Rosary School – Marj Elhamam
Chapter2: The variety of living organisms
Past paper questions

Name: _____ Date: ___ / ___ / 2025

Grade: 9 (A, B, C, D) Subject: Biology IG

Question 1:

a.

Viruses can be classified as pathogens.

(i) What is the definition of a pathogen?

(1)

(ii) Name three other groups of organisms that contain pathogens.

(3)

(iii) In the space below, draw and label a diagram of the basic structure of a virus.

(3)

b.

One example of a virus pathogen is tobacco mosaic virus (TMV).

Explain the effect of TMV on the plants it infects.

(2)

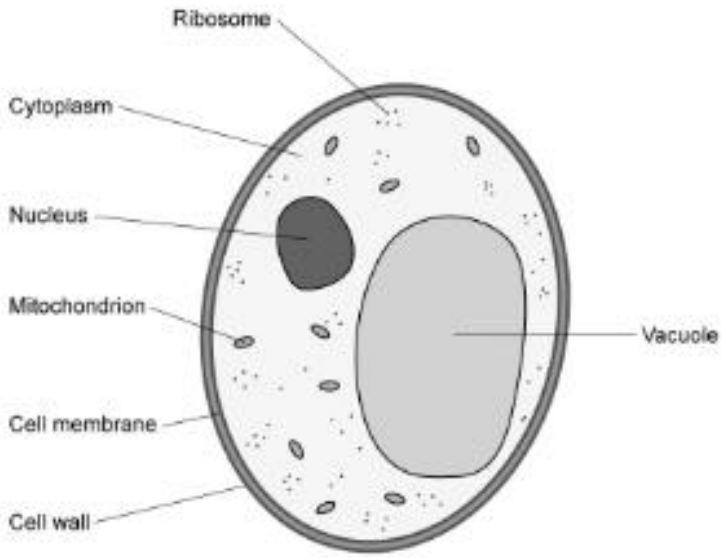
_____

_____

Question 2:

a.

The diagram shows a yeast cell.



(i) Which substance makes up the composition of the yeast cell wall?

(1)

- ☐ **A** Cellulose
- ☐ **B** Chitin
- ☐ **C** Glycogen
- ☐ **D** Starch

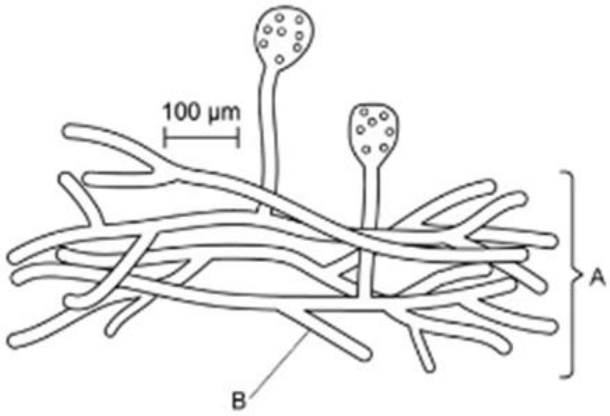
(ii) Which of these structures found in the yeast cell would also be present in a prokaryotic cell?

(1)

- ☐ **A** Cell membrane
- ☐ **B** Mitochondrion
- ☐ **C** Nucleus
- ☐ **D** Vacuole

b.

The diagram below shows a species of multicellular fungi.



Name the structures labelled **A** and **B** on the diagram. [2]

c.

Fungi were once classified as plants because they grow out of the soil, but they are now considered to be a separate kingdom of organisms.

One difference between plant and fungal cells is that plant cells contain chloroplasts and gain their nutrition through the process of photosynthesis, while fungal cells do not.

Describe how fungi gain their nutrients.

[3]

Question 3:

a.

Complete the table by placing a tick (✓) in the correct boxes to indicate which cell features can be found in eukaryotic cells only, prokaryotic cells only, or both types of cell.

Feature	Eukaryotic cells only	Prokaryotic cells only	Both cell types
Cell membrane			
Cell wall			
Nucleus			
Plasmid			
Chloroplast			
Cytoplasm			
Mitochondria			

(3)

b.

The table below shows the average size of different types of cells and organelles.

Cell / Organelle	Average Size (μm)
Animal cell	25
Plant cell	50
Bacterium	2
Mitochondria	1
Nucleus	6

(i) Calculate how many times bigger a plant cell is compared to a bacterium.

(1)

(ii) Using evidence from the table, suggest why prokaryotic cells cannot contain a nucleus.

(2)

(iii) One scientific theory suggests that mitochondria used to be a type of bacteria that entered a eukaryotic cell and became mitochondria over time.

Identify evidence from the table that suggests this could be possible.

(1)

c.

For each of the following examples, name the group of organisms to which the species belongs.

