretes enzymes

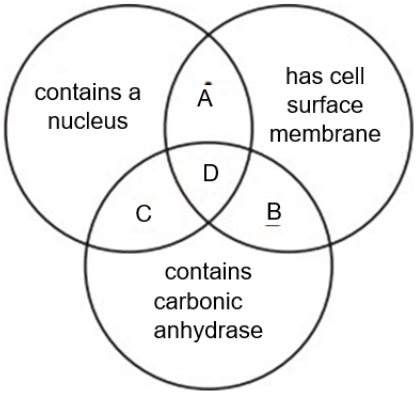
10 The diagram shows cells in the epidermis of a leaf.



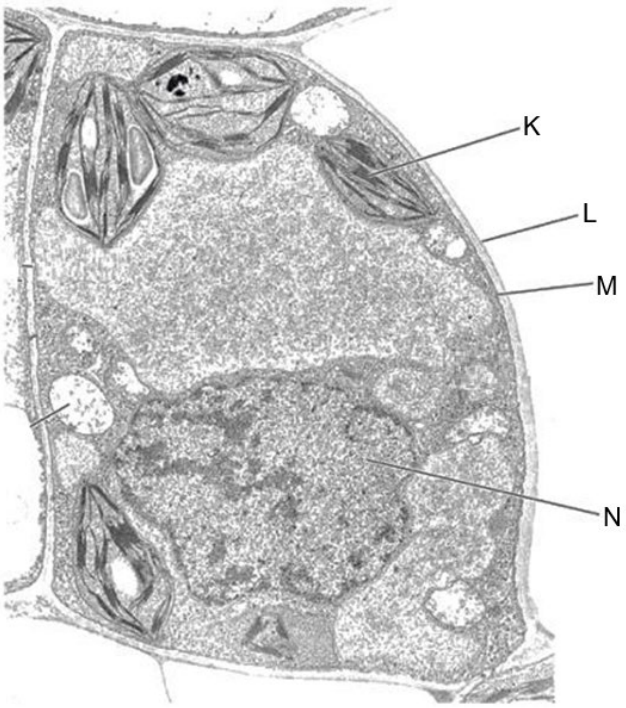
To complete the diagram, which structural features should be added to the cells P and Q?

	P		Q	
	chloroplast	nucleus	chloroplast	nucleus
A	✓	✓	×	×
B	✓	×	✓	✓
C	×	✓	✓	×
D	×	×	×	✓

11 The diagram refers to some properties found in cells.
Which area of the diagram represents a red blood cell?



12 The picture below is an electron micrograph of a plant cell.



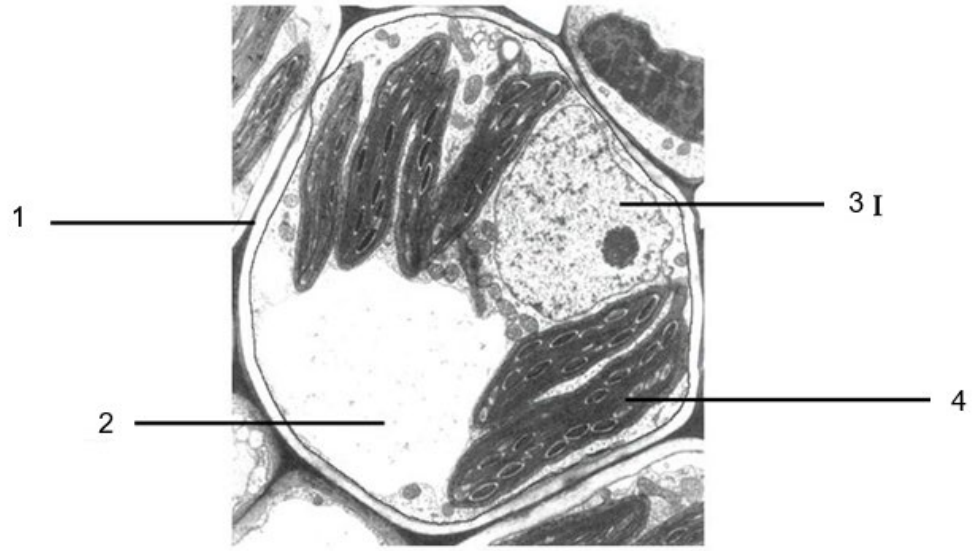
Which of the following correctly identifies the structures K, L, M and N?

	K	L	M	N
A	chloroplast	cellulose cell wall	cell membrane	nucleus
B	Golgi apparatus	cell membrane	cellulose cell wall	mitochondrion
C	chloroplast	cellulose cell wall	cell membrane	vacuole
D	vacuole	cell membrane	cellulose cell wall	chloroplast

13 In which cell would you find the highest amount of rough endoplasmic reticulum?

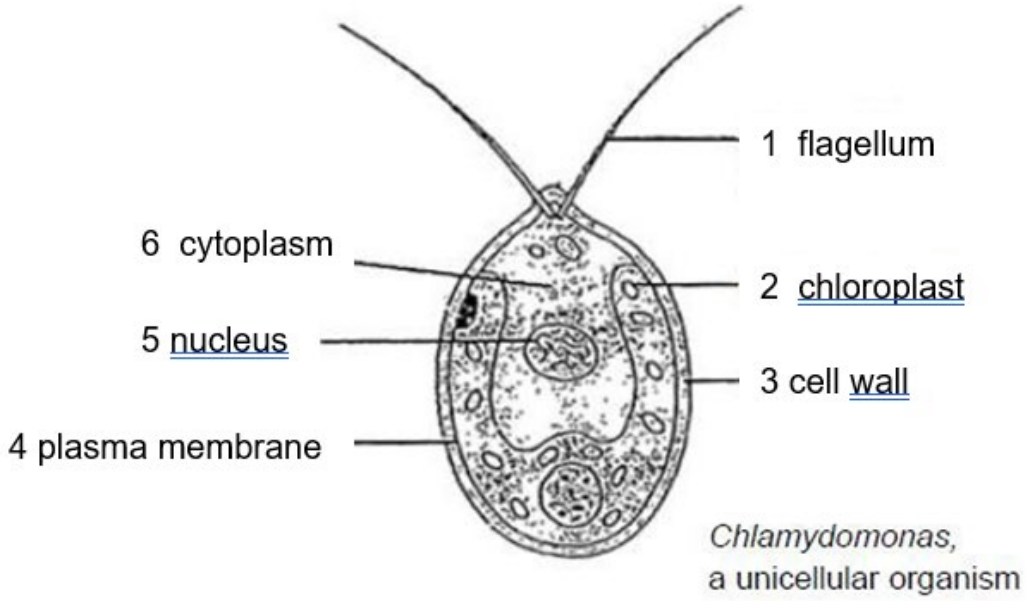
A leaf cell that is carrying out photosynthesis under sunlight
B muscle cell in the thigh of a long-distance runner
C pancreatic cell that actively secretes digestive enzymes
D root hair cell that is absorbing water from damp soil

14 The following shows a plant cell. What are the functions of the labelled parts?



	1	2	3	4
A	control movement of substances into and out of the cell	site of enzyme reactions	controls protein synthesis	absorbs sunlight
B	mechanical support for the cell	regulates the water potential	controls cell division	absorbs sunlight
C	mechanical support for the cell	site of enzyme reactions	controls protein synthesis	modifies proteins made
D	control movement of substances into and out of the cell	regulates the water potential	controls cell division	modifies proteins made

15 The diagram below shows a unicellular organism, *Chlamydomonas*.



Which structure shown is **not** found in a typical animal cell?

