

Answer the following questions:

- 1-Compare between Eukaryotic cell and Prokaryotic cell. (10 Marks)**
- 2-Mention and explain by drawing different shapes of bacteria. (7.5 Marks)**
- 3-What are the main characteristics of viruses? (5 marks)**
- 4-Give an example of a DNA virus and an RNA virus. (3 Marks)**
- 5-What are the requirements of microbial growth? (9 Marks)**
- 6-What are the methods that are used for identification of microorganisms? and mention which of them is used for identification of bacteria, fungi or viruses. (8 marks)**
- 7-What are the types of antibodies and mention their importance? (7.5 Marks)**

Good Luck

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لنود ج الإجابة على أسئلة الامتحان في مادة الميكروبيولوجيا BM392، في 12/5/2018
(Self Study)

Answer the following questions:






1-Compare between Eukaryotic cell and Prokaryotic cell. (10 Marks)

Main differences between Prokaryotic and Eukaryotic cells

Property	Eukaryotic cells	Prokaryotic cells
1- Cell size	Large cells (5 -50) μm	Small cells (0.5 -5) μm
2- Nucleus	Present	Absent
3- Cell division	by mitosis and meiosis.	Cell division by binary fission.
4- Sexual systems	present	absent
5- DNA	DNA composed of: 2- 46 chromosomes	DNA composed of only one chromosome
7- Mitochondria	present For production and storage of energy	absent
8- Examples:	Human cells, animal cells, fungi	Bacteria

2-Mention and explain by drawing different shapes of bacteria. (7.5 Marks)

2) Shape

- a) Cocci (*sing.* Coccus): It is of spherical shape. 
- b) Bacilli (*sing.* bacillus): It is of rod-like shape. 
- c) Coccobacilli: elongated Cocci 
- d) Vibrio: Rod-shaped bacteria that is slightly curved or comma-shaped. 
- e) Spiral: It is wavy or undulating. 

3-What are the main characteristics of viruses? (5 marks)

- a- They do not have nucleus , cytoplasm, mitochondria, or ribosomes.
- b- They must reproduce inside the host cell. Therefore can not be cultivated on normal media like bacteria and fungi (tissue culture).
- c- They can not generate energy or synthesize protein.
- d- They are obligate intracellular parasites.

4-Give an example of a DNA virus and an RNA virus. (3 Marks)

DNA viruses: Herpes virus, HBV

RNA viruses: Influenza, Ebola

5-What are the requirements of microbial growth? (9 Marks)

Requirements for Microbial Growth:

I) Nutritional requirements.

- 1- Macronutrients e.g. carbon and hydrogen, nitrogen sources for synthesis of carbohydrates of proteins.
- 2- Trace elements e.g. minerals
- 3- Growth factors e.g. amino acids and vitamins.

II) Environmental requirements.

- 1- Temperature: Optimum temperature for bacteria 37°C, while for fungi is 30°C.
- 2- PH (Optimum PH for bacteria is 6.5-7.5, while for fungi is 5-6.
- 3- Oxygen (Aerobic conditions need oxygen), Anaerobic do not require oxygen.

16

6-What are the methods that are used for identification of microorganisms? and mention which of them is used for identification of bacteria, fungi or viruses. (8 marks)

Methods for identification of organisms: (Bacteria, fungi, viruses)

1- Microscopy:

- For bacteria and Fungi after staining with suitable dye.

2- Biochemical tests:

- For bacteria through their metabolic activities.

3- Serology:

- For bacteria, fungi and viruses.
- Antigen-Antibody reaction e.g. ELISA technique.

4- Molecular biology:

- For bacteria, fungi and viruses
- Depends on detection of specific gene in the DNA using PCR (polymerase chain reaction).

7-What are the types of antibodies and mention their importance? (7.5 Marks)

1- IgM: For diagnosis of early (recent or acute) infection.

2- IgG: - For diagnosis of chronic infection.

- The only antibody that crosses the placenta (from mother to fetus).

3- IgA: - Found in exocrine secretions (e.g., breast milk, saliva, tears, respiratory and digestive secretions, urine).

- Prevent attachment of viruses and bacteria to the mucosa of respiratory and digestive systems.

4- IgD: Still unknown

5- IgE: In allergic reactions e.g. eczema

In case of parasitic infections (e.g., worms).

Good Luck

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