
	<b>Tanta University, Faculty of Science, Department of Botany and Microbiology</b>		
	<b>Final Examination For 3<sup>rd</sup> Level of Special Microbiology and Chemistry Microbiology (2022-2023)</b>		
<b>Date:</b> 12/01/2023	<b>Course Title: Immunology</b>	<b>Course Code: MB3103</b>	<b>Total Assessment Marks: 100</b>
			<b>Allowed Time: 2 Hours</b>

**Q1: Write briefly on the following with labeled drawing: (30 Marks)**

- With full labeled diagram describe the structure of IgG monomer.
- The steps of the humoral and cell mediated immunity.

**Q2: Compare between each of the following pairs: (30 Marks)**

- The main differences between the primary and secondary immune responses?
- The difference between direct and indirect fluorescent antibody test?

**Q3: Define each of the following: (10 Marks)**

- Haptens.
- The complement system.
- Toxoid.
- Secondary Antibody.

**Q4: Complete the following sentences: (10 Marks)**

- Antigens could be described as .....
- The key primary lymphoid organs of the immune system are the ..... and .....
- Killing or inactivation of bacterial suspension could be done either by.....  
..... or by using .....
- Plasma Cells are developed from .....and they are responsible for making .....

**Q5: Choose the correct answer from the following: (20 Marks)**

1. Which of the following cell/cells will play a role in phagocytosis?

- a- Monocytes.      b- Neutrophils.      c- Lymphocytes.      d. Both a&b.

**Please follow the exam behind this paper**

أنظر خلف الورقة

2. Tetanus is .....
- a- Attenuated Vaccine.                      b- Toxoid.                      c- Killed Vaccine.
3. Nonspecific host defenses that exist prior to exposure to an antigen is called.....
- a- Acquired immunity.                      b- Innate immunity.                      c- Adaptive immunity.
4. Monocytes differentiate into which kind of phagocytic cells?
- a- T cell.                      b- B cell.                      c- Macrophage.
5. Bacillus Calmette-Guerin (B.C.G.) is an example of .....
- a- Killed Vaccine.                      b- Attenuated Vaccine.                      c- Toxoid.
6. Which blood cell can secrete and transport heparin and histamine?
- a- Acidophil.                      b- Basophil.                      c- Neutrophil.                      d. Monocytes.
7. In general, proteins are usually.....
- a- Very good immunogens.                      b- Poor immunogens.                      c- Not antigenic.
8. Antigens found in different members of the different species are known as.....
- a- Allograft.                      b- Xenograft.                      c- Autograft.
9. Helper T-cells can be distinguished from killer T-cells by the presence of.....
- a- CD-2 receptor.                      b- CD-3 receptor.                      c- CD-4 receptor.                      d. CD-8 receptor
10. Commercially available ELISA kits are used for the detection of .....
- a- Rotavirus.                      b- Hepatitis B surface antigen.                      c- Anti-HIV antibodies.                      d. All of these.

**Best wishes**

**Dr. Enas M. El-Ballat**



TANTA UNIVERSITY  
FACULTY OF SCIENCE  
DEPARTMENT OF BOTANY

EXAMINATION FOR JUNIORS (3RD YEAR) STUDENTS OF SPECIAL MICROBIOLOGY

COURSE TITLE:	Physiology of bacteria		COURSE CODE: MB3105
DATE: 15/1/2023	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 H

i. **Write false or true & correct the false:** (20 Mark)

1. Chemolithotrophs bacteria reduced low quantity of organic comp. to obtain large yield of ATP.
2. Reduction of nitrate to nitrite is an effective way to making ATP.
3. In microbial fermentation the electron acceptor is  $O_2$ .
4. The actual P/O ratio may be less than 3.0 & 2.0 in eukaryotic.
5. In entner-doudroff path way degrades glucose, the yields 2ATP, 2NADPH & 2NADH.
6. In  $\beta$ -oxidation 2 carbons of the fatty acid are split off & the formation of fatty acid shorter by three carbons.
7. In anaerobic respiration use inorganic molecules as  $e^-$  donor &  $O_2$  as  $e^-$  acceptor.
8. Many soil bacteria & plant pathogens degrade agar.
9. The catabolism of glucose to pyruvate in glucolysis can yield 2 pyruvate + ATP + 2NADH +  $2H^+$ .
10. Poly  $\beta$ -hydroxybutyrate (PH $\beta$ ) is an important, wide speard material in azotobacter.