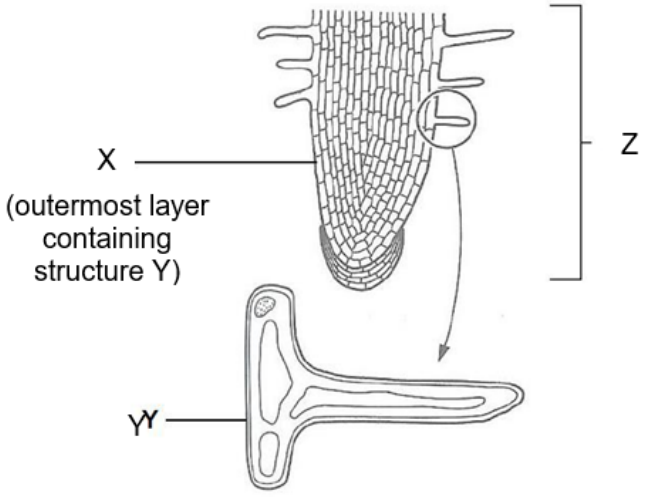
A 1, 2 and 3

B 2, 3 and 4

C 2, 3 and 6

D 3, 4 and 6

16 The diagram shows the structure of a root.



Which of the following correctly identifies a cell, tissue and organ?

	cell	tissue	organ
A	X	Y	Z
B	X	Z	Y
C	Y	X	Z
D	Y	Z	X

17 Which cell type has the most number of ribosomes?

A muscle cell
B red blood cell
C sieve tube element
D xylem

18 Which of the following structures is present in both root hair cells and red blood cells?

A cell wall
B chloroplast
C cytoplasm
D nucleus

19 The following are components of the human digestive system.

1 intestinal epithelium

2 muscles of oesophagus

3 stomach

Which of the following shows the correct categorisation of the components above?

	cell	tissue	organ
A	1	2	3
B	2	3	1
C	-	1 and 3	2
D	-	1 and 2	3

20 How does the long and narrow protrusion of a root hair cell aid in its function?

A It decreases surface area to volume ratio so more water can be absorbed.

B It decreases surface area to volume ratio so less water can be absorbed.

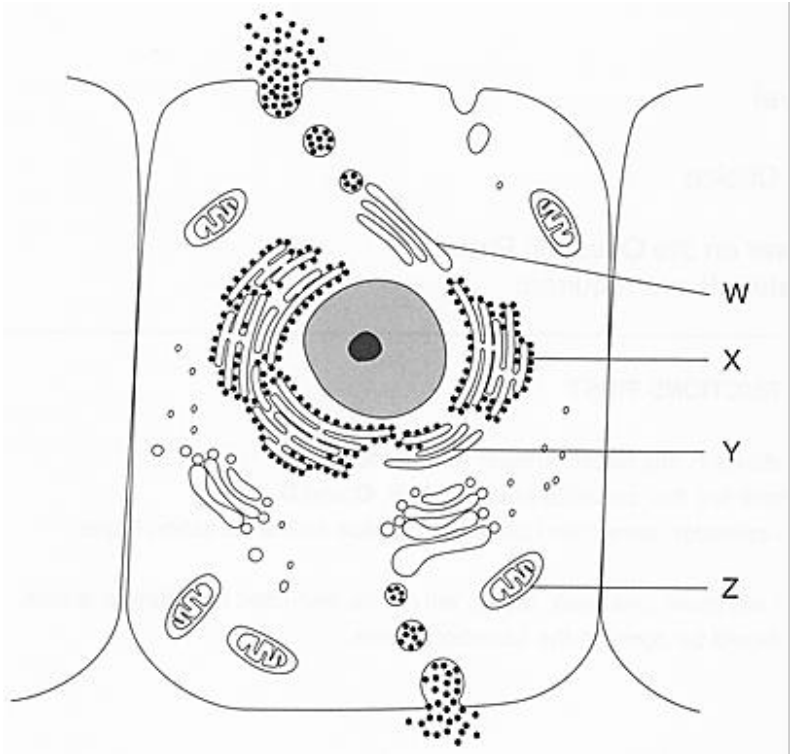
C It increases surface area to volume ratio so water can be absorbed faster.

D It increases surface area to volume ratio so water can be absorbed slower.

21 Which of the following best describes the xylem and the leaf?

	xylem	leaf
A	cell	tissue
B	cell	organ
C	tissue	tissue
D	tissue	organ

22 The diagram shows the detailed structure of an animal cell.



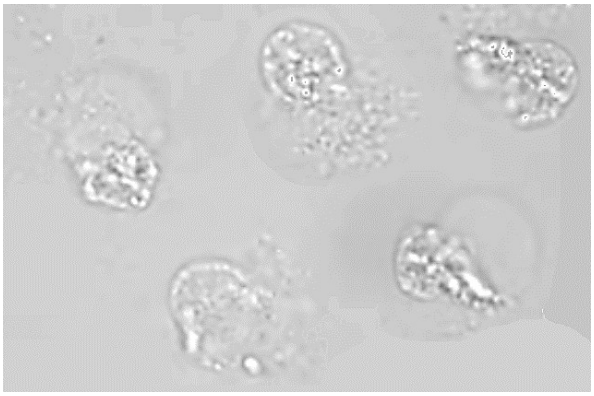
What are the functions of W, X, Y and Z?

	W	X	Y	Z
A	cellular respiration	protein synthesis	protein transport	fat synthesis
B	fat synthesis	protein transport	protein synthesis	cellular respiration
C	protein synthesis	cellular respiration	fat synthesis	protein transport
D	protein transport	protein synthesis	fat synthesis	cellular respiration

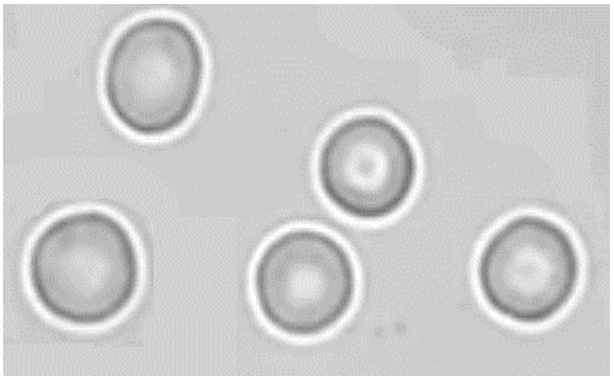
23 When trying to view a blood smear under the microscope, a student placed a drop of blood on a glass slide and added a drop of distilled water to dilute it before placing the coverslip over it.

Which of the following represents the microscopic view of this experiment?

