Mansoura University
Faculty of Science
Botany Department
El-Mansoura, Egypt

جامعة المنصورة
كلية العلوم
قسم النبات
المنصورة - مصر

Final Examination in Botany
Second Term: Jun. 2011

Educational Year: Third Level **Program (Branch): Microbiology**
Subject: M (312) **Course(s): Molecular Physiology**
Time: 2 hrs **Date: 18 / 6 /2011** **Full mark:** 60 **Question mark: 20**

Answer the following questions:

Q 1 A-What is meant by "Molecular Physiology"? (5 marks)

B- " A gene by gene approach has been normally used to understand function. Functional genomics allows large-scale gene function analysis with high throughput technology and incorporates interaction of gene products at cellular and organism level." Discuss. (15 marks)

Q 2 Expect the main points involved in the object "Metabolic engineering for stress tolerance". Comment on your expectations. (20 marks)

Q 3 From your scientific point of view, what do you know and understand about:
a- Oxidative stress tolerance. (8 marks)
b- Heat and cold stress. (8 marks)
c- Eight types of abiotic stress. (4 marks)

Examiners: Prof. Mahmoud El-Baz Prof. Mohamed Naguib

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Educational Year: 3rd Level **Program (Branch): Microbiology**

Subject: Micro ~~309~~ 311 **Course(s): Microbial Toxins / Water and Air Microbiology**

Time: 2 hrs **Date: 18 /06 /2011** **Full mark: 60** **Question mark: 20**

Answer the following questions:

1 **A-** The dust particles are associated with large number of microbial agents that cause diseases and allergies. Explain how to obtain clean dust-free air **(9 points).**

B- Discuss:

1- Bacterial diseases transmitted by air **(5 points).**

2- Bacterial flora of water **(6 points).**

2 A- The effect of storage is to greatly decrease the number of bacteria in water. Explain this statement **(7 points).**

B- Air is not a natural environment for microorganisms. Discuss **(3 points).**

C- True or False and complete; correct the false one **(one point each):**

1. Mycotoxins cause toxic pathological states in animals, called mycotoxicoses, that have severe effects on animal production.
2. Mycotoxins can be formed in many plant crops before harvest and when raw materials or feeds are stored under suboptimal conditions such as ----,-----,-----
3. *Aspergillus flavus* produces the carcinogenic hepatotoxin aflatoxin, and *Fusarium* fungi produce a range of mycotoxins including the tricothecene mycotoxins and zearalenone, an estrogenic metabolite and other.
4. The moulds and the mycotoxins they produce may be destroyed in processing of raw materials and feeds.
5. The use of specialty feed additives, such as mycotoxin adsorbents, is the most common method used to reduce problems associated with mycotoxins.
6. Mycotoxins are extremely unstable under heat and pressure during the pelleting and extrusion processing.
7. Rat and insect infestation and storage under suboptimium conditions can lead to the feed becoming moldy and contaminated with mycotoxins.
8. Deoxynivalenol (DON) is produced by *Asperigillus* species and can be an important contaminant of wheat when wet weather conditions prevail during the growing season.
9. Bacterial toxins are encoded by genes carried on chromosomes.
10. Mycotoxins not only affect conversion and mortality but more important, they also affect the immunologic system causing secondary problems to humans and animals.

3 Crystallographic analysis revealed that the Cry toxins of *Bacillus thuringiensis* (Bt) consisted of three domains; I, II and III. Explain this protein structure **(5 points)** and how the three domains cooperate to kill insects? **(15 points).**

Examiners:	Prof. Dr. *Yehia Abdel-Moneim Osman Ellazeik*

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Final Examination in Botany
Second Term: Jun. 2011

Educational Year: Third Level **Program (Branch): Microbiology**
Subject: M(310) **Course(s): Mineral nutrition and plant hormones**
Time: 2 hrs **Date: 25 /6 /2011** **Full mark:** 60 **Question mark: 20**

