الفرقة الناجية

Department of Botany and Microbiology
Faculty of Science
Assiut University

Final Exam. For the 3rd level students (Microbiology), Summer 2017.

Subject: Biology of Aquatic Fungi (361 B) Maximum Allowed Time: 135 Min.

Answer The Following Questions:- (Note: 5 pages should be considered)

Q.1-Write Briefly on Five Only of the following:- (10 Marks)

a- Adapation of zoosporic fungi for aquatic habitats.

b- Adaptation of Aquatic Ascomycetes for water ecosystem

c- Rumen fungi

d- Adaptation of Aquatic Hyphomycetes for water ecosystem:-

Q.3:-Define Briefly five only of the Following:- (10 Marks)

a- Allelopathy:

b- Neutralism:

c- Littoral Zone

d- The Thermal Stratification of water ecosystem referring to the inhabitant organism:

e- The role of Aqutic Hyphomycetes in aqutic ecosystem:

f- Transient fungi:

Q.4- Circle the correct answer (Give the fit word if it is missing) (5 Marks)

a- The aquatic fungus which is an obligate parasite on some arthropods and thereby is emphasized the great potential in the biological control of mosquitoes larvae.
(*Olpidiopsis* - *Aphanomyces* – *Alatospora* – *Plasmodiophora* – Non of all)

.....

b- The organisms which feed on a variety of food sources.

(Parasites – Saprophytes – Pathogens- Synergism- None of all).

.....

c- The physical location in the environment to which an organism has adapted.

(Migrants – Mesosomes – Thermocline layer- lotic habitat – None of all)

.....

d- The association of organisms that live together and that exhibit well-defined nutritional or behavioral interrelationships.
(Monomorphic - Communities – Ecosystems– Biodiversity – Wetland - All of these)

.....

e- An aquatic fungus which could be used as biocontrol agent for nematode

(*Albugo* - *Coelomomyces* – *Olpidium* - *Aphanomyces* – None of all).

.....

Q.5- Give only one reason for each of the following:- (3 Marks)

a- Predominance of aquatic hyphomycetes in aquatic ecosystem rather than terrestrial fungi:-

b- Leaves colonized by aquatic fungi are more palatable and nutritious for aquatic invertebrates:

c- The superiority of aquatic fungi to heterotrophic bacteria as pioneer colonizers in aquatic ecosystem.

).6- Elaborate the interrelationship between aquatic chytrids and phytoplankton?. (One Mark)

.....

.....

.....

.....

).7- **Give the scientific term which is related to TEN ONLY of the following (Put your answers in the next table):-** (15 Marks)

1- The use of living organisms, primarily microorganisms, to degrade environmental contaminants into less toxic forms (degrading them to harmless compounds).
2- Two usually independent organisms cooperate to break down a nutrient neither one could have metabolized alone.
3- The simultaneous demand by two or more organisms for limited environmental resources, such as nutrients, living space, or light
4- The community which held together by complex interactions between the biotic and abiotic factors in a given water area.
5- The interaction between two different aquatic fungi at which one member benefits while the other does not benefit nor is it harmed.
6- The inhibiting or nullifying action of one organism on another) via giving off antagonistic substances that inhibit or kill susceptible species sharing its habitat.
7- A natural aquatic environment which is lacking a continuous flow of water.
8- Aquatic fungi that move between aquatic and extra-aquatic habitats in haphazard rather than regular.
9- Description of certain aquatic habitat which should be considered in any sampling procedure and deals with depth, dimension, geology of shores, sediment distribution, currents, inflow and outflow of water, etc.
10- Water ecosystems which are characterized by nutrient-deficient, relatively low productivity and support few microorganisms.
11- The chemically synthesized compounds that are not naturally occurring in aquatic habitats (man-made chemicals that are present in the environment at unnaturally high concentrations).
12- A total count (colonies forming units) of an organism within a community.

(Give your answers in the following table):-

No	Answer	No	Answer
1		7	
2		8	
3		9	
4		10	
5		11	
6		12	

The Best Wishes *Prof. Abdel-Raouf Khallil*

Department of Botany and Microbiology Faculty of Science Assiut University		Third level - 2016/2017 Final Examination of Microbial Enzymes (394 B) Summer Semester – 2 hours

Answer 4 only of the following questions (50 marks)

1-Give an account for each of the following (12.5 marks)

a-The classification of enzymes.

b-Oxidoreductases with examples.

