The National
Orthodox School
Shmaisani

(Answer key)

Name : ..... (1st month exam)

October 6, 2022

IBDP Grade 9

Duration 1 hour

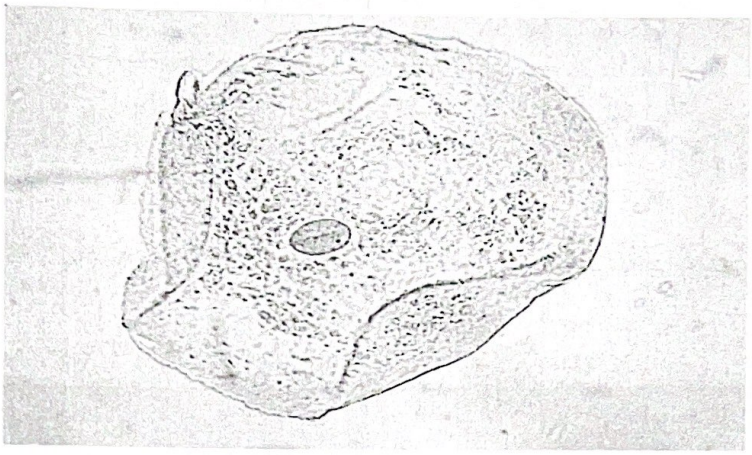
Exam Instructions:

- Answers should be written on lined paper skipping every other line
- Exam Duration includes 5 minutes for reading
- Total Marks for this exam is 36 marks
- All Answers should be written in pen
- No sharing of supplies
- NO QUESTIONS ARE ALLOWED!!
- GOOD LUCK!!!!

Question One :

Figure 12 shows an animal cell viewed using a microscope.

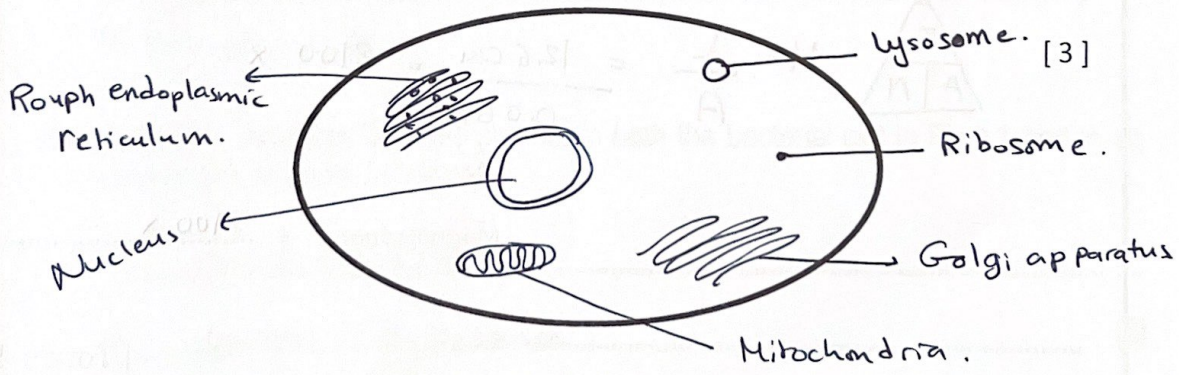
Figure 12



a. The cell contains a nucleus . What is the function of the nucleus

Carries genetic information and controls what happens inside the cell. [1]

b. The diagram shows a eukaryotic cell .
Complete the diagram by drawing and labelling only 3 parts found inside the cell .



[3]

c. Name one structure found in plant cell but not found in animal cell .

cell wall / chloroplast / [1]

Question Two :

Fig. 2.2 shows some liver cells as seen with a light microscope.