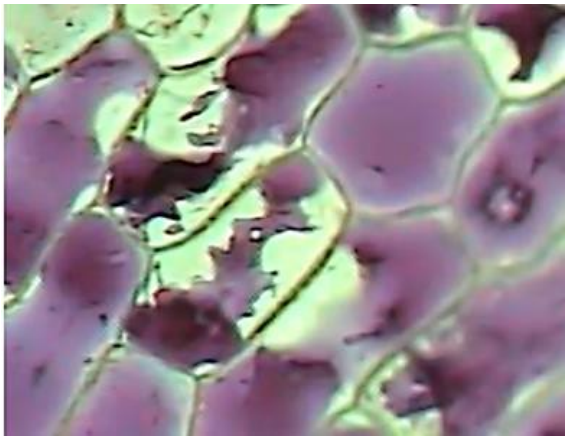
A



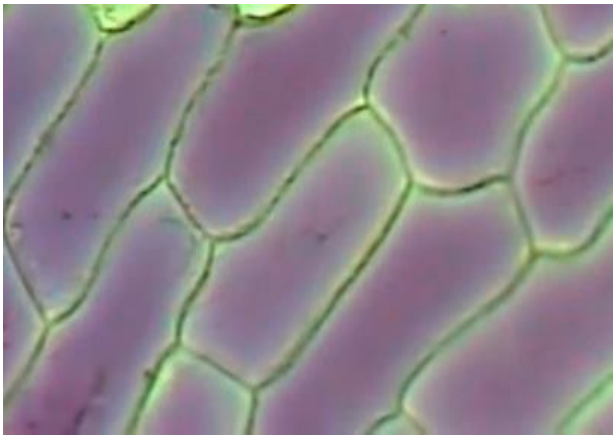
B



C

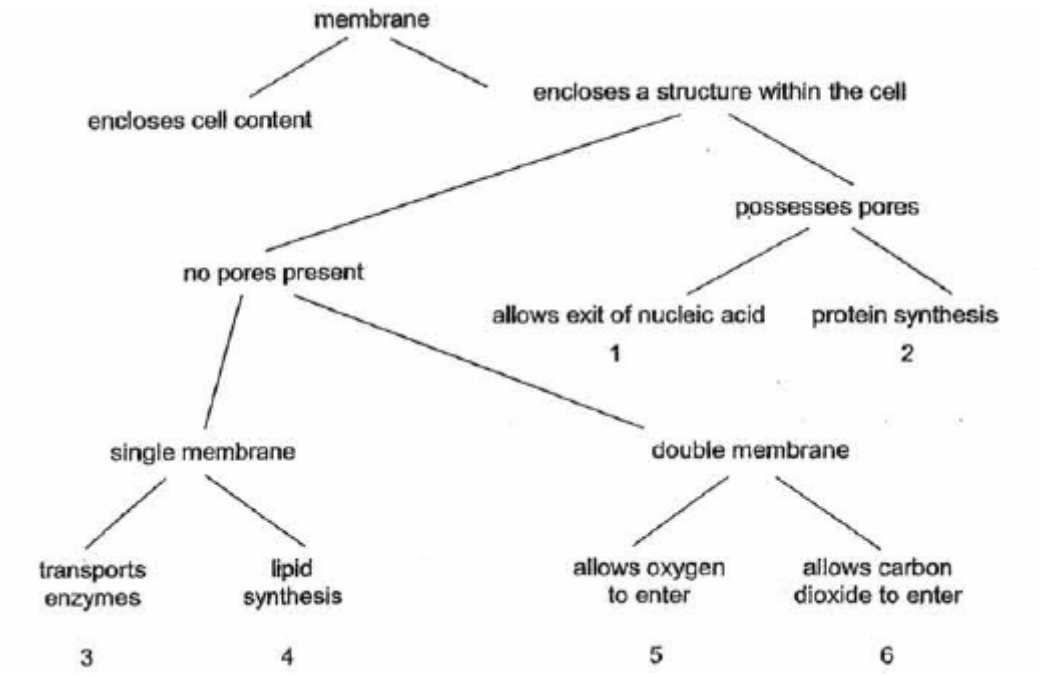


D



24 Membranes within and al the surface of cells have different roles.

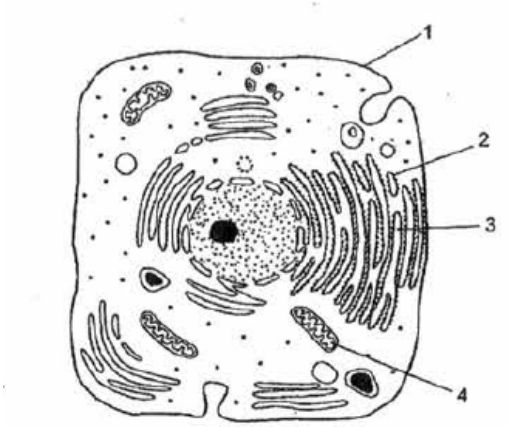
The diagram allows the identification of the various organelles within the cell, by describing the membrane structure and function.



Which of the following correctly idenlifles the organelles that possess the membrane and the function?

	1	**2**	3	**4**	5	6
A	chloroplast	vesicle	smooth ER	rough ER	mitochondrion	nucleus
B	chloroplast	smooth ER	vesicle	roughh ER	nucleus	mitochondrion
C	nucleus	rough ER	vesicle	smooth ER	mitochondrion	chloroplast
D	nucleus	smooth ER	mitochondrion	rough ER	vesicle	chloroplast

25 The diagram shows a drawing of a plant cell.



Which two labelled structures function together to synthesize proteins?

A 1 and 3
B 1 and4
C 2 and 3
D 2 and4

26 Which of lha following is/are examples of complex tissues?

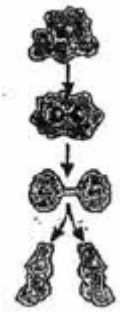
1 blood
2 leaf epidermal tissue
3 skin
4 plant vascular tissue

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

27 Which of the following organelles Is not involved in the synthesis of llpases in an intestinal cell?

A Golgi apparatus
B nucleus
C ribosomes
D smooth endoplasmic reticulum

28 The diagram below shows a typical animal cell



What activity is the organism exhibiting?

A movement

B photosynthesis

C reproduction

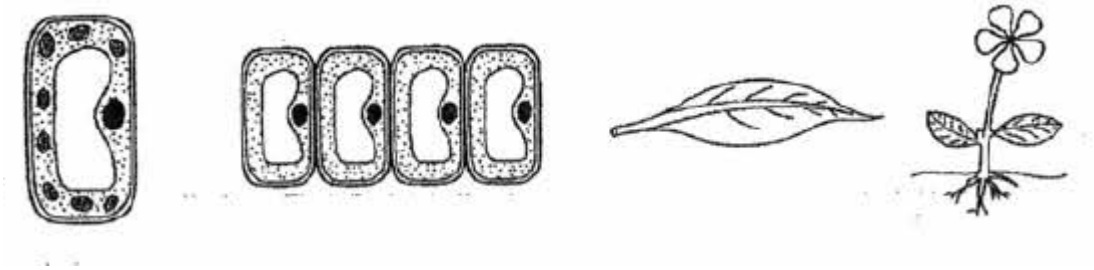
D respiration

29 Which of the following describes the pathway of a protein from its manufacture to its release from the cell?

A endoplasmic reticulum → golgi complex → secretory vesicle
B golgi complex → endoplasmic reticulum → secretory vesicle
C secretory vesicle → endoplasmic reticulum → golgi complex
D secretory vesicle → golgi complex → endoplasmic reticulum

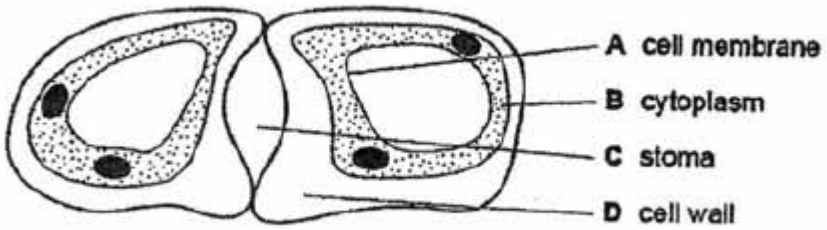
30 Which diagram shows one organ only?

A B C D

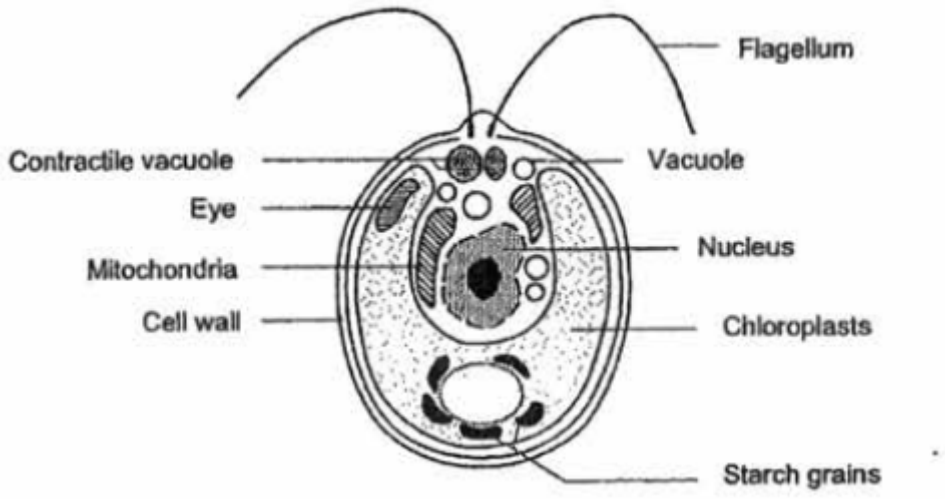


31 The diagram shows a student's drawing of guard cells.

Which label is **not correct?**



32 The diagram below shows a drawing of unicellular organisms, *Chlamydomonas.*



Based on the figure above, what can be concluded about *Chlamydomonas*?

A *Chlamydomonas* uses its flageilum for movement.