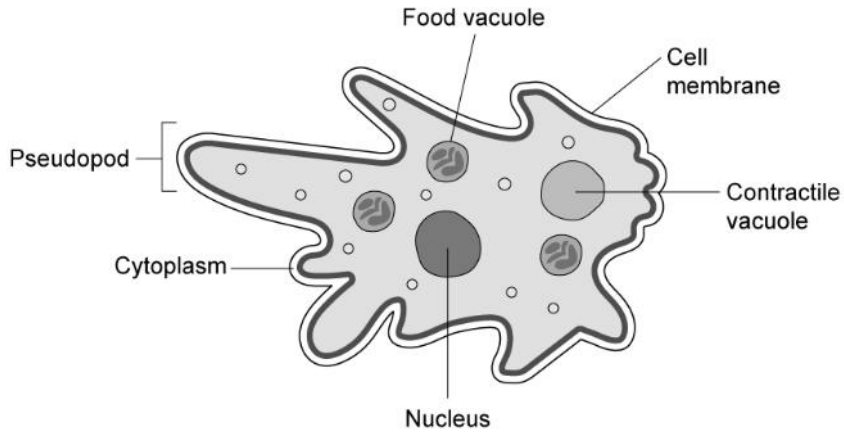
Species	Group of organisms
Mucor	
Amoeba	
Yeast	
Lactobacillus	
Plasmodium	

(5)

Question 4:

a.

The diagram shows *Amoeba proteus*, a type of unicellular microorganism found in fresh water.



Name the group of organisms that this species belongs to.

(1)

b.

The *Amoeba proteus* gets its nutrition by surrounding other unicellular organisms with its pseudopodia and engulfing the prey, digesting the nutrients internally and storing the nutrients in the food vacuole.

(i) Compare this process to saprotrophic nutrition in fungi.

(3)

(ii) As well as nutrition, which other life process is being demonstrated during this process?

(1)

The *Amoeba* is found in fresh water and must control its internal conditions by balancing the amount of water that moves in and out of the cell across the cell membrane.

The *Amobea* contains a structure called a contractile vacuole, which expels excess water from the cell. As well as excess water, they also remove waste materials from the cell.

Which of the life processes does the contractile vacuole carry out?

(1)

Question 5:

a.

Which of the following correctly shows the levels of organisation in an organism in order of size from the smallest to the largest?

- ☐ **A** Organelle, cell, organ, tissue, organ system
- ☐ **B** Organelle, cell, tissue, organ, organ system
- ☐ **C** Cell, organelle, tissue, organ, organ system
- ☐ **D** Cell, tissue, organelle, organ, organ system

b.

Define the term **organ**. (2)

_____

_____

c.

Name an example of an organ found in the following groups of organisms:

(i) Plants

(1)

(ii) Animals

(1)

d.

Give two differences between organisms in the plant group and organisms in the animal group. (2)

_____

_____

e.

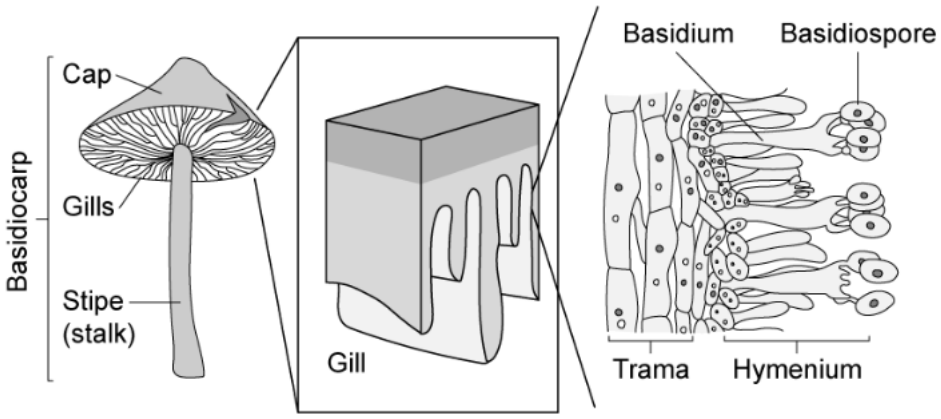
State why it is not possible for prokaryotic organisms to have tissues. (1)

_____

Question 6:

a.

The image below shows the structure of a basidiocarp, the spore-producing part of a fungus.



The basidiocarp is a fungal organ.

Explain why the basidiocarp can be described as an organ.

(2)

b.

From the diagram in part (a), identify:

(i) A tissue.

(1)

(ii) A cell.

(1)

(iii) An organelle.

(1)

c.

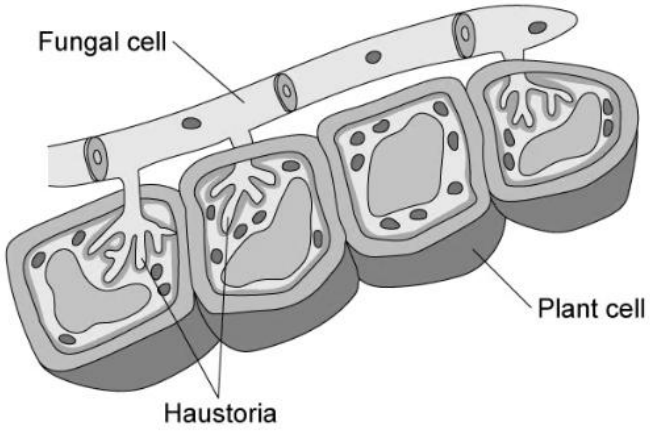
The trama in part (a) is made up of thread-like structures.

Describe the thread-like structures visible in the trama.

(3)

d.

Another fungal structure, known as a haustorium (plural haustoria) is shown in the image below.



Haustoria are feeding structures, enabling fungi to take nutrients from their surroundings.

Use the image above and your own knowledge to suggest how haustoria function.

(3)