Biology Bridging Work – Answer what you can from GCSE and then use resources (books, internet etc) to help you answer the other questions. Please bring to first lesson along with folder.

NAME _____

Qu.	Topic	Marks available	Predicted mark	Actual mark
	Section A - multichoice	**5**		
	Section B - Definitions and use of microscope	**11**		
1	Microscopy and cell structures	**5**		
2	Cell structures and function; microscopy	**8**		
3	Cell structures and function	**10**		
	Total	**39**		

<u>Reflection</u>: After completing the questions/research

What do you feel comfortable with?

What particular aspect interests you from the reading you have done so far?

Section **A – multiple choice**

1) What is the advantage of using a light microscope to observe cells?

A. You can observe cells at a maximum magnification of ×500 000.
B. You can observe living cells.
C. You can observe the three-dimensional surface of cells.
D. You can observe organelles in detail.

Choose 1 answer ___ [1]

2) Why is staining used in the preparation of microscope slides? Which of the following statements is/are true?

1. To observe specific organelles.
2. To preserve cells.
3. To differentiate between different types of cell.
4. To distinguish between different tissues.

A. Only statement 2 is true.
B. Statements 1, 3, and 4 are true.
C. Only statements 1 and 3 are true.
D. Only statements 3 and 4 are true.

Your answer ___ [1]

3) Name the ways in which prokaryotic cells are different to eukaryotic cells.

A. Prokaryotic cells do not have a nucleus or membrane-bound organelles.
B. Prokaryotic cells do not have membrane-bound organelles or a cell wall.
C. Prokaryotic cells do not have membrane-bound organelles or ribosomes.
D. Prokaryotic cells do not have a nucleus or ribosomes.

Choose 1 answer ___ [1]

4)

Three types of microscope are listed below.

Select the row that shows the correct use for each type of microscope.

	Type of microscope and what it is used to observe		
	Light microscope	**Transmission electron microscope**	**Laser scanning confocal microscope**
A	an object at a certain depth within a cell	cell surfaces	organelles
B	an object at a certain depth within a cell	cell surfaces	whole cells and tissues
C	whole cells and tissues	organelles	cell surfaces
D	whole cells and tissues	organelles	an object at a certain depth within a cell

Your answer ☐ **[1]**

5)

Fig. 8.1 shows an animal cell.

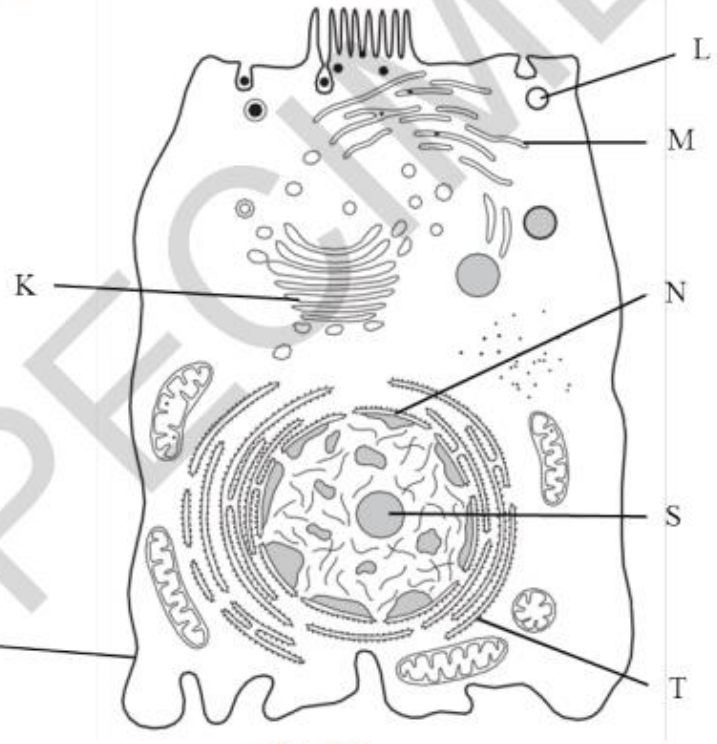

Fig. 8.1

Which option describes the correct sequence of organelles involved during the production and secretion of a protein from this cell?