B. *Chlamydomonas* is an animal cell because it.contains small vacuoles. .

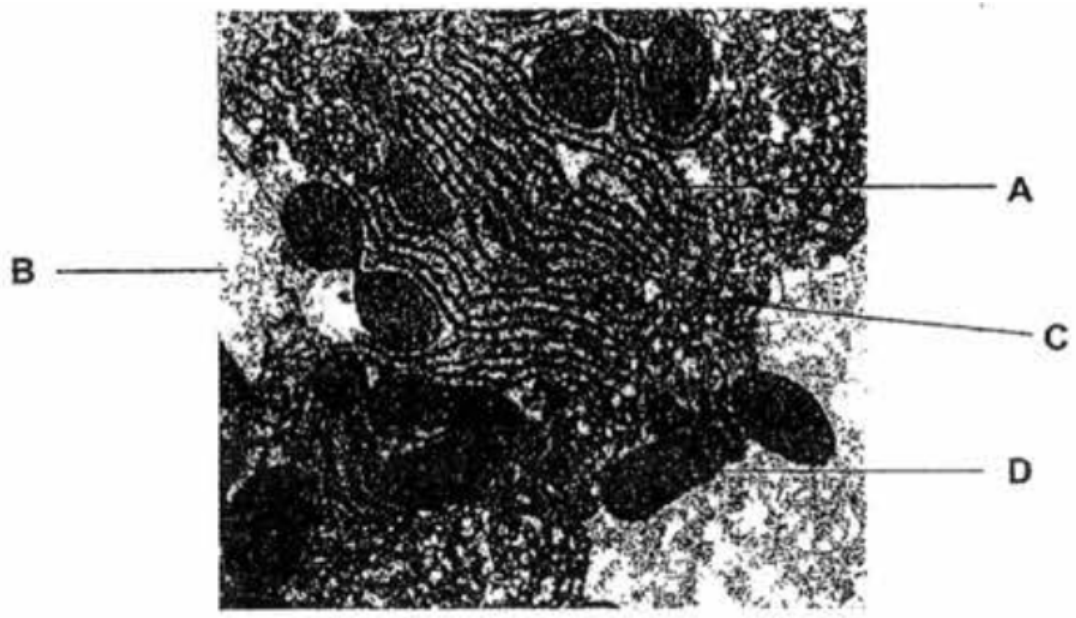
C *Chlamydomonas* is a plant cell because it has a cell wall and chloroplast.

D *Chlamydomonas* is an animal cell because it contains mitochondria and nucleus.

33 HMG-coA reductase is an enzyme which controls the production of cholesterol. This enzyme is found embedded within a membrane.

The diagram below shows an electron micrograph of a part of a liver cell.

Where in the cell could this enzyme be found?

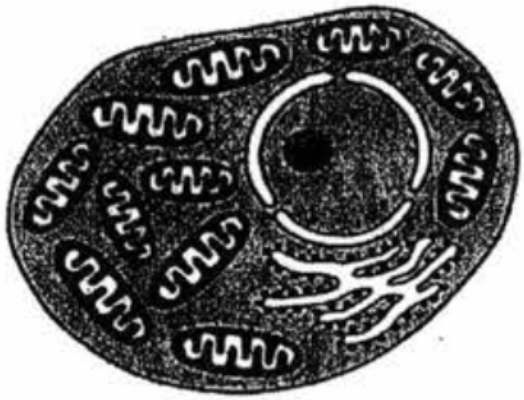


34 The cells of an ant and an elephant are, on average, the same small size, so an elephant just has more cells instead of having larger cells.

What is the main advantage of cells having a smaller size?

A A smaller cell has larger cell membrane surface area than a larger cell
B A smaller cell is less likely to burst than a larger cell
C A smaller cell requires less energy than a larger cell
D A smaller cell can carry out exchange of substances more efficiently than a larger cell

35 The diagram below shows an extracted animal cell under an electron microscope.



The cell is likely to……

A be a cheek epithelial cell
B be a mature red blood cell
C require high levels of oxygen
D produce large amounts of glucose

36 Which sequence shows the correct involvement of organelle and substance in the production and secretion of an enzyme?

A Golgi apparatus → ribosome → rough endoplasmic reticulum → vesicle

B nucleus → smooth endoplasmic reticulum → Golgi apparatus → vesicle

C rough endoplasmic reticulum → vesicle → Golgi apparatus

D smooth endoplasmic reticulum → vesicle → ribosome

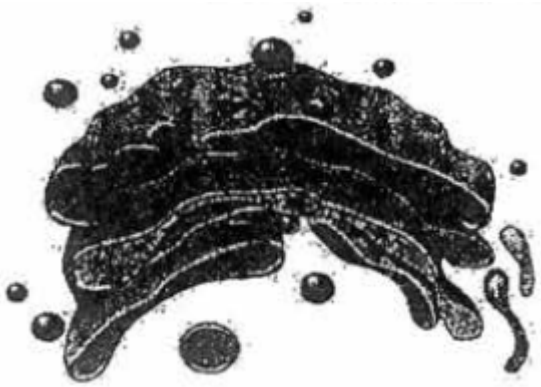
37 A student made the following observations about two cells he viewed under the microscope.

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?

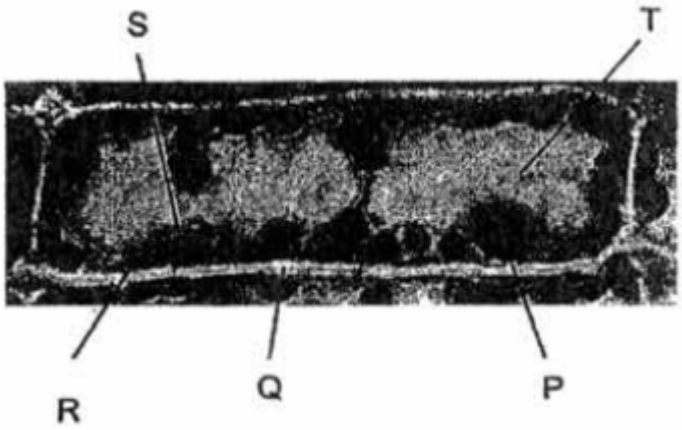
	cell A	cell B
A	spongy mesophyll cell	red blood cell
B	onion epidermal cell	cheek cell
C	muscle cell	root hair cell
D	root hair cell	spongy mesophyll cell

38 The organelle in the diagram below is a _____



A rough endoplasmic reticulum
B smooth endoplasmic reticulum
C golgi apparatus
D mitochondrion

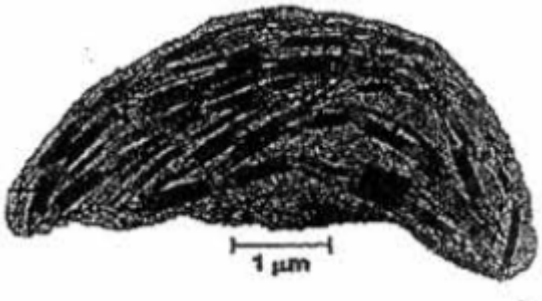
39 The photomicrograph shows a cell from a pondweed.



Which of the labeled parts would be visible in an animal cell under the light microscope?