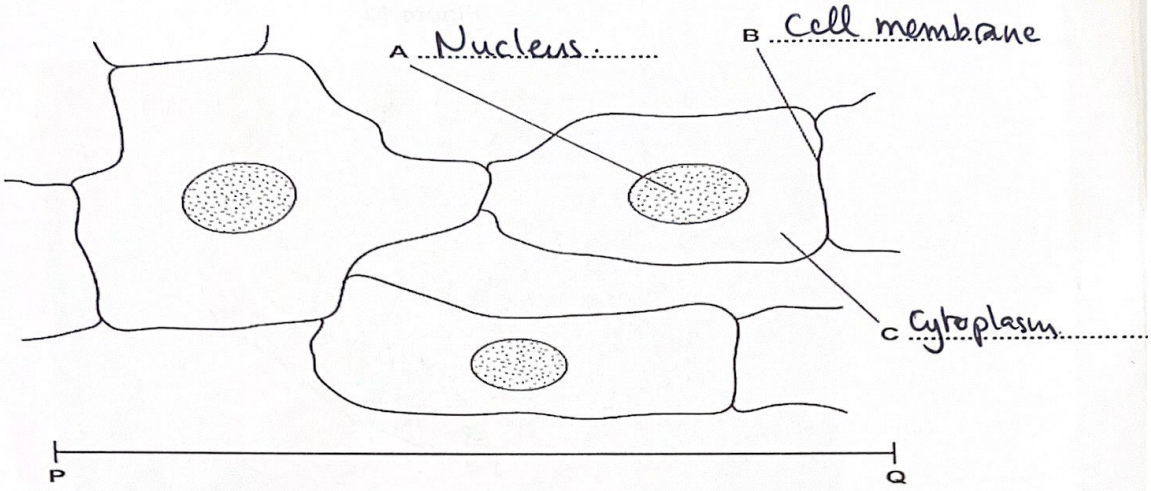


Fig. 2.2

12.6.

a. Label, on Fig. 2.2, the structures **A**, **B** and **C**.

The distance **P-Q** is 0.06 mm.

Calculate the magnification of Fig. 2.2.

Show your working.

$M = \frac{I}{A} = \frac{12.6\ cm}{0.06mm} = 2100\ x$

Magnification = 2100 x

[Total : 5

Question Three :

1 Fig. 1.1 shows a diagram of a bacterial cell.

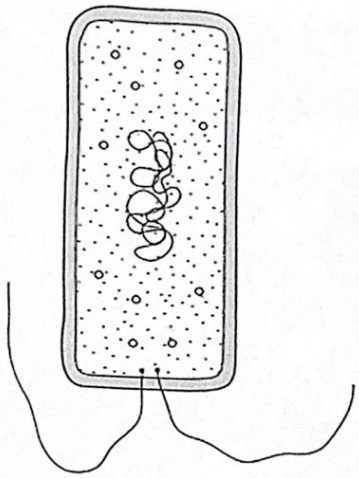


Fig. 1.1

(a) (i) State four structural features, present in a photosynthesising plant cell, that make it different from the bacterial cell in Fig. 1.1.

1. Membrane bound organells
2. Cell wall (cellulose)
3. It has el mitochondria
4. Ribosomes 80s [4]
5. No plasmid.

(ii) State two structural features present in both the bacterial cell in Fig 1.1 and in an animal cell, such as a liver cell.

1. Contain DNA.
2. Contain Ribosomes [2]

Cell wall.
Contain Cytoplasm.

Question Four :

Fig. 6.1 shows some cells from the shoot tip of an onion, *Allium cepa*.

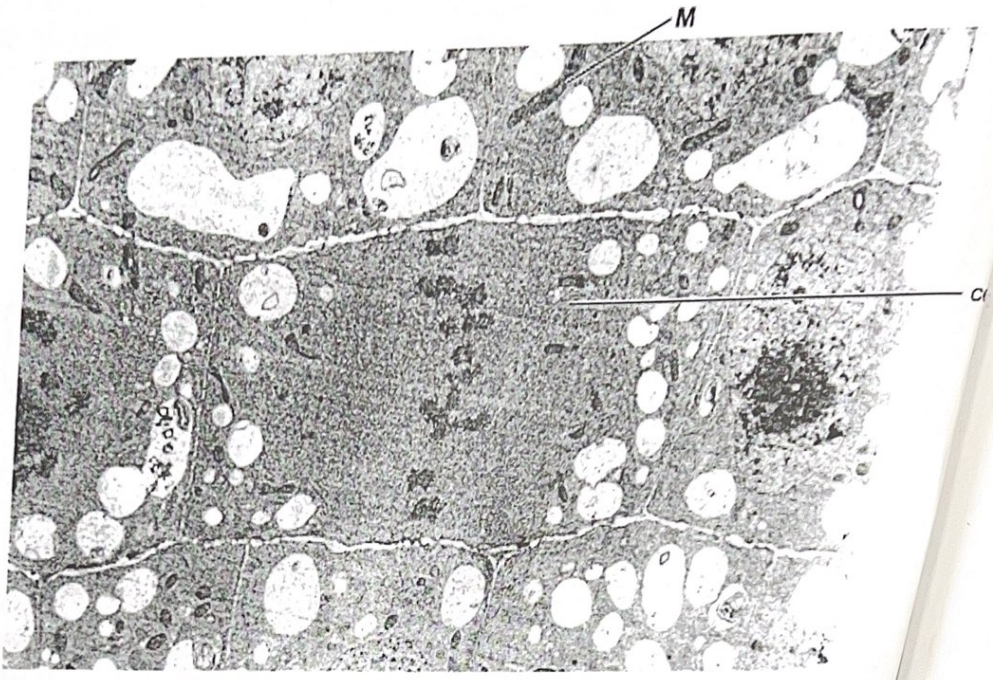


Fig. 6.1

- State the evidence visible in fig.6.1 that identifies the cells of *A. cepa* as plant cells

The presence of cell wall. [1]

Question Five :

a. Substances can move into and out of cells through the cell membrane.