A S, K, L, J **B** T, K, L, J **C** T, M, L, J **D** S, T, K, L

Your answer ☐ **[1]**

[Total:5]

Section B – short answer questions

1 State the correct term for each of the following definitions.

a A structure within cells consisting of microtubules and microfilaments.

..... [1]

b A graduated measuring scale placed on the microscope stage.

..... [1]

c The two parts of a light microscope that magnify the specimen.

.....

..... [2]

d The dark staining region of a cell where ribosomes are made.

..... [1]

e The detailed structure of cells visible only with an electron microscope.

..... [1]

2 A student used the following procedure to view her own cheek epithelium cells.
She:

1. rubbed a cotton wool bud inside her cheek
2. rubbed this onto a clean microscope slide
3. added three drops of methylene blue solution
4. angled a cover slip over this and lowered it gently
5. set the microscope to its lowest magnification
6. placed the slide on the stage
7. looked through the eyepiece to search for cells.

a Explain why:

i methylene blue was added

..... [1]

ii the cover slip was lowered gently

..... [1]

iii the microscope was set to its lowest magnification.

..... [1]

B The student had eaten cereal and not cleaned her teeth before making her cheek cell slide. Plaque bacteria and pieces of fibrous plant material were visible on the slide. Suggest how the bacterial and plant cells could be distinguished from the cheek cells.

.....

..... [2]

[Total:11]

Section C – long answer questions

Question:1

The use of microscopy has greatly enhanced our knowledge of cell structure.

(a) Explain the difference between magnification and resolution.

_____

_____

_____

[2]

(b) Fig.4.1 is an electron micrograph showing part of a nucleus.

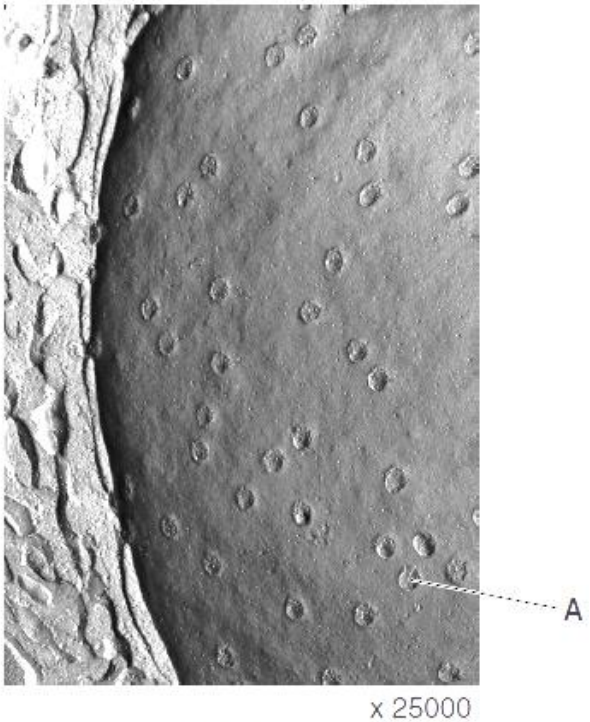

Fig. 4.1

(i)A student stated that Fig.4.1 was taken using a scanning electron microscope.

What evidence supports the student's statement?

_____

_____

[1]

(ii) OnFig.4.1, the nuclear pore complex, labelled **A**, is 3mm wide.

Calculate the actual diameter of the pore, in **nanometres**.

_____nm

[2]

[Total:5]

Question:2

1Fig.1.1 is a diagram of a plant cell.