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

40 Which statements best describes the function of the organelle shown?

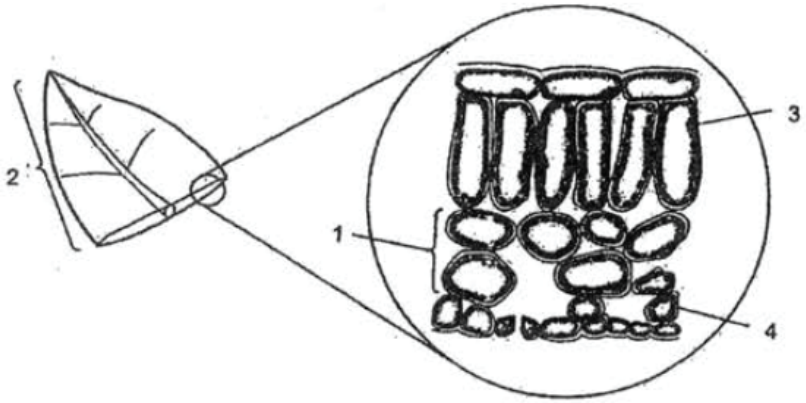


A absorbs light energy for the manufacture of food by the cell
B controls the activities of the cell
C is involved in the oxidation of food substances to release energy
D is the site where proteins are synthesised

41 A special dye propidium iodide stains DNA. Which cell would show no staining with propidium iodide?

A cheek ceil
B phagocyte
C red blood cell
D yeast cell

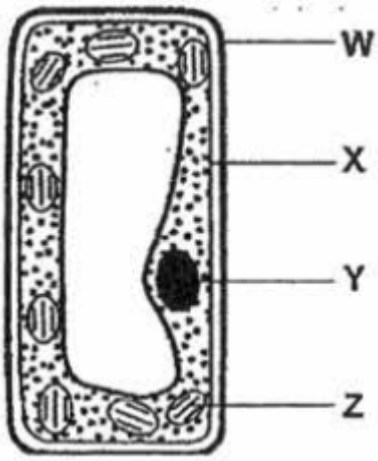
42 The diagram below shows the structure of a leaf.



Which identifies a cell, tissue and a organ?

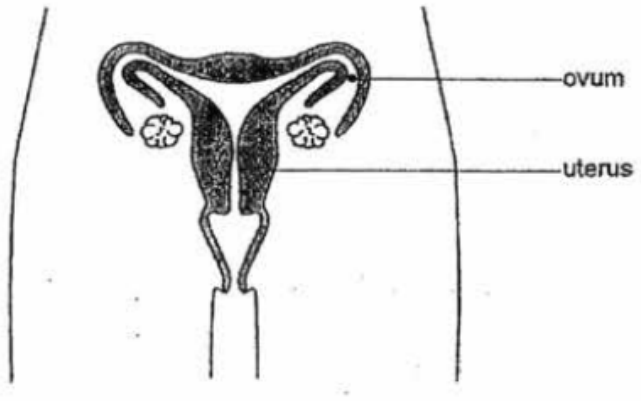
	Cell	Tissue	Organ
A	1	4	3
B	2	3	1
C	3	2	4
D	4	1	2

43 Which two parts of the plant cell shown are also found in the liver cells?



A W and X
B W and Z
C Y and X
D Y and Z

44 The diagram shows the female reproductive system



At which level of organization are the ovum and the uterus?

	Ovum	Uterus
A	Cell	Organ
B	Cell	Tissue
C	Organ	Tissue
D	Tissue	Organ

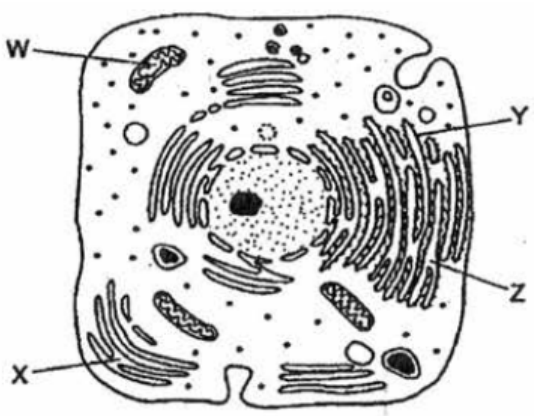
45 The table shows comparisons between a red blood cell and a root hair cell.

Feature number	Feature	Red blood cell	Root hair cell
1	Transports oxygen	Yes	Yes
2	Cytoplasm present	No	Yes
3	Large surface area to volume ratio	Yes	Yes
4	Nucleus present	No	Yes

Which comparisons are correct?

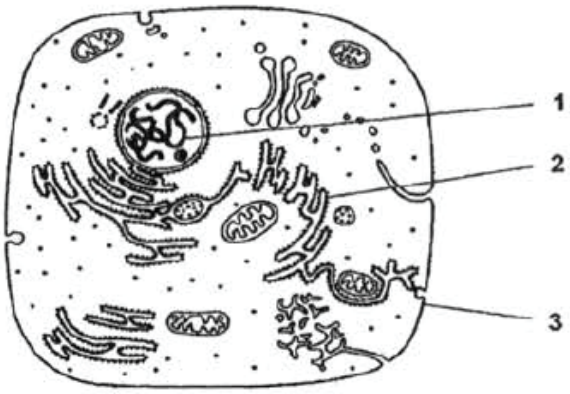
A 1, 2 and 3
B 1, 3 and 4
C 1 and 2 only
D 3 and 4 only

46 The diagram below shows a cell as seen under an electron microscope. What are the functions of the numbered parts in the cell?



	Aerobic respiration	Formation of polypeptides	Transport of proteins	Synthesis of fats
A	W	X	Y	Z
B	W	Y	Z	X
C	X	Z	W	Y
D	Z	W	Y	X

47 The diagram shows the structure of a typical animal cell as seen using an electron microscope.



Which cell components are needed to synthesise and build proteins within the cell?

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

48 A student suggests that plants cells do not require mitochondria since they have chloroplasts.

Which statement would you use to convince him otherwise?

A The presence of mitochondria keeps all plant cells alive.

B Having both chloroplasts and mitochondria would maximize the rate of photosynthesis.

C Mitochondria would be necessary at night when chloroplasts are no longer able to photosynthesize.

D The chemical energy stored in glucose cannot be efficiently utilized in the cell without mitochondria.

CELL STRUCTURE AND ORGANISMS STRUCTURED QUESTIONS

1 Fig. 1.1 shows a section through a microscopic, single-celled organism. It is often found living in fresh water. These cells are able to carry out biochemical processes for the maintenance of life.

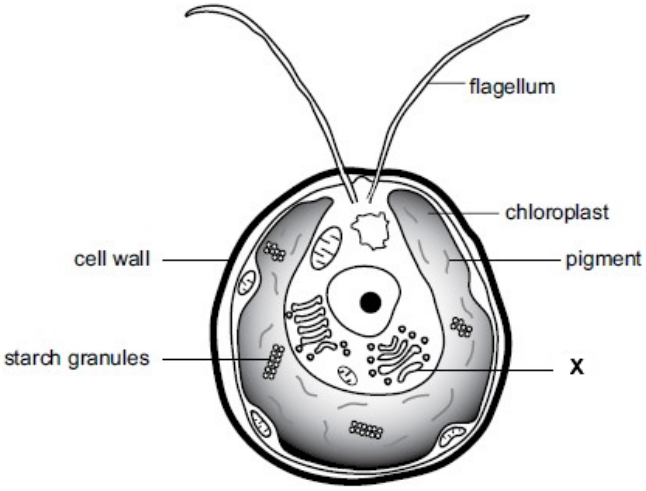


Fig. 1.1

(a) State one way in which this cell differs from a palisade mesophyll cell.

…… [1]

(b) Name the structure labelled **X** in Fig. 1.1 and describe its function.

……

…….. [2]

(c) The cell can carry out photosynthesis to make its own food. Write the balanced chemical equation for photosynthesis.

……[1]

[Total: 4]

2 Fig. 1.1 shows a mucus-secreting cell **X** found in the lining of a stomach.

Cell **X** produces and secrete mucin, a protein component of mucus.

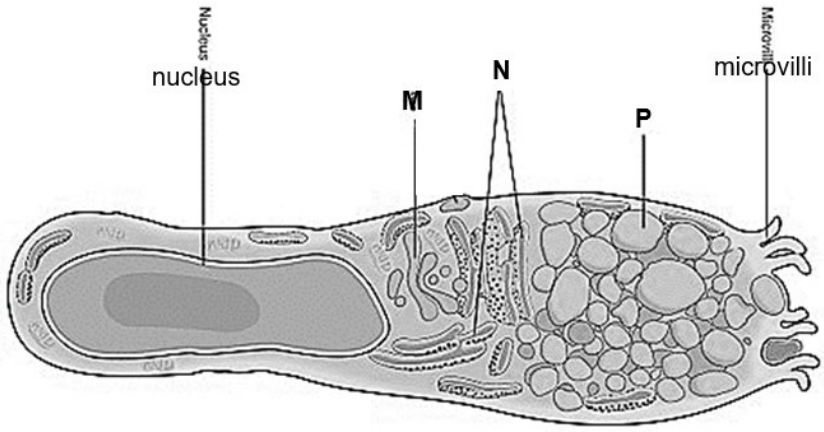


Fig. 1.1

(a) Identify organelles **M**, **N** and **P**.