Answer the following questions:

Q1 Discuss briefly each of the following:
- **a-** Translocation of mineral solutes from soil to root hair.(10marks)
- **b-** Transport of mineral ions across plasma membranes .(10 marks)

Q2
- **a-** What are functions and deficiency symptoms of N, P and Fe in higher plants nutrition. (10 marks)
- **b-** Draw a Labeled diagram to explain GA_3 biosynthesis. .(5 marks)
- **c-** Explain how the synthetic auxin has used as a weed killer…….. .(5 marks)

Q3
- **a-** Write on the mechanisms of IAA catabolism….(10 marks)
- **b-** Define and interpret phototropism and stomatal closure by ABA…..(10 marks)

Examiners: Prof. Mohamed Abbas Prof. Samia Haroun

المستوى الثالث - ميكروبيولوجي . م ٣٠٨ - ميكروبيولوجيا طبية

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Educational Year: 3rd Level **Program (Branch): Microbiology**
Subject: Micro 307 308 **Course(s): Medical Microbiology**
Time:2 hrs **Date: 28 /06 /2011** **Full mark: 60** **Question mark: 20**

Answer the following questions:

1 A- Define the following terms concerning medically important microbes: pathogenecity, virulence, quorum sensing, infectious disease, communicable disease, noncommunicable disease and contagious disease **(7 points)**
B- Draw and explain the different stages of infectious disease **(7 points).**

2 **Answer eqach question as required: From 1-9 choose correct answer, from 11-14 T or F and 15 complete missing words. (2 points/ question).**

1-Virulence factors that promote bacterial colonization of the host are the:
- a- ability to use motility and other means to contact host cells.
- b- ability to adhere to host cells and resist physical removal.
- c- ability to invade host cells.
- d- ability to compete for iron and other nutrients.
- e- ability to resist innate immune defenses and to evade adaptive immune defenses.
- f- All of the above g- none of the above

2- Bacteria that are potentially harmful to humans are influenced by factors that control their ability to cause disease:
a) Pathogenicity and virulence b) Dose of infectious bacterium
c) Host's immune responses d) All of the above e) None of the above

3- Most of the virulence factors that enable bacteria to colonize the body and/or harm the body are the products of:
a) quorum sensing genes. B) sense their own population density,
c) communicate with each other d) and behave as a population rather than as individual bacteria. e- all of above f- none of the above

4- Individuals vary in their susceptibility to infection due to:
a) their genetic makeup, b) previous exposure to infection,
c) underlying medical condition, and d) exposure to physical or mental stress

5- A given pathogen causes a specific disease, if:
- a. Recognised syndromes appear on the patient
- b. patient's clinical condition
- c. potential pathogen isolated from or detected in clinical samples
- d. They are never be part of the normal flora but may cause subclinical infection.

6- A potential pathogen being clinically significant, if:
- a- Isolated in abundance b- Isolated in pure culture
- c- Isolated on more than one occasion d-Isolated from deep tissues

Examiners:	Prof. Dr. *Yehia Abdel-Moneim Osman Ellazeik*

e- Evidence of local inflammation f- Evidence of immune response to pathogen g- Fits with clinical picture

7- Virulence is:

a- a multifactorial and multidimentional process
b- needed to colonise and/or damage tissues
c- needed to distinguish pathogen from commensal
d- expressed or essential in vivo, but not in the lab

8- The causative agent for herpes disease is a:

1- Orthopoxvirus **3-Papillomavirus**
2- Simplexvirus **4-Coronavirus**

9- Stealth mechanism is the ability of microbe to evade the host systems by:

a- inhibition of phagocytosis, b- evading phagocytosis,
c- inactivation complement system and antibodies, d- hiding within host cells.

