Assiut University – Faculty of Science

Department of Botany & Microbiology

Date: 25-8-2019

Course: Biological Control (B - 499)

Time: Two hours

Total Markss: 50

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**Answer FOUR questions only: ..... (Total marks=50)**

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1- **Give an account of the following fungal bio agents focusing on their life cycles ..... (12.5 marks)**
   a) ***Coelomomyces stegomyiae*** **..... (6.5 marks)**
   b) ***Entomophthera muscae*** **..... (6 marks)**

2- **Discuss the role of the following microbes in the biocontrol of plant diseases ..... (12.5 marks)**
   a) ***Trichoderma harzianum*** **..... (6.5 marks)**
   b) ***Cheatomium globosum*** **..... (6 marks)**

3- **Describe with labeled diagrams each of the following mentioning their role in pest control ..... (12.5 marks)**
   a) ***Beauveria bassiana*** **..... (6.5 marks)**
   b) ***Bacillus thuringiensis*** **..... (6 marks)**

4- **Describe six different trapping structures by which nematode trapping fungi capture and consume their prey .....(12.5 marks)**

5- **Give suitable drawings for each of the microscopic structure for each of the following organisms referring to their importance as biocontrol agents ..... (12.5 marks)**
   a) ***Metarhizium*** **..... (3.5 marks)**
   b) ***Conidiobolus*** **..... (3 marks)**
   c) ***Lecanicillium*** **..... (3 marks)**
   d) ***Epicoccum*** **..... (3 marks)**

**Best wishes**

**Prof. A. M. Moharram**

| Faculty of Science<br>Botany& Microbiology<br>Department | | كلية العلوم<br>قسم النبات والميكروبيولوجى |
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| Food Microbiology (498 B)<br>Time: Two hours<br>Total degree: 50 marks | Summer semester exam - the academic year 2018/2019<br>Fourth Level<br>Exam date: Monday, 02/09/2019 | |

**Answer all the following questions:**

**The first question:** Write briefly about **seven only** of the following: **(28 marks)**

1. Indicators of microbial food spoilage
2. Control of food spoilage by modified atmosphere
3. *Clostridium botulinum* and its role in food spoilage
4. The principles of Hazard Analysis Critical Control Points
5. Predominant microorganisms in water and how to control them
6. Bacteria as important microbes in food
7. Sources of microorganisms in food
8. The effect of hydrogen ion concentration on microbial growth in food
9. Benefit uses of filamentous fungi in food industry

**The second question:** Compare between **four only** of the following: **(12 marks)**

1. Nitrite and $H_2O_2$ as antimicrobial agents
2. Neurotoxin and enterotoxins
3. Canning and cooking
4. Freezing and refrigeration.
5. CAP, MAP and VP.

**The third question: Identify each of the following:** **(7 marks)**

Psychrotrophic Microbes - Food Spoilage - Extrinsic factors - Slime Producers - D- value - Foam-Drying - Radurization

**The fourth question:** **(3 marks)**

(a) Are obligate thermopiles a problem in storage at temperatures lower than 45°C? If not, why?

(b) In what conditions do mesophilic bacteria spoil canned foods?

Good luck

Dr Amal Danial

| Assiut university<br>Faculty of Science<br>Botany & Microbiology Department | | |
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| **Symbiosis Microbiology (Code: 496 B)** | | |
| **For Under Graduate Students ($4^{th}$ level)** | **Summer Semester 2018-2019** | **Time allowed :2 hours** |

## Answer the Following Questions (50 Marks)

**Question no (1): Complete the following sentence and put your answer only in a table (20 marks, one for each space)**

1. In ..... both species benefit, while in ..... both species are unaffected.

2. The inability of non-mycorrhizal plants to support mycorrhizal colonization may be due ....., ..... and .....

3. The development of hyphae between root cells to form highly branched structure called .....

4. ..... can degrade pectins and lignins making carbon compounds available for fungal growth during times of limited photosynthetic activity.

5. Orchid mycorrhiza formed complex hyphal coils within the host plant cells called .....

6. Protocorm is .....

7. Arbuscular mycorrhizal fungi release an unidentified diffusional factor, known as the myc factor, activates .....

8. The growth of endolitic lichens is ....., while epilitic is .....

9. The host plant of *Rhizobium meliloti* is ....., while *Bradyrhizobium japonicum* is .....

10. .....fixing 50-400 Kg N/ha/Y, while .....fixing 10-200.

11. In nodule formation, bacteria released from the infection thread into the cytoplasm of the host cells remain surrounded by the ..... which helps in .....

12. ..... located in the cytoplasm of the nodule cells representing 30% of total proteins and control the release of $O_2$ in the region of bacteroids.