2- Describe each of the following (12.5 marks)

a- How can the cell regulate enzyme activity by ATP and byproducts.

b-Application of Proteases.

3-Explain each of the following (12.5 marks)

a-Competitive Inhibitors on bases of Michealis-Menten and Lineweaver-Burk plots.

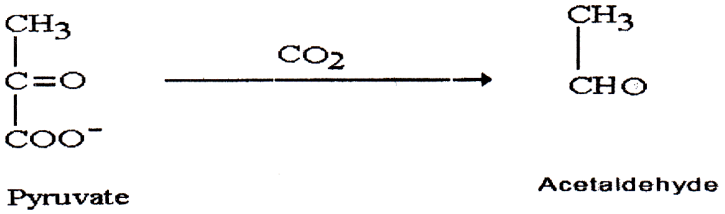
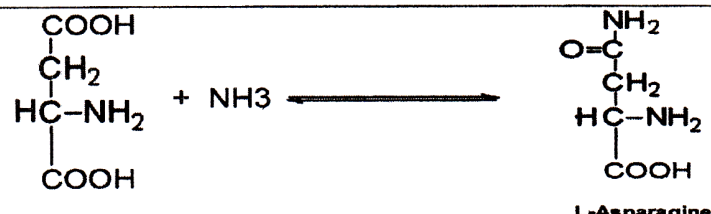
b-Coenzymes and prosthetic groups.

4-Write on each of the following (12.5 marks)

a-Enzymes Biotechnology.

b-Nanotechnology and their role in enzyme activity.

5-Illustrate on the reaction, the four digits of the following EC (12.5 marks)

a- EC 4.1.1.1.	 Pyruvate Acetaldehyde
b- EC 6.3.1.1.	 L-Aspartic acid L-Asparagine

Good luck *Prof. Dr. Hassan A. H. Hasaan*

Assiut University Academic Programs: Microbiology and Chem. & Microbiology
Faculty of Science Studying Year : 2016/ 2017
Department: Botany & Microbiology Allowable Time : Two hours
Course Code 396B, Course Title: Industrial microbiology
Total Degree: 50 marks Forth& Third levels, SummerSemester

Final Term Exam

---

1. Give an account on only five of the following: (25 marks, 5 for each)
   a) General characters of industrial microbe.
   b) Fermentation conditions and strategy for Baker yeast production.
   c) The factors affecting ethanol fermentation.
   d) Preparation of filling tank for vinegar production from fermented apple juice.
   e) Separation and purification of penicillin from fermented mash.
   f) Side chain degradation of steroids using bio-transformation technique with special reference to their medicinal importance.

2- What are the main advantages ofthefollowing?(20 marks, 4 for each)
   a) Using sulfite during glycerol bio-production.
   b) Aeration in the first stage of ethanol fermentation.
   c) Using citric acid as preservative and additive material in food industry.
   d) Using both chemical and biological assays for detection of antibiotics.
   e) Introduce dehydration reaction on a steroid hormone.

3- Identify only five of the following: (5 marks, one for each)
   Up-stream processes of a fermentation, Industrial microbiology, Spirit vinegar, Solid state technology in citric acid fermentation, B-Lactam antibiotics and Precursors.

WITH MY BEST WISHES

Prof. Dr.: A. A. Zohri

Assiut University Academic Programs: Microbiology and Chem. & Microbiology
Faculty of Science Studying Year : 2016/ 2017
Department: Botany & Microbiology Allowable Time : Two hours
Course Code 393B, Course Title: Physiology of Fungi
Total Degree: 50 marks Forth& Third levels, Summer Semester

Final Term Exam

---

1. Describe only four of the following: (24 marks, 6 for each)
   a) Phases of growth in filamentous fungi.
   b) Physiological adaptation of fungi under high temperature.
   c) Roles, sources and level of carbon as fungal nutrition.
   d) Methods used for measurement of fungal growth.
   e) Chemical characters of fungal cell walls.

2- Explain the main physiological roles of only four of the following:
(16 marks, 4 for each)
   a) Cell wall and Micro-bodies in fungal cell.
   b) Golgi bodes and ribosomes.
   c) Phosphorus and nitrogen in fungal nutrition.
   d) Growthco-factors and internal factors on fungal growth.
   e) Vacuole and pigments in fungal cell.