Outline the significance of surface area to volume ratio in the limitation of cell size.

Volume : level of metabolic activity

Surface area : The rate of exchange.

As a cell increases in size, its surface area to volume ratio decreases. [3]

Question Six :

1. **What feature of both striated muscle and aseptate fungal hyphae is different from typical cell structure? Circle the correct answer**

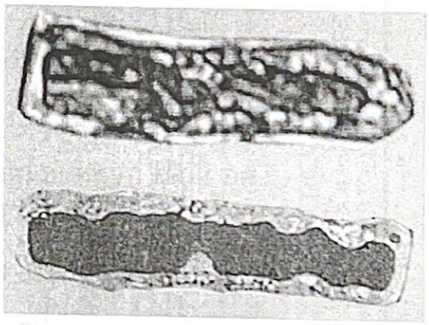
   (a.) They have multiple nuclei within a structural unit.

   b. They have a cell wall that is not made of cellulose.

   c. They have plasmids.

   d. They have an absence of cholesterol in the plasma membrane.

2. **The images are microscopic views of two similar cells.**



What is a reason for the differences between the two micrographs?

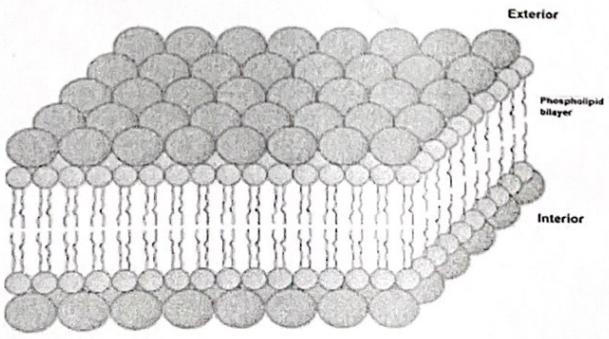
a. The lower image has a higher magnification.

(b) The lower image has greater resolution.

c. A nucleus can only be seen in the upper image.

d. The upper image is an electron micrograph.

3. **The Davson–Danielli model of membrane structure proposed that membranes were composed of a phospholipid bilayer that lies between two layers of globular proteins, as shown in this diagram.**



What evidence supported this model?

(a.) An electron micrograph that showed two dark lines with a lighter band in between

b. Freeze-fracture electron microscopy

c. Evidence that all membranes are identical

d. The hydrophobic regions of protein would be in contact with water

4. Which statement applies to cholesterol?

a. It is hydrophobic and found on the outside of the phospholipid bilayer.

b. It is hydrophilic and found inside the phospholipid bilayer.

(c.) It impacts membrane fluidity.

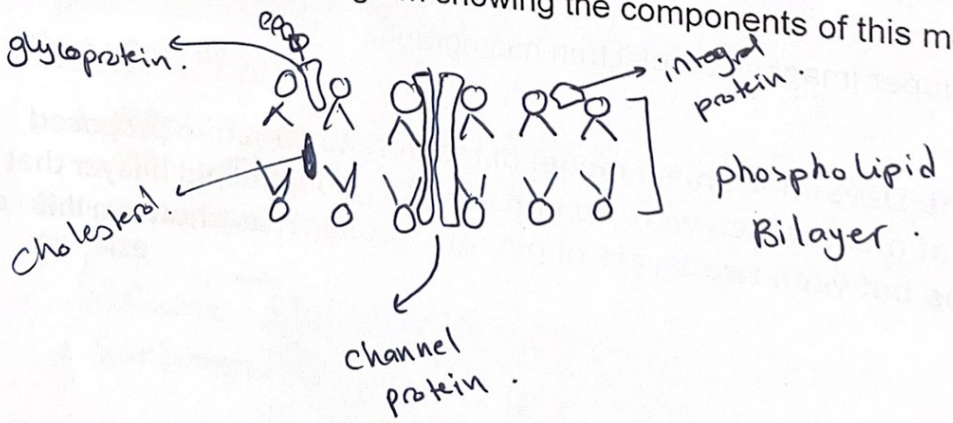
d. It is transported in association with glucose in the blood.

[total : 4]

Question Seven :

The fluid mosaic model of S.J. Singer and G.L. Nicolson (1972) is widely upheld to explain membrane structure.

Draw and label a diagram showing the components of this model .



[5]

Question Eight :

List the types and functions of membrane proteins .

* Integral protein : act as channels in facilitated diffusion , and active transport .
* peripheral proteins : Cell recognition , involved in immune response .
* Glycoprotein : They have various vital functions .

[6]