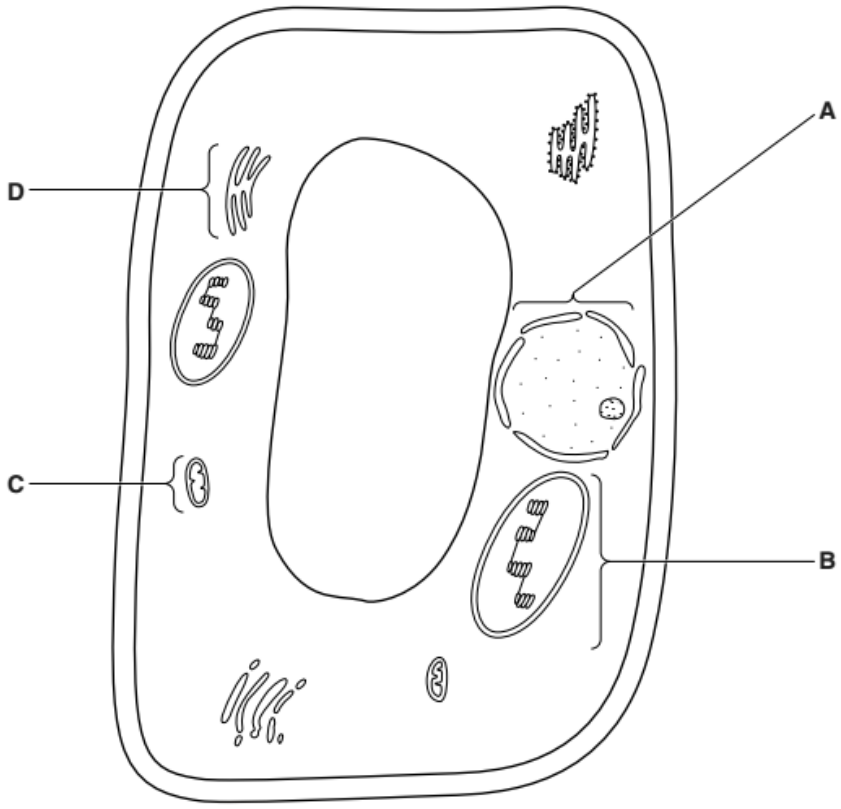

Fig. 1.1

(a)(i) Name the cell components labelled **A** and **B.**

A.....

B.....

[2]

(ii) State the **functions** of the components labelled **C** and **D.**

C_____

D_____

[2]

(b) A student suggested that the details of component **C** could be seen clearly with a very good light microscope.

Explain why the student is **not** correct.

_____

_____

_____

_____[2]

(c) Staining is a process often used in microscopy.

Describe the **advantages** of staining specimens to be viewed under a microscope.

_____

_____

_____

_____

[2]

[Total:8]

Question:3

Fig.2.1 is a diagram of a cell showing the organelles involved in the production and secretion of an extra cellular protein. The rough endoplasmic reticulum (**RER**) is shown enlarged at the side of the diagram.

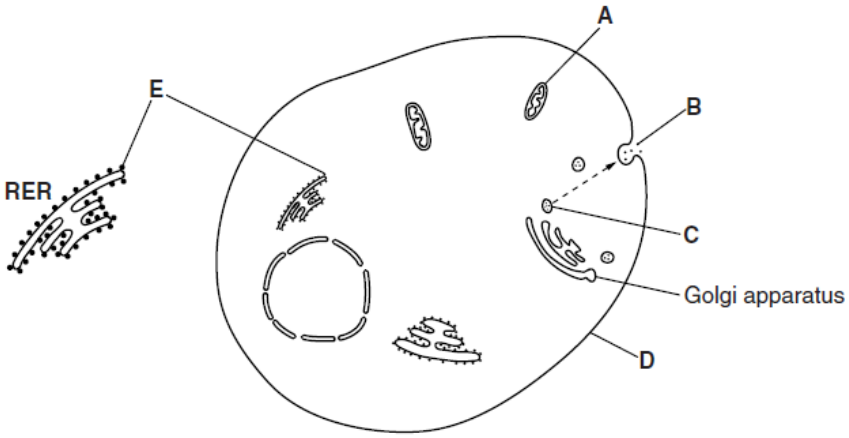

Fig. 2.1

(a)(i) Name the structures labelled **C**, **D** and **E**.

C_____

D _____

E_____

[3]

(ii) Suggest **one** type of extra cellular protein secreted at **B**.

_____ **[1]**

(iii) Organelle **A** provides ATP which is a source of energy.

Suggest **one** stage during the secretion of a protein that requires energy.

_____ **[1]**

(iv) Outline the role of the Golgi apparatus.

_____

_____

_____

_____

_____

[2]

(b) The cell shown in Fig.2.1 is a eukaryotic cell.

(i) Identify **two** features, **visible in Fig.2.1**, which would **not** be present in a prokaryotic cell.

_____

_____

_____ **[2]**

(ii) Name **one** feature that would be present in the cytoplasm of a prokaryotic cell that is **not** found in a eukaryotic cell.

_____ **[1]**

[Total:10]