ii. **Write on the following with drawing:** (30 Marks)

1. Pentose phosphate path way & its function.
2. Catabolism of carbohydrates & intracellular reserve polymers.


iii. **Mention to the following:** (30 Marks)

1. Define the  $e^-$  transport chain.
2. Places where syntheize of ATP in this chain.
3. Differences between bacterial & eukaryotic chain.
4. Hypothesis about how oxidative phosphorylation occurs.

iv. **Compare between the following:** (20 Marks)

1. Light reaction of green & purple bacteria with cyanobacteria & eukaryotic.
2. Denitrification & nitrification.

EXAMINERS	DR. SAMIA SHABANA.	DR. ABD ELRHEEM AL SHANSHORY.
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	<b>TANTA UNIVERSITY</b> <b>FACULTY OF SCIENCE</b> <b>DEPARTMENT OF BOTANY</b>			
	<b>EXAMINATION FOR JUNIOR (THIRD YEAR) STUDENTS OF MICROBIOLOGY</b>			
	<b>COURSE TITLE:</b>	<b>MICROBIAL ENZYMES</b>	<b>ACADEMIC YEAR:</b> 2022-2023	<b>COURSE CODE:</b> <b>MB3109</b>
<b>DATE: SUN.</b>	22 <b>JANUARY</b> , 2023	<b>TERM: FIRST</b>	<b>TOTAL ASSESSMENT MARKS: 100 MARKS</b>	<b>TIME ALLOWED: 2 HOURS.</b>

**1-Answer the following questions (30 Marks).**

- a- Compare between the different enzyme reversible inhibitors?
- b- Explain enzyme catalysis process?
- c- Illustrate the process of enzyme allosteric control?

**II -Fill in the blank ( 10 Marks):**

1. Types of enzymes assay techniques .....
2. Enzyme Irreversible inhibitors.....,
3. Enzyme induced fit model developed by Koshland?.....

**2. Put (✓) or (X) on the front of the following sentences and correct the wrong ones (20 Marks):**

1. Lineweaver-Burk plot is a plot between the substrate concs. and the reaction velocity.
2. Regulatory enzymes are made of several subunits at least one.
3. Enzyme control of metabolism by induction and repression, activation of performed enzymes and allosteric enzyme.
4. Lactate dehydrogenase is existing in five isoforms.

**3. Write on each of the following (20 Marks)**

- a- How enzyme decrease the activation energy of the enzymatic reaction?
- b- Enzyme immobilization?
- c- Carboxypeptidase A enzyme action
- d- Enzyme kinetic mechanisms


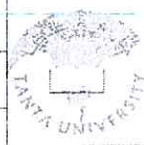
**4. Solve this problem ( 20 Marks):**

A crude cell- free extract of yeast cells contained 20 mg/ml. Ten microliter of this extract in a standard total reaction volume of 0.5 ml catalyzed the formation of 30 nmoles of products in 1 min.under optimum assay conditions.

A- Express (v) in terms of nmoles x ml<sup>-1</sup>x min<sup>-1</sup>.

B- What would be (v) be if the same 10 µl of extract were assayed in a total volume of one ml?

C-What is the concentration of enzyme in terms of units/ml of this extract? D- What is the specific activity of this preparation?

		<b>Tanta UNIVERSITY, Faculty of Science, Department of Botany</b>			
<b>EXAMINATION for freshmen (Third level) students OF Microbiology</b>					
<b>JRSETITLE:</b>		<b>Microbial Toxin and Secondary metabolite</b>	<b>COURSE CODE:MB3111</b>		
<b>DATE:</b> 17/1/2023	<b>JANUARY, 2023</b>	<b>TERM: FIRST</b>	<b>TOTAL ASSESSMENT MARKS: 100</b>	<b>TIME ALLOWED: 2HOURS</b>	

**Answer all following questions:**

**First questions**

**( 25 degrees):**

**Write briefly on:**

- 1- Control of ochratoxin.
- 2-Ergot effect on humans and other mammals
- 3-Effect of Ochratoxin on health.
- 4- Occurrences of aflatoxins.
- 5- Mechanism of aflatoxins action.