13. In *Azolla* ..... involved in the transfer and uptake of metabolites from the fern to the prokaryote colony, and from this one to the plant.

**Look in the back**

**Question no (2): Compare in table between two only of the following.**
**(12 marks, 6 for each)**

1. Plant types according to the mycorrhizal colonization.

2. Ectomycorrhiza and endomycorrhiza.

3. Determinate and indeterminate nodules.

**Question no (3): Explain in details the steps with drawing if possible for three only of the following.**
**(18 marks, 6 for each)**

1. Actinorhizal plants nodule formation.

2. Reproduction in lichens.

3. Nodule development process in legumes plants.

4. Stages of arbuscular mycorrhiza formation.

*With My Best Wishes*

*Dr- Ghada Abd-Elmonsef Mahmoud*

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| Botany and Microbiology Department | Summer semester<br>Final exam. (2018-2019)<br>Analytical Instruments (Code : 453 B)<br>For Under Graduate students (4rd level)<br>Date: 5/9/2019<br>Time allowed 2 hours | Assiut University |

# Answer the following questions (with drawing)..... 50 marks

## I. Describe in details <u>two only</u> of the following..... (2×10 = 20 marks)

1. Three purposes (uses) of spectrophotometer.
2. (a) Factors affecting pH (b) Calibration of pH-meter.
3. Two types of Density Gradient Centrifugation

## II. Shortly explain <u>six only</u> of the following ..... (6×5 = 30 marks)

1. Producing a paper chromatogram
2. Thin layer chromatography
3. Microcentrifuges.
4. Atomic Spectrometers
5. Ratio of fronts (Rf).
6. Two types of Cuvettes used in spectrophotometry.
7. Advantages and disadvantages of double beam spectrophotometers
8. Henderson-Hasselbalch role in buffering solutions

*Best wishes*

*Dr. Ahmed Amro*

Lecturer in Botany and Microbiology Department

Assiut University
Faculty of Science
Department of Botany & Microbiology
جامعة أسيوط
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Microbiology Students, Level 4 — Final Exam Summer 2019

Actinomycetes (472 B) — Time allowed: 2 hours

**Answer the following questions:** (50 Marks)

**Q1. Complete 20 only of the following sentences:** (20 Marks)

1- Streptomycetaceae includes genera ..... ,..... and .....

2- *Streptomyces* ..... produces the antiparasitic drug ivermectin

3- The antibiotic ..... was the first to treat tuberculosis; whereas the first chemical synthezied antibiotic was .....

4- The ..... have been implicated for both direct and indirect enhancement of plant growth.

5-Some actinomycetes can form complicated structures, such as spore, ..... and ..... ....

6- The common scab in beet caused by .....whereas; actinomycosis caused by .....

7- Actinomycetes is a phylum of Gram ..... bacteria with high ..... content.

8-Reproductive hyphae are called ..... mycelia.

9-Tetracycline is ..... spectrum antibiotic produced by .....and .....

10- The septation of a hyphae occurs during ..... production and start with the formation of .....

11. The bacterial characteristics of actinomycetes are ..... , ..... .....

12-Actinomycetes ..... ,..... and ..... causing human diseases.

13- *Frankia* mode of life is ..... or symbiotic with ..... plants.

14- *Streptomyces* ..... has genome structure 6.3 Mbp, while *S. bingchenggensis* has the largest bacterial genome ..... Mbp.

15- The size of vegetative hyphae of *Streptomyces* range between ..... to ..... mm diameter

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16- *Streptomyces* ..... responsibles for a distinct soil odur and has ability to degrade large polymer such as ..... and .....

17- *Streptomyces* ..... produces Boromycin which effective against Gram ..... bacteria

18- *Streptomyces hygroscopicus* produces the natural herbicide .....

19- Streptomycetes produce anticancer ..... and .....

20- *Streptomyces endus* produces antibiotics ..... and .....

21- Neomycin belongs to the antibiotics class ..... and produced by .....

22- The cell wall of Mycobacterium tuberculosis contains ....., ..... and .....

23- $N_2$-fixation means .....

**Q2: Write with drawing <u>TWO</u> only of the following:** (10 Marks)

1- Life cycle of *Streptomyces*

2- Morphological structure of *Frankia*

3- Aerial spores arrangements of *Streptomyces*

**Q3: Write on <u>Five</u> only of the following:** (20 Marks)

A- Uses of streptomycin

B- Phosphate solubilization by actinomycetes

C- Industrial uses of *Corynebacterium*

D- General characters of streptomycetaceae

E- Ecological importance of *Frankia*

F- Fungal characteristics of actinomycetes

G- Classification of antibiotics according to their mode of action

*Best wishes*

*Dr. Naeima Yousef*