M: ……..

N: ……..

P: ……..

[3]

(b) With reference to organelles **M**, **N** and **P**, describe how mucin is produced and secreted out of cell **X**.

……..

……..

……..

……..

……..

……..

……..[3]

(c) Similar structures found in different regions of the body may have different functions. Microvilli can also be found in the small intestine.

Suggest one functional similarity and difference between the microvilli found in the small intestine and cell **X**.

similarity:……..……..

……..….[1]

difference:……..……

……[1]

3 Hydrogen peroxide is a toxic chemical produced in plant and animal cells. The enzyme catalase is also found in plant and animal tissues.
In the presence of catalase, hydrogen peroxide is broken down to water and oxygen gas according to the equation given below:

$$\text{hydrogen peroxide} \xrightarrow{\text{catalase}} \text{water + oxygen}$$

The mixture of water and oxygen gas forms a layer of froth.

An experiment was carried out to investigate one of the factors affecting the action of catalase. Fig. 2.1 shows the experimental set ups showing the results of the investigation.

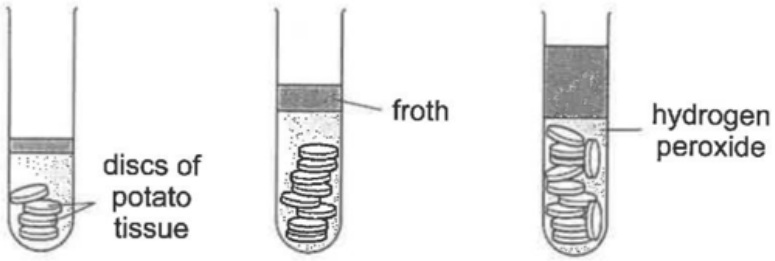


Fig. 2.1

(a) (i) State the independent variable that is being investigated in this experiment.

…….. [1]

(ii) State two variables that need to be kept constant in this experiment.

1. ……

2. ……..[2]

(iii) Suggest a suitable control for this investigation.

……...

…….. [1]

(iv) State the conclusion that can be made from the results shown in Fig. 2.1.

……...

…….. [1]

(b) (i) In place of potato tissue, suggest an animal tissue that will also work in the same way for this experiment.

…….. [1]

(ii) Name the organelle of the cell where a high concentration of catalase might be found.

…….. [1]

[Total: 7]

4 Fig. 1.1 shows a three-dimensional model of an animal cell as seen under an electron microscope.

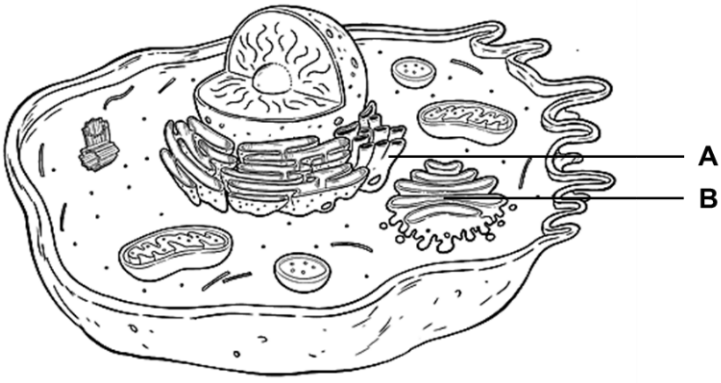


Fig. 1.1

(a) Identify structures **A** and **B**, and state their functions.

Structure **A**

name .....

function.....

.....

Structure **B**

name .....

function.....

.....[3]

(b) The same cell is viewed under a light microscope.
Draw the expected observation. Label all structures drawn.

[2]

[Total: 5]

5 Fig. 2.1 shows a serous cell, which can be found in the human stomach. These cells are involved in the secretionof mucus to coat the stomach walls. The main component of mucus is proteins.

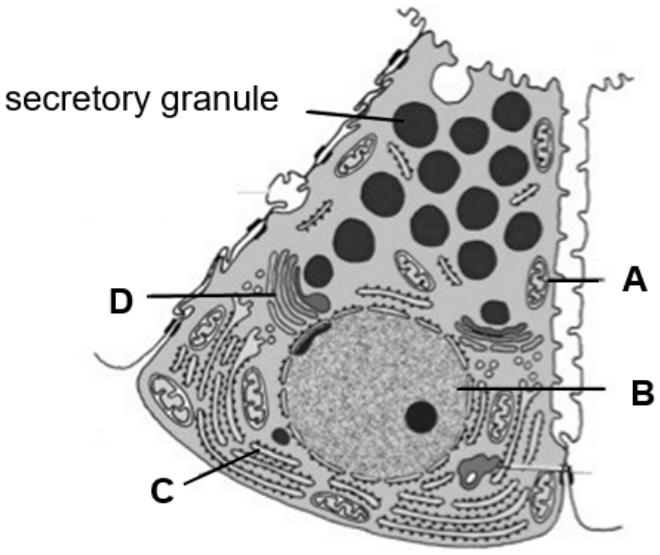


Fig. 2.1

(a) Name structures **A** to **D**.

A: ……

B: ……

C: ……

D: ……

(b) Using the letters **C** and **D**, explain how the cell shown in Fig. 2.1 produces and secretes mucus to coat the stomach wall.

……..

……..

……..

……..

……..

……..[3]

(c) Sometimes, when a person is lying flat, partially digested food from the stomach returns to the oesophagus, causing discomfort. This is known as 'heartburn'.

Explain why medication for this condition is often alkaline in nature.

……..

……..

……..

…… [2]

[Total: 7]

6 Fig. 1.1 shows a unicellular fungal cell.

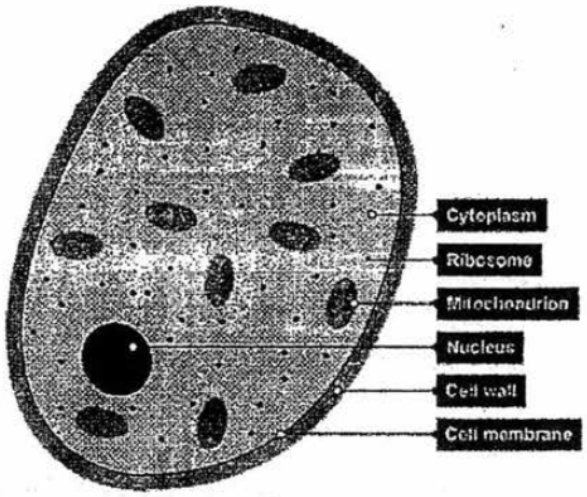


Fig. 1.1

(a) Define unicellular.

……

……[1]

(b) A student examinee the cell, and almost mistakes it as a plant cell.
Suggest why he might have made this mistake.

……[1]

(c) Describe the function of the following organelles:

(i) Cell membrane

……[1]

(ii) Mitochondrion

……[1]

(iii) Cytoplasm

……[1]

7 Fig. 1 shows a pair of specialized plant cells.

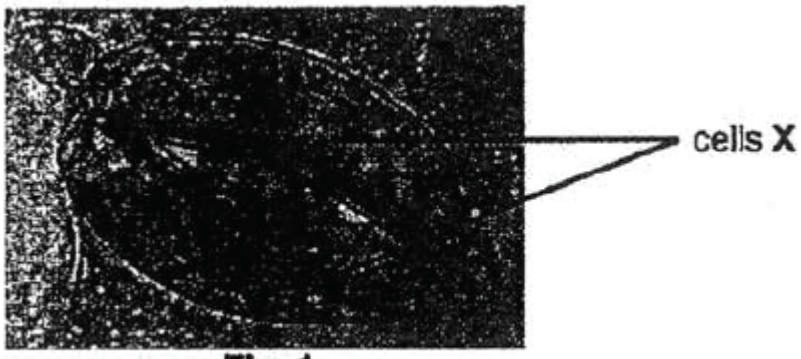


Fig. 1

(a) Identify cell **X.**

…… [1]

(b) (i) Name one structural difference between cell X and a typical plant cell.

