This is a Class 1 exam

Lebanon Evangelical School for Boys and Girls

Lebanon Evangelical School

for Boys and Girls — Loueizeh - Baabda

Stage Exam 01

11NOV2022

Do NOT write in this box. Your MARK will be placed here.

Subject :	Biology	
Class :	11S	
Teacher :	Christine Khalil	
Duration :	1 hour	
Please write your answers on a separate sheet of paper.		
Your name :		*Time taken to complete exam*
Your Class :		
Exam Room :		
How many sheets, including cover sheet :		

- Do not open this paper until the teacher in charge instructs you to do so.
- The most important thing to remember in taking an exam is NEVER PANIC.
- If you are caught cheating in this exam, you will be awarded zero for ALL exams that are taken on this day.

Exercise 1 (10 points)

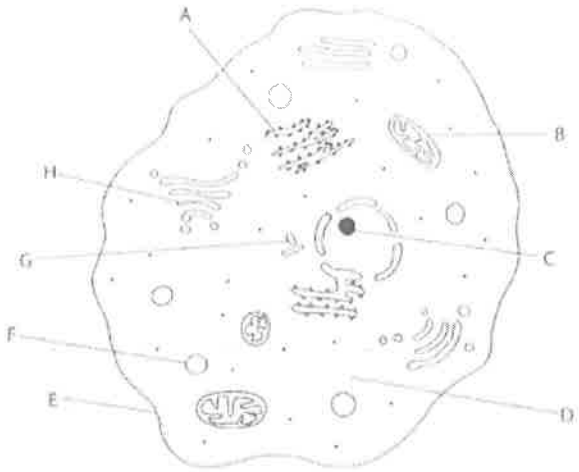
Copy the table below on your paper and fill it with the given expressions.

Small- No membrane-bound organelles- Reproduces by binary fission- Undergoes mitosis to make new cells- Ribosomes present- Has cytoplasm- Has plasma membrane- Evolutionary older type of cell- Multicellular- Has DNA in a nucleus- Membrane-bound organelles- Large- Bacterial cells- Plant cells- Animal cells- Has DNA- Has a nucleoid- Can have a cell wall- Unicellular- Are capable of protein synthesis

Prokaryotic cells	Eukaryotic cells	Common between the 2 cells

Exercise 2 (8 points)

The diagram below shows a cell seen under an electron microscope.



1. Fill the table below. (Don't copy the table on your paper. Write **the number** found in the box and write the answer next to it). (6.5)

Structure	Name	Function
A (whole structure)	1	2
B	3	4
D	5	XXXXX
E	6	7
F	8	9
G	10	11
H	12	13

2. Is this an animal or a plant cell? Justify your answer. (1.5)

Exercise 3 (6 points)

An experiment was carried out to determine what happens to amino acids after they are absorbed by animal cells. The cells were incubated for 5 minutes in a medium containing radioactively labeled amino acids. The radioactive amino acids were then washed off and the cells were incubated in a medium containing only non-radioactive amino acids.

Samples of the cells were taken at 5, 10 and 45 minutes after the start of the experiment and the sites of radioactivity in the cells were determined.

The results are given in the table below. The figures show radioactivity in certain cell organelles (the values are expressed as a percentages).

Organelle	Percentage of radioactivity		
	At 5 minutes	At 10 minutes	At 45 minutes
Rough endoplasmic reticulum	80	10	5
Golgi apparatus	10	80	30
Vesicles	0	5	60

1. Name one type of molecule synthesized from amino acids in cells. (1)
2. Explain why the radioactivity is associated mainly with the rough endoplasmic reticulum after the first 5 minutes of the experiment. (2)
3. Explain the changes in radioactivity percentages in the different organelles in the cell during the remaining 40 minutes of the experiment. (2)

4. If the experiment is continued for a further period of time, most of the radioactivity will be found outside of the cell. Explain the reason behind this result. (1)

Exercise 4 (4 points)

Rhododendrons are plants that are widely distributed throughout the northern hemisphere.

The flowering periods and habitats of two types of Rhododendrons are shown in the table below.

Types	Flowering period	Main flowering period	Habitat
Rhododendrons type 1	April to July	May	Rocky areas in lowland regions
Rhododendrons type 2	May to July	June	High mountainous regions

Where these 2 types of Rhododendrons overlap, hybrid plants are found that have arisen as a result of mating between these 2 types. These hybrid plants are capable of flowering and producing viable seeds.

1. Suggest a reason why scientists may prefer to classify these 2 types of plants as different species. (1)
2. Suggest a reason why other scientists may prefer to classify these 2 types of plants as a same species. (1)
3. Suggest a way to clearly determine if these 2 types of plants belong to the same or to different species. Explain your answer. (2)

Answer Key for SE01 for 11S

Exercise 1 (each box is 0.5 points)

Prokaryotic cells	Eukaryotic cells	Common between the 2 cells
Small	Undergo mitosis to make new cells	Ribosomes present
No membrane-bound organelles	Multicellular	Has cytoplasm
Reproduce by binary fission	Has DNA in a nucleus	Has plasma membrane
Evolutionary older type of cell	Membrane-bound organelles	Has DNA
Bacterial cells	Large	Can have a cell wall
Has a nucleoid	Plant cells	Unicellular
	Animal cells	Are capable of protein synthesis

Exercise 2

1. (each number is 0.5) 1. Rough endoplasmic reticulum 2. Transport system of the cell 3. Mitochondria 4. Generation of energy 5. Cytoplasm 6. Plasma membrane

7. Delimits the cell and separates what's inside from what's outside of the cell.

8. Vacuole 9. Storage of water and material 10. Centrosome

11. Helps in animal cell division 12. Golgi apparatus 13. Packaging and secreting proteins

2. It is an animal cell (0.5) because it has a centrosome and contains many small vacuoles (1 reason for 0.5).

Exercise 3

1. Protein (1)
2. Because the rough endoplasmic reticulum has ribosomes on it (1) which are the sites of protein synthesis (1).

3. After being formed by the ribosomes on the rough endoplasmic reticulum, the proteins move to the golgi apparatus (1) where they will be enclosed in membranes to form vesicles (1).
4. Because of exocytosis, the vesicles move to the cell membrane and fuse with it, releasing its content outside of the cell. (1)

Exercise 4

1. Because the 2 types of plants have different behavioral characteristics (different flowering period and habitat). (1)
2. Because the 2 types of plants were capable of interbreeding and producing viable fertile offspring (produced hybrid plants capable of flowering and producing viable seeds). (1)
3. Rely on the karyotype of these 2 types of plants, if they have the same number of chromosomes with the same shape then they belong to the same species. If they have a different number of chromosomes or the same number of chromosomes but different shapes then they belong to 2 different species (2)