3- Comparing between each of the following: (10 marks, 2 for each)
   a) Chemical structure of chitin and chitosan as fungal cell well components.
   b) Facilitated diffusion and active transport as models of nutrient transport in fungi.
   c) Effect of visible light and radiations of fungal growth.
   d) Sterile mineral oil and lyophilization as fungal preservation methods.
   e) Weak acidophilic and alkaliphilic fungi.

WITH MY BEST WISHES
Prof. Dr.: A. A. Zohri

Assiut University Academic Programs: Microbiology and Chem. & Microbiology
Faculty of Science Studying Year : 2016/ 2017
Department: Botany & Microbiology Allowable Time Two Hours
Course Code 392B, Course Title: Microbial Metabolism
Total Degree: 50 marks Forth& Third levels, Summer Semester

Final Term Exam I- Fungal Metabolism (25 marks)

---

1. Write on<u>only three</u> of the following: (15 marks, 5 for each)
   a) Location, role and net energy generation of pentose phosphate pathway in fungal cell.
   b) ATP yield during glycolysis and Krebs cycle.
   c) Nitrogen catabolism by fungi.
   d) Pathway of SO_4 reduction by fungi.

2- Comparing between each of the following: (10 marks, 2 for each)
   a) Assimilation and dissimilation.
   b) Facilitated diffusion and diffusion channels as models of nutrient transport in fungi.
   c) Catabolism of one molecule of glucose by respiration and fermentation.
   d) Transamination and reductive amination pathways of amino acids in fungi.
   e) Catabolism and anabolism of lipid by fungi.

WITH MY BEST WISHES

Prof. Dr.: A. A. Zohri

Part II Bacterial metabolism

1) - Define three of the following :- (6 marks)

a- Phototrophs.

b- Chemolithotrophy.

c- Phototrophic heliobacteria.

d- Nucleotide.

---

2) – Write short notes on three of the following :- (15 marks)

a- Light reactions in purple and green-sulphur bacteria.

b- Mechanism of biological nitrogen fixation.

c- Mixed acid fermentation.

d- Biosynthesis of uracil, cytosine and thymine.

---

3) – Compare between (select two) the following:- (4 marks)

a- Purple sulfur bacteria and purple non-sulfur bacteria.

b- Different electron acceptors in anaerobic respiration.

c- Energy generating patterns in bacteria.

Good Luck

Dr-Ghada Abd-Elmonsef

Assiut University
Faculty of Science
Botany & Microbiology Department

جامعة أسيوط
كلية العلوم
قسم النبات والميكروبيولوجى

Microbiology Students (3 Level)
Systematic Mycology 2 (362B)
Total: 50 Marks

Summer course: 2016/2017
Time allowed: 2 hours

I- With drawing (if possible) compare between Four only of the following: **(20 marks)**

1-Teleutospores in Families: Ustilaginaceae and Tillitiaceae.

2- Teleomorphs of *Penicillum* and *Aspergillus* groups.

3- Types of Basidiomata and Ascomata.

4- Spore formation in a unicellular ascomycetous fungus and basidiomycetous one.

5- Asexual stages in Basidiomycetes and Ascomycetes (Family: Erysiphaceae).

II-Answer by one word on 5 only of the following: **(5 marks)**

1	The fungal cells that remain arranged compactly and loose their individuality.	
2	Fungi that live on decaying leaves.	
3	The fungus that complete life cycle on one host plant.	
4	A group of fungi that produce naked asci on host plants.	
5	A few of Ascomycetes entirely developed and remained underground.	
6	A group of fungi that produce flask shape ascoma with arranged asci.	

III- With illustration only answer on 4 only of the following:- **(10 marks)**

1- Long life cycle in rust diseases.

2. Conidia in *Fusarium*.

3- Two genera related to Family: Sphaeropsidaceae.

4- Appendages attached with ascocarps in powdery mildew diseases.

5- Methods of infection in smuts diseases.