……

……[1]

(ii) How does the difference stated in (b) (i) help in the function of these cells.

……

……

……

……

……

……

……[3]

(c) Suggest how these specialized cells X are different from a plant adapted to a hot and dry environment compared to a typical green plant.

……

……

……

……

……[2]

[Total mark: 7]

ANSWERS FOR CELL STRUCTURE AND ORGANISMS MCQ

Q1: A	Q11: B	Q21: D	Q31: A	Q41: C
Q2: B	Q12: A	Q22: D	Q32: C	Q42: D
Q3: D	Q13: C	Q23: A	Q33: C	Q43: C
Q4: C	Q14: B	Q24: C	Q34: D	Q44: A
Q5: A	Q15: A	Q25: D	Q35: C	Q45: D
Q6: D	Q16: C	Q26: B	Q36: C	Q46: B
Q7: B	Q17: A	Q27: D	Q37: B	Q47: B
Q8: D	Q18: C	Q28: C	Q38: C	Q48: D
Q9: D	Q19: D	Q29: A	Q39: A	
Q10: C	Q20: C	Q30: C	Q40: A	

ANSWERS FOR CELL STRUCTURE AND ORGANISMS STRUCTURED QUESTIONS

1 Fig. 1.1 shows a section through a microscopic, single-celled organism. It is often found living in fresh water. These cells are able to carry out biochemical processes for the maintenance of life.

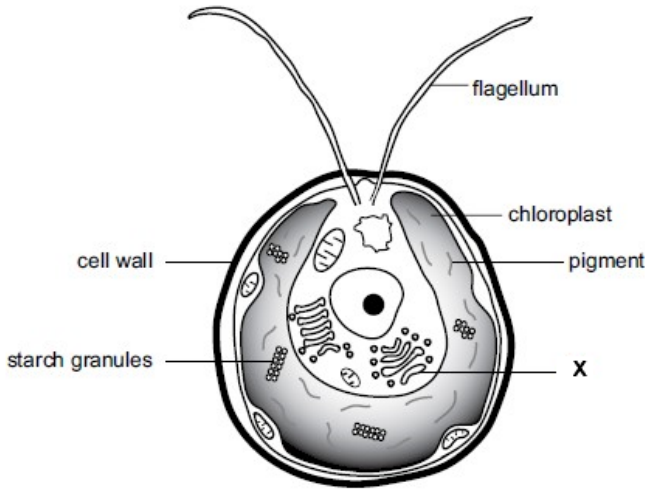


Fig. 1.1

(a) State one way in which this cell differs from a palisade mesophyll cell.

- no central vacuole / no cell sap ;
- one chloroplast only ;
- large chloroplast / ref shape of chloroplast
- round / spherical shape of cell ;
- no tonoplast / vacuolar membrane / AW ;
- cell is entire organism / not part of a tissue
- ref. position of nucleus
- presence of flagellum

[any 1] [1]

(b) Name the structure labelled **X** in Fig. 1.1 and describe its function.

Golgi complex OR Golgi body OR Golgi apparatus. [1]
Organelles that process, modify and package material into vesicles for export from the cell/modify substance made by ER [1] [2]

(c) The cell can carry out photosynthesis to make its own food. Write the balanced chemical equation for photosynthesis.

chlorophyll

$6CO_2+6H_20 \rightarrow C_6H_{12}O_6 + 6O_2$

Light

[1] correct equation

[1] correct conditions [1]

[Total: 4]

2 Fig. 1.1 shows a mucus-secreting cell **X** found in the lining of a stomach.

Cell **X** produces and secrete mucin, a protein component of mucus.

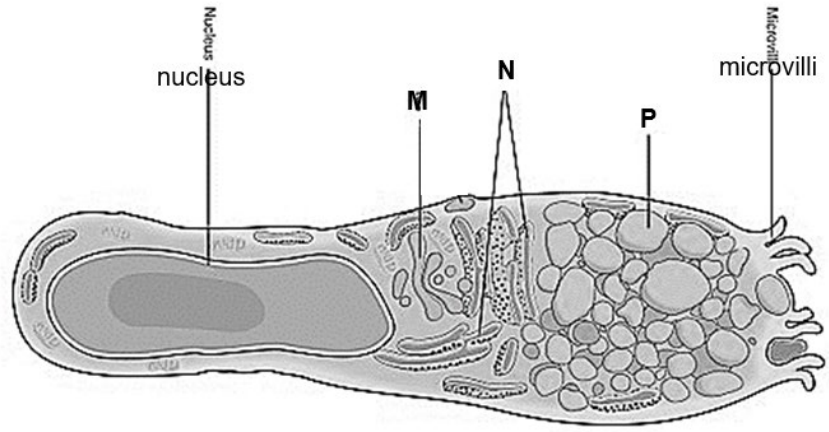


Fig. 1.1

(a) Identify organelles **M**, **N** and **P**.

M: Golgi apparatus / body

N: Rough endoplasmic reticulum

P: (Secretory) vesicle

[3]

(b) With reference to organelles **M**, **N** and **P**, describe how mucin is produced and secreted out of cell **X**.

Ribosomes attached on N synthesises protein mucin;
Vesicles pinch off N and fuses with M/ Golgi Body, which (chemically) modifies and packages mucin;
Secretory vesicles P then pinch off M and fuses with cell membrane to release mucin;

[3]

(c) Similar structures found in different regions of the body may have different functions. Microvilli can also be found in the small intestine.

Suggest one functional similarity and difference between the microvilli found in the small intestine and cell **X**.

similarity: Microvilli increases surface area to volume ratio for the cell; [1]

difference: The microvilli in cell X helps in secretion of mucin while the microvilli in the small intestine helps in the absorption of nutrients.

[1]

3 Hydrogen peroxide is a toxic chemical produced in plant and animal cells. The enzyme catalase is also found in plant and animal tissues.
In the presence of catalase, hydrogen peroxide is broken down to water and oxygen gas according to the equation given below:

$$\text{hydrogen peroxide} \xrightarrow{\text{catalase}} \text{water + oxygen}$$

The mixture of water and oxygen gas forms a layer of froth.

An experiment was carried out to investigate one of the factors affecting the action of catalase. Fig. 2.1 shows the experimental set ups showing the results of the investigation.

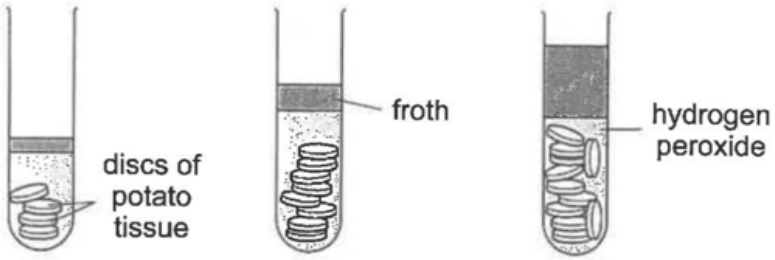


Fig. 2.1

(a) (i) State the independent variable that is being investigated in this experiment.

Concentration of catalase (R: number of discs / thickness of potato tissue); [1]

(ii) State two variables that need to be kept constant in this experiment.

Volume of hydrogen peroxide;
Temperature;
A: Time taken, type of potato

R: Concentration of hydrogen peroxide (as the source is the same)
R: Size of potato discs (cut out from the same template) [2]

(iii) Suggest a suitable control for this investigation.

Use an inert substance in place of potato tissue (A: relevant named material)
Or
Use hydrogen peroxide only (omit the enzyme in the test tube)

R: Use potato discs in distilled water
The aim of the experiment is to investigate the factors affecting the action of catalase. The control aims to show that the reaction cannot take place / takes place at a much slower rate in the absence of catalase. [1]

(iv) State the conclusion that can be made from the results shown in Fig. 2.1.