10- Characteristics/properties of bacterial endotoxin include the following except:

a- broad host range specificity and biological action. b- Heat stable
c- Can activate Superman factor X d- Structural component of the cell wall
e- Readily forms toxiods

11- Quorum sensing in bacterial responds to changes in intracellular concentration of ion conc. which leads to changes in gene expression e.g. fall in intra-cellular iron levels triggers de-repression of diphtheria toxin gene **(T or F).**

12- Different strains of the same bacterial species differ in their virulence, and virulence can be increased or decreased by the conditions under which the bacteria are cultured or passaged in a living host . **(T or F)**

13- Routes of infection of microbial pathogens are Direct or indirect contact, Air-borne transmission, Percutaneous transmission, Food- and water-borne transmission, Insect-borne transmission · Transplacental transmission , Endogenous transmission. **(T or F)**

14- Normal flora: Reside in the gastrointestinal, upper respiratory and urogenital tracts and skin. They have a protector and beneficial role. However, they cause disease if they enter sterile sites. **(T or F)**

15-Bacteria regulates gene expression in response to environment (T or F).

16- Superficial mycosis infection restricted to--------while systemic mycosis affect ----------

3	**Sex is an important step in successful infection of bacterial pathogen. Explain the statement in details showing how sex affects bacteria pathogenicity. (14 points).**

Examiners:	**Prof. Dr.** ***Yehia Abdel-Moneim Osman Ellazeik***

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Final Examination in Botany
Second session, June, 2011

Educational Year: Third level. **Program (Branch): Microbiology**
Subject: M 306 **Course:** Algae and Physiology of Algae
Time: 2 hrs **Date: 11 /6 /2011** **Full mark:** 60 **Question mark: 20**

Answer the following questions:

Question 1- Answer the following as requested, in the table specified for answer:

True or False : 8 marks

1- Nitrogen-Fixing Cyanobacteria (BGA) are unique as they carry out both nitrogen fixation and photosynthetic activities at the same time.
2- In Cyanobacterial cell, Polyhedral body contain carboxylase enzyme (ribulose 1,5- biphosphate Carboxylase.
3- Regarding their habit, *Microcystis* represent a regular colony while *Merismopedia* represent an irregular colony.
4- In Rhodophyta, flagellated or motile forms are present only in reproductive units but absent completely in vegetative forms.

Choose the correct answer : 5 marks

1- Example of heterotrophic algae is:
a- *Prototheca.* b- *Euglena.* c- *Draparnaldia.*
2- *Prorocentrum* and *Peridinium* algae belong to the sub-division:
a- Mesokaryotic phycophyta. b- Eukaryotic phycophyta. c- Prokaryotic phycophyta.
3- Paramylon accumulated as storage food material in:
a- Euglenophyta. b- Rhodophyta. c- Cyanophyta.
4- The following sequence: { NN E1 → Intl E2 → Int2 E3 → Int3 E4 → Int4 E5 $NH_4 + H_2$ } refer to:
a- Photosynthetic pathway. b- Algal purification. c- Nitrogen-fixation.
5- Chloroplasts of Ulothrix are :
a- Ripon shape. b- Star shpe. c- Girdle shape.

Complete : 7 marks

1- Chamaesiphon and Dermocarpa are members of Chamaesiphonales, they reproduce asexualy by:
a- ..... and b- ..... respectively.
2- The basic characteristics of algae are:
a- ..... b- ..... c-.....
3- Examples of high molecular weight products in algae are:
a- ..... b- .....

True or False				Correct answer					Complete		
1	2	3	4	1	2	3	4	5	1	2	3
									a- b-	a- b- c-	a- b-

Question 2- Explain with the help of drawings the life cycle of *Ectocarpus* .