**Second questions**

**( 25 degrees):**

**Complete the following questions:**

- 1- Gyromitrin produced by -----
- 2- Ochratoxin produced by -----and-----.
- 3-Clinical sings of aflatoxicosis in animals include ---,---,---and---
- Oriliane toxin produce by-----
- 5- Aflatoxin Chemisorbents by using -----.

**Third question**

**( 25 degrees):**

Choose the correct answer of the following:

- 1-Which toxin can be the source of nephrotoxin?
  - a) Aflatoxin
  - b) Ochratoxin
  - c)None of these
- 2-Patulin is a toxic fungal metabolite produce by :
  - a) *Penicillium*
  - b) *Aspergillus*
  - c) *Byssochlamys*
  - d) All of these
- 3-Which of the following microorganisms produces Afltoxin?
  - a) *Aspergillus*
  - b)*Penicillum*
  - c) both a and b.
- 4- Citrinin is a mycotoxin originally isolated from
  - a)*Penicillium citrinum*
  - b) *Aspergillus niveus*
  - c) both a and b.
- 5- Gyrometrine toxin produce by
  - a) *Clitocybe dealbata*
  - b) *Gyromitra esculenta*
  - c) None of these



**Fourth question**

**(25 degrees):**

Identify the following toxins

- 1- Trichothecenes
- 2- Muscarine
- 3- Amantins
- 4- Ergomtrin
- 5- Zearalenone

With my best Wishes  
Examiner: Prof.Dr. Saida Amer

	TANTA UNIVERSITY, FACULTY OF SCIENCE, DEPARTMENT OF BOTANY			
	FINAL EXAMINATION FOR THE THRID YEAR (BOTANY)			
	COURSE TITLE	APPLIED MICROBIOLOGY	COURSE CODE: MB3113	
DATE: 24/ 1/ 2023	JUN 2023		TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

**Answer the following questions**

**Question 1. Enumerate the following (25 marks)**

1. Methods of Strain improvement include

1, 2, 3,

2. Quality control of the production process must include check on

1, 2, 3, 4, 5,

3. Modern methods of semisynthetic penicillin production involve

1, 2, 3,

4. The following biotransformation are obtained by microorganisms

1, 2, 3, 4, 5,

**Question 2. Check  $\checkmark$  or X for the following sentences (25 marks)**

1. Microbial fermentations are used to produce inorganic acids ( )
2. Overheating of fermentator during fermentation is controlled by cool air ( )
3. Industrial microbiology, mainly depends on the fermentation phenomenon ( )
4. A major ingredient of penicillin production media is Corn meal ( )
5. keeping the acquired characters over a long time called strain stability ( )
6. Immobilized enzymes is a method for producing gluconic acid ( )
7. Primary metabolites have no obvious role in the lives of the organisms ( )
8. Quality of the product is determined by the amount and purity ( )
9. Centrifugation is the commonly used recovery methods for bioethanol ( )
10. The native penicillin is potent enough for clinical use ( )



**Question 3. Compare between the following**

**(25marks)**

- a) Fungal and bacterial enzymes.
- b) Primary and secondary metabolites.
- c) Different generation of cephalosporin
- d) Crude and refined media.