The higher the concentration of catalase / enzyme, the higher or faster the rate of breakdown of hydrogen peroxide;

R: The more potato discs, the more froth
Enzyme activity always increases the rate of reaction. [1]

(b) (i) In place of potato tissue, suggest an animal tissue that will also work in the same way for this experiment.

liver tissue
R: muscle tissue / human cheek tissue [1]

(ii) Name the organelle of the cell where a high concentration of catalase might be found.

smooth endoplasmic reticulum (for detoxification)
R: mitochondria / vacuole / chloroplast [1]

[Total: 7]

4 Fig. 1.1 shows a three-dimensional model of an animal cell as seen under an electron microscope.

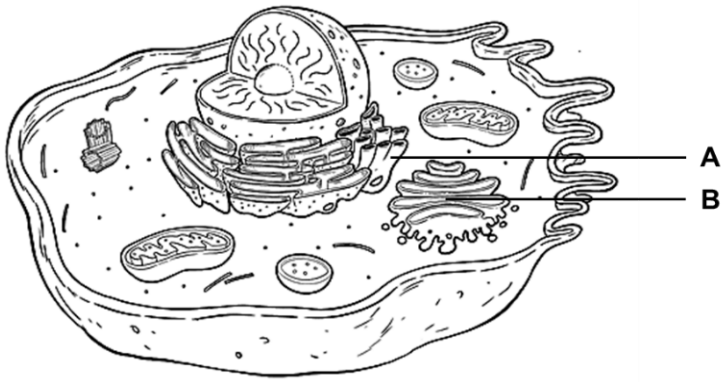


Fig. 1.1

(a) Identify structures **A** and **B**, and state their functions.

Structure **A**

name smooth endoplasmic reticulum,

function synthesises fats/performs detoxification

Structure **B**

name Golgi apparatus

function modifies substances made by ER and send them for secretion out of the cell; [R: transport to other parts of the cell]

Both labels correct - 1m, function for A and B - 1m each [3]

(b) The same cell is viewed under a light microscope.
Draw the expected observation. Label all structures drawn.

drawing of animal cell; [A: did not follow shape]
labelling for nucleus, cell membrane and cytoplasm;
(deduct marks for not following drawing rules)

[2]

[Total: 5]

5 Fig. 2.1 shows a serous cell, which can be found in the human stomach. These cells are involved in the secretionof mucus to coat the stomach walls. The main component of mucus is proteins.

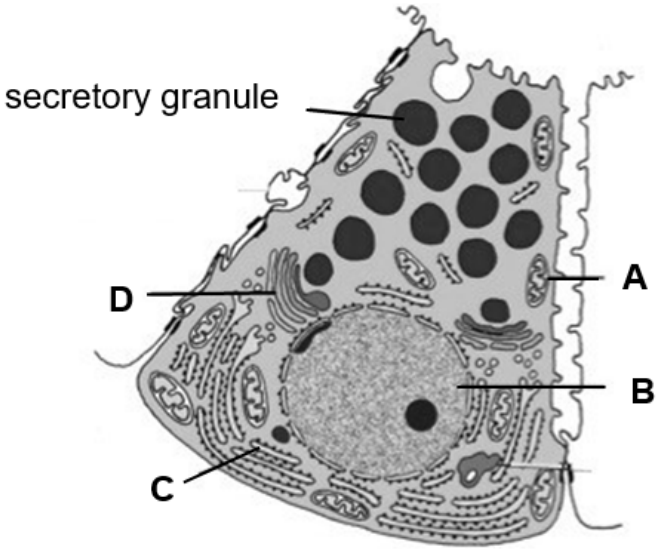


Fig. 2.1

(a) Name structures **A** to **D**.

A: Mitochondrion

B: nucleus

C: rough endoplasmic reticulum

D: Golgi apparatus/body

(b) Using the letters **C** and **D**, explain how the cell shown in Fig. 2.1 produces and secretes mucus to coat the stomach wall.

1. Ribosomes attached to structure C produce the mucus proteins, and structure C transports these proteins to structure D

2. At structure D, the proteins are chemically modified and packaged into secretory granules

3. These secretory vesicles move towards the cell surface membrane and fuse with it, releasing its contents to coat the stomach wall [3]

Marker's report:
Most students showed a good understanding of how structures C and D work together to produce mucus, but failed to use the correct phrases to make the connections.

(c) Sometimes, when a person is lying flat, partially digested food from the stomach returns to the oesophagus, causing discomfort. This is known as 'heartburn'.

Explain why medication for this condition is often alkaline in nature.

1. The partially digested food contains hydrochloric acid from the stomach

2. Medication is alkaline to neutralise the acid

R: "acidic food" without the mention of the presence of HCl / neutralising "the food" [2]

[Total: 7]

6 Fig. 1.1 shows a unicellular fungal cell.

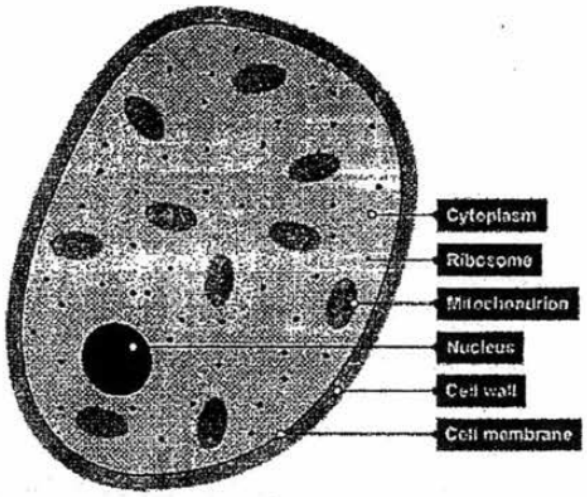


Fig. 1.1

(a) Define unicellular.

An organism that only consists of one cell [1]

(b) A student examinee the cell, and almost mistakes it as a plant cell.

Suggest why he might have made this mistake.

The presence of the cell wall [1]

(c) Describe the function of the following organelles:

(i) Cell membrane

Control the subtstances entering orleaving the cell [1]

(ii) Mitochondrion

Produce energy for the cell [1]

(iii) Cytoplasm

Site at which chemical reactions take place [1]

7 Fig. 1 shows a pair of specialized plant cells.

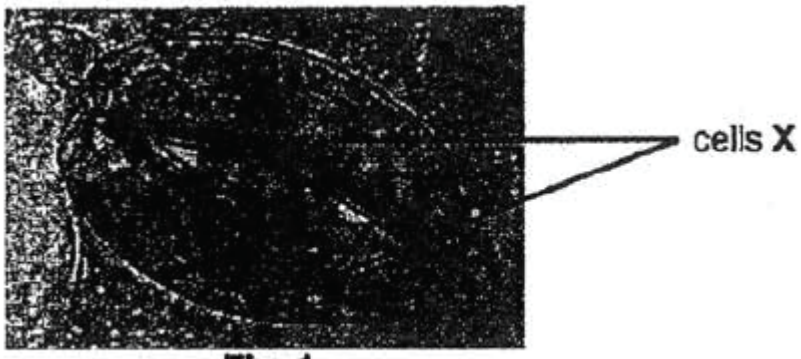


Fig. 1

(a) Identify cell **X.**

Guard Cells [1]

(b) (i) Name one structural difference between cell X and a typical plant cell.

Guard cells have uneven cell walls [1]

(ii) How does the difference stated in (b) (i) help in the function of these cells.

Any 3:

- Guard cells can become turgid/flaccid due to changes in water potential of cells
- Allows guard cells / stoma to open and close
- Which can control gaseous exchange
- Allowing carbon dioxide to enter during photosynthesis / oxygen to enter during respiration / prevent excessive water loss

[3]

(c) Suggest how these specialized cells X are different from a plant adapted to a hot and dry environment compared to a typical green plant.

Any 1:

- Sunken stomata
- Few in number
- Remain closed during the hottest part of the day

1m: elaboration/explanation of point [2]

[Total mark: 7]