Question 3- Great bulk of algal physiology is undertaken using algal cultures. Discuss this statement referring to:

a- Sampling of algae. **b- Isolation of algae.** **c- Purification of algae.**
d- Types of algal cultures. **e- Methods of cultivation.** **f- Importance of algal cultivation.**

Examiners: 1- Dr. Abdel-Rahman I. Soliman.* 2- Prof.Dr. Yehya Azab

Best Wishes for Success Dr. Abdel Rahman Soliman

Mansoura University
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Educational Year : 3th year
Subject: Bot 309 m
Time: 2 hrs
Full marks: 60

Second term examination in Botany May 2011

Program: Microbiology
Course: Enzymes
Date: 14/6/2011
Question marks: 20

Answer the three questions: --

Question 1

A-Identify: K_m--- V_{max}--- Activation energy- Isomerase. (١٥)

B-Complete: (١٥)

1-Transferase enzyme means.....
2-Oxidoreducatse enzyme means.....
3-..... an example of alpha glucosidases.
4-Esterase enzyme belongs to group of enzymes known as.....
5-The likages in amylose differs from those in amylopectin in.....
6-Pyruvic decarboxylase convert pyruvic acid into.....
7-Fumarase produce fumaric acid from.....
8-Urease converts urea into .....
9-Sucrose transglucozylase converts sucrose into.....
10-Phosphogylceromutase converts glyceric acid-3-phosphate into.....

Question 2

A-Compare between the reactions of Ribulose-bis-P carboxylase and Ribulose-bis-P oxygenase. (٨)

B-Write the enzymatic reactions leading to production of the following metabolites?: (١٢)

(i) Aspartic acid from Asparagine. (ii) Acetaldehyde from Pyruvic acid.
(iii) Glutamine from Glutamic acid. (iv) Alanine from Pyruvic acid.

Question 3

A) ***Choose*** the correct answer:(١٠)

1-From the following data for a hypothetical enzyme, choose the most effective substrate:
(a) S with K_m= 1.0 (b) S with K_m= 1000 (c) S with K_m=0.1 (d) S with K_m=0.01

2-Which molecule is the first CO_2 acceptor in dark reactions of C_3-plants ?.
(a) 3-PGA (b) Ribulose 1,5-bisphosphate (c) G-3-P (d) Ribose-5-P

3-A compound accumulates in the vacuoles of cacti at night and released in the day:
(a) Acetyl CoA (b) Malic acid (c) PEP (d) OAA

4-Most of food plants such as *Phaseolus* belong to:
(a) CAM-plants (b) C_4- Plants (c) C_3- Plants (d) Non of these plants.

5- C_2H_5OH could be produced by the action of :
(a) Alcohol dehydrogenase (b) Urease (c) Malic enzyme (d) Chlorophyllase

(B) ***Relate*** each of the following enzymes to its main category and write its catalyzed reaction:(١٠)

- Malic enzyme
-Glutaminase
-Oxaloacetic acid decarboxylase
-Asparagine synthestase.

With Best wishes
Prof. Hamed M. El-Shora

٣ ميكروبيولوجي - ٣ ٣٠٧ - ميكروبيولوجيا الاغذية

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Final Examination in Botany
Second Term: Jun. 2011

Educational Year: **3rd Level** Program (Branch): **Microbiology**
Subject: **B 307** Course: **Food Microbiology**
Time: **2** hrs Date: **21 / 6 /2011** Full mark: **60** Question mark: **20**

Answer the following questions:

1- **Question one**

A. Demonstrate food spoilage problems of concentrated and ready-to-serve (RTS) juices. (6)
B. What physiological types of bacteria are most likely to be present when canned food spoiled? (6)
C. List and describe the principles upon which methods of food preservation are based. (7)

2- **Question Two**

A. Most foodstuffs serve as good media for the growth of many different microorganisms. Summarize the chemical degradation processes undergo in foods and related to the corresponding spoilage. (10)
B. Conclude factors affecting kinds and numbers of microorganisms in foods. (10)

Question Three

السؤال الثالث فى كراس الاجابة

Examiners: **Prof. Anwar Mankareous** Ass. Prof. Hoda Soliman
Ass. Prof. Mervat H. Hussein Dr. Doaa Darwish