**Question 4. Chose the correct answer**

**(25 marks)**

- 1- The most important environmental factors affecting fermentation process
- a) Carbon source                      2) Nitrogen source                      3) a and b                      4) None of these
- 2- The commonly used recovery methods include
- a) Evaporation                      b) swabbing                      c) neutralization                      d) None of these
- 3- The most effective antibiotic available for the systemic treatment of fungal infections of skin
- a) Griseofulvin                      b) Penicillin                      c) Cephalosporin                      d) All of these
- 4- Secondary metabolites production is
- a) *Nonspecific*                      b) *specific*                      c) *extremely specific*                      d) *None of these*
- 5- Which one of the following organic acid is used to supply calcium to the body?
- a) *Citric acid*                      b) *gluconic acid*                      c) *itaconic*                      d) *None of these*
- 6- In which of the following production processes, antifoam is added
- a) Penicillin                      b) Cephalosporin                      c) alkaloids                      d) citric acid
- 7- Which of the following is an acceptable method for recovery of ethanol
- a) *evaporation*                      b) *precipitation*                      c) *filtration*                      d) *None of these*
- 8- Regarding to gluconic acid production all the following statements is true except
- a) *Used in dishwasher detergents*                      b) *produced by Aspergillus sp.*
- c) *The fermentation is carried out at 30 degree*                      d) *Used in leather tanning*
- 9- Production of cephalosporin C is induced by
- a) *phenylacetic acid*                      b) *phenoxyacetic acid*
- c) *Corn steep liquor*                      d) *None of these*
- 10- Strain maintenance is to preserve the strain from
1. *Death*    2. *Contamination*                      3. *Both of the above*                      4. *None of the above*

*With my best wishes*

EXAMINER	MOHAMED YASER BEDAIWY
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	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF PHYSICS		
	<i>EXAMINATION of third year students of Material Science group</i>		
COURSE TITLE:	<b>Solar Energy Conversion Devices1</b>	COURSE CODE:MS3111	
DATE:	15/1/2023	TERM: FIRST	TOTAL ASSESSMENT MARKS : 100 TIME ALLOWED: 2 HOURS

**Answer the following questions: (25 marks each question)**

- 1) A- Define, give SI units and write mathematical formula for the following quantities: normalized drying efficiency, convection heat transfer coefficient, thermal diffusivity. (15 marks)  
 B- Write short notes on dimensionless numbers and show how we use it to calculate the convective heat transfer coefficient. (10 marks)
  
- 2) Discuss briefly:
  - Different kinds of solar dryers (15 marks)
  - Different methods of thermal energy storage. ( 10 marks)
  
- 3) A- Write an expression for the total amount of solar radiation incident on a tilted surface. (10 marks)  
 B- Explain with graphs how one can improve the efficiency of solar air heaters. (15 marks)
  
- 4) A- Discuss the theory and basic principles of solar stills and the factors affecting the daily productivity. (15 marks)  
 B- Write an expression for the total loss coefficient of a flat-plate solar air heater with single glass cover. (10 marks)

Best Wishes,

Examiner: Prof. A. A. El-Sebail

- 12)-The time between a host's exposure to an infectious agent and the appearance of symptoms is the:
- Communicable period.
  - Incubation period
  - Latent period
- 13)- Accidental parasites
- may live in unusual places in their normal host.
  - occasionally appear in unusual hosts under natural conditions
  - free living organisms that can live as parasites when accidentally introduced into the bodies of other animals
- 14)- Virulence
- Infections naturally transmitted between lower vertebrate animals and man.
  - The ability of organisms to produce severe pathological reaction, the degree of pathogenicity in a given host
  - The routes via which the parasite migrates in the host.
- 15)- Epidemic:
- The occasional appearance of a parasite in one or few members of a community.
  - The presence of a parasitic infection at a steady rate all year.
  - When there is a sharp increase in the rate of a given disease in a particular season.

## II- Second question (50 marks)

### 1-Mention the diagnostic stage of the following: (10 Marks)

- Fasciola sp*
- Ancylostoma sp*
- Schistosoma mansoni*
- Enterobious sp*
- Schistosoma hematobium*

### 2- Fill in the blanks (14Marks)

- \_\_\_\_\_ is Larval stage with 10 hooks.
- \_\_\_\_\_ is a proglottid releases from strobila or disintegrates to release eggs.
- \_\_\_\_\_ is the posterior margin of "segment" overlaps with anterior of following one.
- \_\_\_\_\_ is metacercariae enter the circulation and are distributed in abnormal sites.
- \_\_\_\_\_ is a result from the invasion of the skin by the cercariae
- \_\_\_\_\_ is the excretory unite of Nematodes
- \_\_\_\_\_ is the intermediate host of *Schistosoma hematobium*