من فضلك أنظر خلفه

IV-Choose the correct answer for 10 only of the following: **(10 marks)**

1- Which of the following form pycnidium

a.*Trichurus* b. *Pestalotia* c. *Phoma*

2- Which of the following consists from one cell.

a. Heterobasidium b. Holobasidium c. Phragmobasidium

3- Which of the following fungi forms Gymnothecium

a. *Aspergillus* b. *Talaromyces* c. *Eupencillium*

4- The ascus wall of *Tuber aestivum* is

a. Unitunicate b. Bitunicate c. Prototunicate

5- Which of the following fungi that its life cycle depends on the stage of the plant

a. *Taphrina* b. *Uncinula* c. *Claviceps*

6- A fungus used for production of Cyclosporine

a. *Cordyceps* b. *Claviceps* c. *Aspergillus oryzae*

7- Which of the following fungi forms two types of conidia

a. *Penicillium* b. *Fusarium* c. *Ulocladium*

8- Which of the following fungi forms Synnemata

a. *Botryodiplodia* b. *Graphium* c. *Geotrichum*

9- Which of the following fungi produces lovastatin?

a. *Aspergillus niger* b. *Penicillium citrinum* c. *Aspergillus terreus*

10- Which of the following fungi causes Aspergilloma

a. *Aspergillus fumigatus* b. *Aspergillus oryzae* c. *Aspergillus flavus*

11- Which of the following fungi forms conidia in acropetal succession

a. *Alternaria* b. *Scopulariopsis* c.*Aspergillus*

V- Give the anamorphs for Five only of the following: **(5 marks)**

1- *Microascus* 2- *Pleospora* 3- *Hypocrea*

4- *Setosphaeria* 5- *Necteria* 6- *Cochliobolus*

Good luck ***Prof. M. A. Abdel-Sater***

Assiut University
Faculty of Science
Botany and Microbiology Department

Course Title: Plant pathogenic fungi
Course Code: 364 B
Final Exam: Third Level
Summer Semester (August) 2017
Allowable Time: 2 hours
Total Degree: 50 Marks

Answer the following questions

1. Illustrate with drawings only three of the following.....(15 marks)

a) Pathogen, symptoms and disease cycle of bunt smut of wheat.

b) Overwintering structure, pathogen and symptoms of grey mold disease.

c) Disease symptoms, life cycle and control of *Spongospora subterranea*

d) The fungal structures and diagnostic symptoms related to Dutch elm disease.

2. Give the scientific term ..... (10 marks)

1. Pathogens that infect, kill the host and extract nutrients from the dead host tissue.
2. Degree of the pathogenicity in a qualitative measure.
3. The initial contact of a pathogen with a site of plant where infection is possible.
4. Bulbous structure that is produced at the end of the germ tube and generate physical forces to bring about penetration of the cuticle of plant surface.
5. The process by which pathogens establish contact and nutritional relationship with the susceptible host tissues.
6. Diseases that are constantly prevalent in a particular country or part of the earth.
7. Killing and collapse of seed tissue before emergence of seedling above soil.
8. The type of conidiophore that produce single clavate conodium and present in *Phyllactinia*
9. Stage of ergot in which sticky and yellowish sugar excretions were produced by the fungus
10. Appearance of soot like mass of the fungal pathogen spores on the host infected parts.

.....look at the next page.....

3. Discuss with diagrams only two of the following .....(8 marks)

a) Role of conidiophores in differentiation between downy mildew fungi.

b) Key for identification of powdery mildew fungi based on ascomata and their appendages.

c) Various types of aecial stage on rust fungi.

4. Write with drawing the name of pathogen, dormant structure and primary inoculum (only three) .....(9 marks)

1. Late blight of potato
2. Wilt disease
3. Apple scab
4. Club root disease of Cruciferae

5. Compare with drawing (two only) .....(8 marks)

a) *Uromyces and Phragmidium* (according to host and teliospores)

b) Ustilaginaceae and Tilletiaceae (according to spore germination)

c) Peach leaf curl and root rot (pathogen and management)

..... Good Luck .....

Dr. Ismail Ramadan Abdel-Rahim

Assiut University
Faculty of Science
Department of Botany and Microbiology

جامعة أسيوط
كلية العلوم
قسم النبات والميكروبيولوجى

Pathogenic Microorganisms (397 B)
3rd level (Microbiology & Botany Students)
Summer Course 2016/2017

Final exam: 24th August 2017
Time allowed: 2 hours

Answer the following four questions ***(50 marks)***

I) Give short accounts on 5 only of the following **(20 marks, 4 each)**

1) Different techniques used to diagnose pathogens.
2) Mechanisms of pathogenicity.
3) The differences in the structure and ways of transmission of hepatitis viruses.
4) The differences between exotoxins and endotoxins.
5) The three main categories of mycotic diseases, giving examples for each.
6) Portals of entry and exit of pathogens into or from human/animal body.
7) The beneficial role of the normal microbiota.

