
	Tanta University, Faculty of Science, Department of Botany		
	Final Examination for (Second Year) Students of Microbiology		
	Course Title: Instrumental Methods in Microbiology	Course Code: MB2105	
Date: 6/3/2021	First Semester	Total Assessment Marks: 100	Allowed Time: 2 Hours

Question1. Chromatography is an analytical technique used for separating a mixture of chemical substances into its individual components. (15 Marks)

- Define each of the following: Mobile phase - Analyte. (5 Marks)
- Compare between size exclusion chromatography and affinity chromatography according to mobile phase, stationary phase and the basis of separation. (6 Marks)
- Choose the correct answer (4 Marks)
 - Higher the adsorption to the stationary phase, the slower the molecule will move through the column. (True -False)
 - Eluent is the fluid entering the column (True -False)
 - Gas chromatography depends on polarity of molecules as a basis of separation (True -False)
 - Eluent is the fluid that is collected in the flasks (True -False)

Question2. Polymerase chain reaction (PCR) is a technique used in molecular biology to amplify DNA. (35 Marks)

- Mention the steps of the standard PCR? (5 Marks)
- Define Primer Dimer - DNA ladder. (5 Marks)
- With labeled drawings and brief description, explain the inverse PCR. (10 Marks)
- What is the purpose of DMSO, and highly processive DNA polymerases in GC-rich PCR? (5 Marks)
- What are the five key factors that need to consider when amplifying long targets in the long PCR? (5 Marks)
- Mention the conditions that needed to be done in Multiplex PCR? (5 Marks)

Question3. DNA sequencing is the process of determining the sequence of nucleotide bases in a piece of DNA. (15 Marks)

- Write and draw the structure of the unique ingredient of Sanger sequencing reaction? (5 Marks)
- Explain briefly how Sanger sequencing method works? (10 Marks)

Please, continue to the following paper sheet

Question4. Spectrophotometry is a scientific method based on the absorption of light by a substance. (20 Marks)

- a) Mention four possible applications of spectrophotometer. (10 Marks)
- b) Write only transmittance and absorbance equations of spectrophotometer according to Lambert and Beer laws. (10 Marks)

Question5. Antibiotics are a type of medicine, which are used to treat bacterial infections. (15 Marks)

- a) Define the bacterio-static effect and bacteri-cidal effect of the antibiotics. (5 Marks)
- b) How do you prevent bacteria from developing antibiotic resistance? (10 Marks)

**Best Wishes
Dr. Mohamed El-Shetehy**

Course title:

Diversity of prokaryotes

Course code: MB2101

Date

6 March, 2021

Term: 1st

Total assessment marks: 100

Time allowed: 2 hours

Answer the following Questions1: -

(50 Marks)

1a- Rewrite only in your note book the number and the suitable sign (√) or(X) (5 Marks)

1. Pilli of bacteria are used for sticking to surfaces and host cells ()
2. Uniform and choked cells are used to gain synchronized cultures ()
3. *Bacillus anthrax* is belonging to Archaea ()
4. Fimbriae of bacteria are used for sticking to surfaces and host cells ()
5. 16s rRNA technique is useful for identification of bacteria ()

1b- Rewrite only in your notebook the correct number for each of the following: (5 Marks)

- 1- Spirochetes are: a) Causative agent of syphilis b) Lack cell wall c) Obligate parasites
- 2- *Salmonella* causes: a) Botulism b) Typhoid fever c) Anthrax
- 3- Bacteria are: a) Disease-causing pathogens b) Diverse c) a & b
- 4- Within the domain archaea are: a) Chlamydia b) Methanogens c) Spirochetes
- 5- An organism grows at a pH 2-3 belongs to: a) Bacteria b) Archaea c) Eukarya

2- With drawing compare the structure and function of three only:

(20 Marks)

- 1- Gram-positive and Gram-negative cell wall of bacteria
- 2- Batch and continuous cultures
- 3- Cytoplasmic membrane of bacteria and archaea
- 4- Endospores and capsules

3- Explain in brief the following:

(20 Marks)

- 1- Three methods used for measurement of bacterial growth
- 2- The bacterial growth curve
- 3- Flagella

Question 2:-

(50 marks)

write on the following


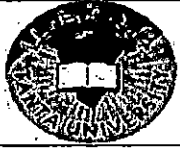
(30 marks)

- a- Cell structure of cyanobacteria
- b- Asexual reproduction in cyanobacteria
- c- Different between Cyanophyta and Bacteria
- d- Structure of heterocysts
- e- Reproduction in *Scytonema*
- f- Movement in *Oscillatoria*

B: complete the following

(20 marks)

- 1- True branched form present in species.....however false branched forms present in
- 2- Nostoc reproduces by.....,,
- 3- *Spirulina* rich with,,
- 4- Protoplast of cyanobacteria divided into and

	Tanta University Faculty of Science Botany Department			
	Final Examination for (second Year) Students of Chemistry/Microbiology			
	Course title	Prokaryotic organisms		Course code: MB 2101
Date	13/3//2021	Total assessment marks: 150	Term: First	Time allowed: 2 h

Answer the following questions:

Part I: Bacteria (75 marks)

I. Complete the following sentences (25 marks)

1. The..... are group of bacteria that lack a cell wall, they have.....molecules incorporated into their membranes.
2. Prokaryotes sometimes possess smaller extra-chromosomal pieces of DNA called
3. Bacterial capsules are generally composed ofrarely do they containor.....
4.are less vulnerable to attack by lysozymes because their peptidoglycan is shielded by
5. On the basis of small subunit ribosomal RNA analysis,.....give rise to three cellular domains of life,..... and.....
6. Viruses should consideredbut they are not, since they are.....
7.may be overproduced when bacteria are fed sugars to become reserve offor subsequent metabolism.
8. Viruses are made up ofand
9. A bacterial cell has five essential structural components,,,and.....
10. is a group of bacteria that obtain their energy through photosynthesis.

II. Write true or false and correct the false: (15 marks)

1. The most significant difference in the Gram-negative wall is the presence of the outer membrane.
2. Procaryotic cells have a nucleoid.
3. Archea is a group of unicellular prokaryotic cells that sometimes produce ethanol.
4. Protozoa are animal like, non-motile, non -photosynthetic cells.
5. Pilli are filamentous protein structure attached to the cell surface that provide the swimming movement.
6. Chlamydia are obligate extracellular parasite.
7. Cytoplasm of eukaryotic is more gel like than that of prokaryotic.
8. Bacterial endospore is resistant to dessication.
9. Bacterial endospore exosporium consists of calcium dipicolinic acid.
10. Gram-negative bacterial cell wall is relatively thin and surrounded by outer membrane.

III. Write on the following: (20 marks)

1. Tactic behavior.
2. Correlation of the Gram stain with cell wall properties of bacteria.
3. The origin of cellular life.
4. Functions of capsule.

IV. Illustrate with drawing: (15 marks)

1. The ultrastructure of a bacterial endospore.
2. Different arrangement of bacterial flagella.
3. Methods for detection of bacterial motility.

Part II: Blue green algae (75 marks)

I- Choose the correct answer for each of the following: (20 marks)

- 1-Which of the followings have heterocyst.....
a- *Gleocapsa* b- *Oscillatoria* c- *Tolypothrix*
- 2-The position of heterocyst in *Rivularia* is.....
a- terminal b- basal c- intercalary
- 3-Which of the following orders include *Gleocapsa*.....
a- Nostocales b- Stigonematales c- Chroococcales
- 4-True branching present in
a- *Nostoc* b- *Stigonema* c- *Scytonema*
- 5-Storage food formed in cyanobacteria is.....
a- glucose b- glycogen c- cyanophycean starch

II-Complete the following sentences: (20 marks)

- 1- The cell content (protoplasm) of the cyanobacteria divided into two regions. They are.....and.....
- 2- Filament of *Nostoc* consist of three different types of cells. They are.....,and.....
- 3- Cell wall of cyanobacteria consist of.....and.....
- 4- Mucilaginous sheath is made up of.....
- 5- Cyanobacteria reproduce by.....and.....methods

III. Answer the following questions with TRUE or FALSE and correct the false one. (20 marks)

- 1- The main pigment in cyanobacteria is carotene ()
- 2- *Scytonema* can fix atmospheric nitrogen ()
- 3- *Oscillatoria* move by flagella ()
- 4- Thallus of *Micracystis* is filamentous ()
- 5- False branching present in thallus of *Spirulina* ()

IV. Write short notes in:

1-Functions of heterocyst

2-Reproduction in *Nostoc*



With all the best

Examinars:

Prof. Saly F.Gheda

Dr. Shimaa H. El Sapagh

Examinars: Dr. Sally Gheda Dr. Shimaa El-Sapagh

	TANTA UNIVERSITY, FACULTY OF SCIENCE, DEPARTMENT OF BOTANY				
	EXAMINATION FOR SOPHOMORES STUDENTS OF MICROBIOLOGY				
COURSE TITLE:	Actinomycetes		COURSE CODE: MB 2107		
DATE 30-1-2021	JANUARY, 2021	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2HOURS	

Answer the following questions:

1-Complete the following sentences: (20 marks)

- a- Types of tuberculosis are.....
- b- Nocardiosis primarily presents as orand it is more frequently.....
- c- Streptomycosis are ,.....,.....,.....
- d- Mycobacterium could be classified according to pigmentation into.....,.....,...
- e- Causes of industrial importance of *Rhodococcus* sp. are.....,.....,.....
- f- industrial importance of *Corynebacterium*..... ..

2- Identify the following: (15 marks)

bioremediation, tuberculin test , pleomorphic

3-Discuss the causes of mycobacterium pathogenicity and its correlation to cell wall structure (20marks)

4-Give short notes on the following: (15 marks)

- a- leprosy
- b- Medical importance of *Streptomyces*
- c- bioremediation

5- Compare between Laboratory diagnosis of *Corynebacteria* , *Mycobacteria*, *Nocardia* (20 marks)

6- Identify pleomorphic, cord formation (10 marks)

Best wishes

Examiners: Dr. Nanis G. Allam, D r. Maha Azab