### 3-Choose the correct answer and rewrite it in your answer sheet. (14 Marks)

- Distal cytoplasm in the tegument of cestode supported by:
  - Cuticle
  - Microtriches
  - Spines
- The Pathogenicity of *Dipylidium caninum* in children is higher than adults because:
  - Children eating raw fishes.
  - Children let dogs lick their faces.
  - Children doesn't like dogs.
- Cestodes lack:
  - Excretory system.
  - Digestive system.
  - Reproductive system.
- The scolex of *Dipylidium caninum* contains:
  - Scolex with four bothridia.
  - Scolex with four suckers.
  - Scolex with two bothria.
- Unit structure of the excretory system in Digenea is:
  - Ootype.
  - Flame cell
  - Renette
- The intermediate host of *fasciola sp* is:
  - Dogs.
  - Lymnea* snail.
  - Man.
- worms in nematodes are:
  - Aceolomate.
  - Pseudoceolomate.
  - Ceolomate.

### 4- Give a one sentence definition , mention a parasite species for which the term applies.

(12 Marks, 3Mark each)

- Halozone infection.
- Renette.
- Direct life cycle.
- creeping eruption.

*Best wishes*

Examiners: Prof. Nahla A. Radwan

Dr. Lamia I. Bakr



Answer the followings:

**I- First question (50 marks)**

**1- Compare in table between (30 marks, 5 marks each)**

- a) Choanomastigote and opithomastigote forms of heamoflagellayes.
- b) Diagnostic stages of two species of plasmodium.
- c) Methods of control of *Trypanosoma* sp and *Giardia* sp.
- d) Carrier and reservoir host.
- e) Encapsulation or antigenic mimicry.
- f) Direct and indirect methods of parasitic disease diagnosis.

**2-Choose the correct answer and rewrite it in your answer sheet (20 Marks, 1.5 Mark each)**

- 1) Habitat is
  - a. The space in the biotic environment in which life is possible.
  - b. The environmental component of the niche.
  - c. Combination of environmental factors capable to support life.
- 2) Antigenic variation is
  - a. The parasite changes the composition of their surface to escape the immune response of the host.
  - b. Parasites coat themselves with host-produced molecules so that it appears as self to the host
  - c. Encapsulates to shield itself from the host reaction.
- 3)Stercorarian *Trypanosoma*
  - a. Develops in the anterior gut of insect and leaves the insect with the saliva.
  - b. Develops in the hindgut of insect and leaves insects with the feces.
  - c. Develops in the haemocoel of the insect and leaves the insect when ingested by host
- 4)Trophozoite of *Giardia* sp.
  - a. Bears 4 pairs of flagella directed backwards and sucking disc.
  - b. Bears 3-5 anterior flagella and axostyle.
  - c. Bears one flagellum and undulating membrane.
- 5) Control of *Trypanosoma cruzi* occurs through
  - a. Avoid eating raw vegetables
  - b. Proper waste disposal and use of latrine
  - c. bug control, eradication of nests
- 6) *Trichomonus vaginalis* trophozoite is characterized by
  - a. 6-8 flagella with adhesive disc
  - b. One flagellum with micro and macro nuclei
  - c. 3-5 flagella with central axostyle
- 7) Cutaneous Leishmaniasis
  - a. Typically caused by *L. donovani*
  - b. Typically caused by *L. tropica* or *L. mexicana*.
  - c. Typically caused by *L. braziliensis*
- 8) *Plasmodium falciparum* caused:
  - a. splenomegaly, anemia, and weakness.
  - b. malignant tertian fever.
  - c. yellowish-green frothy discharge.
- 9) A paratenic host is:
  - a. Required by a parasite to transport the parasite up or down the food chain, no development take place.
  - b. An alternative final host.
  - c. Where asexual reproduction occurs.
- 10) Opportunistic parasites
  - a. Are ingested and pass unchanged in the stools.
  - b. Exist in latent form and flare in immunodeficient patients.
  - c. Spend their entire life in hosts except while transferring from one host to other.
- 11) Transmission of parasites depends on:
  - a. Susceptible host, density of infection and a source of infection.
  - b. Susceptible host, mode of transmission and a allergic reaction.
  - c. Susceptible host, mode of transmission and a source of infection.