II) What is meant by…….. (answer 10 only) **(10 marks)**

1) Viremia.
2) Syndrome.
3) Leucopoenia.
4) Peptidoglycan.
5) Resident microbiota.
6) Opportunistic pathogens.
7) Morphological dimorphism.
8) Acellular forms of microorganisms.
9) Preferred portal of entry of many microbes, giving an example.
10) Sensitivity test, giving one reason why is sensitiveity test urgently needed?.
11) Direct examination when positive can differentiate between zygomycosis and phaeohyphomycosis infections, How?.

III) Choose the correct answer (or complete) for 10 of the following: **(10 marks)**

1) The number of organisms required to establish an infection is termed as……
***Inoculum potential** *** Lethal dose** *** Infective dose** *** Virulence factors**
2) A structural component found in Gram +ve but not in Gram –ve bacteria?
*** Chitin** *** Peptidoglycan** *** Teichoic acid** *** Cutin**
3) Structures that allow bacteria to survive harsh environmental conditions are
*** Flagella** ***Pili** *** Spores** ***Capsules**

من فضلك أنظر بقية الأسئلة فى الصفحة التالية

4) Which one of the following organisms causes kuru disease?

*** *Salmonella*** *** Prions** *** Viruses** *** *Mycobacterium***

5) Which one of the following causes tuberculosis in humans?

*** Prions** ***Aspergillus fumigatus*** ***Mycobacterium bovis*** ***M. tuberculosis***

6) Infection of the cornea is termed as

*** Onychomycosis** *** Tinea corporis** *** Tinea capitis** ***Keratomycosis**

7) Which of the following diseases is sexually-transmitted?

*** Endophthalmitis** *** Meningitis** *** AIDS** ***Gonorrhea**

8) Which of the following microorganisms can cause community-acquired pneumonia?

Legionella ***Streptococcus*** ***Haemophilus*** ***Influenza virus**

9) Infections of the fingernails or toenails are termed as

*** Tinea versicolor** *** Tinea manuum** *** Tinea pedis** *** Onychomycosis**

10) Examples of fungal metabolites that may cause symptoms are .....and .....

11) Cholera is caused via drinking water contaminated with.....

12) Body organs that do not have normal microbiota in healthy people are:

1) ..... 2) ..... and 3) .....

IV) Answer 10 only of the following (by only one word): **(10 marks)**

1) A diagnostic medium used for identification of *Candida* species.
2) Antibiotics able to destroy many types of bacteria.
3) The virulence factors destroying white blood cells.
4) Presence of toxins in the host's blood.
5) Factors that decrease body temperature.
6) Health care-associated-infections.
7) A disease is always present in a population?.
8) A group of microorganisms can cause diseases and carried by fleas and body lice.
9) Number of microbes that will kill 50% of inoculated test animals.
10) Organisms that harmoniously live in or on the human body without causing disease.
11) A decrease in glucose concentration and elevation in protein and white blood cell count in the cerebrospinal fluid (CSF) are characteristic findings for.....
12) A disease that cannot be transmitted directly or indirectly from host to host?.

Best wishes **(24/8/2017)** **Professor *Mady Ahmed Ismail***

Department of Botany and Microbiology *Faculty of Science* *Assiut University*		*Third level* - *2016/2017* *Final Examination of Microbial Toxins (393 B)* *Summer Semester* – *2 hours*

Answer the following questions (50 marks

I-Write on four only of the following: (20 marks)

1-Outline the bases of microbial toxins classification.

2-Types of mycotoxin and natural occurrence of patulin and aflatoxin.

3-Chemical structures of citrinin and aflatoxins and their producing organisms.

4- Effect of Moisture content (MC) on Mycotoxins production.

5-Steratiges for post-harvest prevention of mycotoxins.

II-Explain of the following: **(20** marks)

1-Metabolism of aflatoxin in liver.

2-Biosynthesis pathway of patulin

III-Mention the mycotoxin that affect the following systems and their symptoms: (10 marks)

Systems	Mycotoxin	Symptoms
a-Vascular system		
b-Respiratory system		
c-Urinary system		
d-Reproductive system		

Good luck

Prof.Dr. Hassan A. H. Hasaan