Faculty of Science Botany and Microbiology Dept.		كليه العلوم قسم النبات والميكروبيولوجى
Biotechnical Analysis (B453) Course: Time: 2 hours Marks:50 marks		2019/2020 Level: Fourth 4/1/2020

Answer the following questions

First Question: Complete the following sentences (5 marks) Only 5:-

1. Rotors can be classified into.....,.....and.....
2. .....buffer suitable for gel permeation and anion-exchange chromatography.
3. Factors affecting buffer pH are..... and .....
4. Centrifuge components are.....,.....and .....
5. The advantage of TLC in compared to PC, is .....and.....
6. The equation of Beer-Lambert law is.....

Second Question: Write the definition of the following (20 marks) only ten:-

1-Electromagnetic radiation 2-Eluate 3-Immobilized phase

4-Retardation Factor 5-Radioimmunoassay (RIA)

6-Immunoprecipitation 7-Absorption spectrum

8- Chromatogram 9- Gradient elution mode

10- Gas chromatography 11-Two way paper chromatography

Third Question: Write in details about (Only five) of the following:- (25 marks)

1- The different types of electromagnetic spectrum.

2- Ion Exchange Chromatography.

3- Molecular Exclusion Chromatography.

4- Different solutions used to remove the contamination from pH electrode.

5- Factors affecting solutes separation in CC.

6- Rate-zonal centrifugation and Criteria for successful.

Good luck **Dr/ Eman Aldaby**

Assiut University, Faculty of Science		Biological Control (B-499) Date: 23-12-2019
Department of Botany and Microbiology		Time allowed: Two hours Total Marks: 50

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Answer FIVE questions only:

1- Discuss the role of the following microbes in biocontrol of insect pests with special reference to their microscopic features and mechanism of infection by these microorganisms..... ..... (10 Marks)

a- *Beauveria bassiana*

b- *Metarhizium anisopliae*

2- Give labeled illustrations for each of the following: ..... (10 Marks)

a- *Conidiobolus coronatus* b- *Chaetomium globosum*

c- *Epicoccum nigrum* d- *Lecanicillium lecanii*

3- Describe with labeled drawings the different stages development during host infection by: ..... (10 Marks)

a- *Entomophthora muscae* on house flies.

b- *Bacillus thuringiensis* on caterpillars

4- Give an account of the following microorganisms focusing on their microscopic structure and the target hosts..... (10 Marks)

a- *Coelomomyces stegomyiae*

b- Paecilomyces lilacinus

5-- Describe the different trapping structures by which certain fungal species capture and consume nematodes..... (10 Marks)

6- Describe each of the following fungi mentioning their role in the biocontrol of plant diseases: ..... (10 Marks)

a- Trichoderma harzianum

b- Pseudomona fluorescens

c- Bacillus subtilis

d- Coniothyrium minitans

========== End of Questions ==========

Best wishes,,,,,,,,

Professor Ahmad M Moharram

Assiut University Faculty of Science Botany & Microbiology Department		
Soil Microbiology (Code: B491)		
For Under Graduate Students (4th level)	First Semester 2019-2020	Time allowed :2 hours

Answer the Following Questions (50 Marks)

Question no(1): Put true √ or false × in front of each statement and correct the wrong statements (20 marks. one for each)

1. Soil microbes play an important role in the biochemical cycling of elements in the biosphere where the essential elements undergo chemicals transformations ( )
2. The ideal soil (ideal for the growth of most plants) is being composed of 45% minerals, 25% water, 25% air, and 5% organic matter ( )
3. Soil organisms play important role in cementing / binding of soil particles ( )
4. Silt soil has particle size <0.002 mm ( )
5. Yeasts are the most abundant microorganisms in soil with many important functions ( )
6. *Pseudomonas* can only derive its energy by turning nitrite into nitrate, results in a gain of oxygen ( )
7. Actinomycetes are similar to bacteria and fungi, with characteristics linking them to both groups ( )
8. Streptomycin is used to treat tuberculosis and infections caused by certain bacteria and neomycin ( )
9. Bacteria are the only organism that can fix nitrogen ( )
10. Proteins are degraded to individual amino acids mainly by fungi, actinomycetes and *Clostridium* ( )
11. The biogeochemical process through which organic compounds are broken down to inorganic compounds or their constituent elements is known "Mineralization" ( )
12. Conversion of atmospheric nitrogen into hydrogen and nitrate by microorganisms is known as biological nitrogen fixation ( )
13. Nitrogenous fertilizers contribute only 60% of the total world requirement while biological nitrogen fixation contributes about 25 % of the earth's fixed nitrogen ( )
14. *Azotobacter, Pseudomonas, Achromobacter* are symbiotic (associative) nitrogen fixed bacteria ( )
15. *Entomophthora, Beauveria,* and *Metarhizium* used in the management of insect pests ( )
16. Hemicelluloses hydrolysis into soluble monosaccharide like glucose, galactose, mannose, xylose, arabinose ( )

Look in the back

17. Keratin degrading microorganisms are able to produce laccase, heme-peroxidases, manganese peroxidase and versatile peroxidase enzymes ( )

18. Sea dwelling bacteria (*Vibrio furnisii)* degrade the ocean chitin wastes ( )

19. Proteins are complex organic substances containing nitrogen, sulphur, and sometimes phosphorus in addition to carbon, hydrogen and oxygen ( )

20. Sulphate reduction to H_2S by sulphate reducing microorganisms occurred under aerobic conditions ( )

Question no(2): Discuss three only of the following **(15 marks. 5 for each)**

1. The processes of nitrogen cycle.

2. The role of microorganisms in degradation of pesticides and hydrocarbons.

3. Biogas production by microorganisms from agro-industrial wastes.

4. Phosphorus cycle in nature.

Question no(3): Illustrate the microbial degradation process (two only) of the following process
(15 marks. 7.5 for each)

1. Decomposition of cellulose by microorganisms.

2. Pectin hydrolysis by soil microorganisms.

3. Biodegradation of keratins by keratinolytic microorganisms.

With Our Best Wishes

Prof. Dr. Magdy M. K. Bagy

Botany and Microbiology Department	First semester Final exam. (2019-2020) Seed Biology (Code : 411 B) For Under Graduate students (4th level) Date: 5/1/2020	Time allowed 2 hours
		Assiut University

Answer the following questions ..... 50 marks

I. Describe in details 2 only of the following..... (2×10 = 20 marks)

1. Types of seed dormancy.
2. Hemicellulose and Rhaphinose as reserved food material of Endosperm.
3. Germination physiology (only diagrammatically).

II. Shortly explain 4 only of the following ..... (4×5 = 20 marks)

1. Tests of seed viability (two only).
2. Vivipary as special type of *Avicennia marnia* germination.
3. The major cell types of major grasses endosperm (diagrammatically).
4. Role of Lectins and Chitenase in seed self-defense.
5. Seed coat anatomy of Fabaceae (diagrammatically).
6. Dispersal strategies of some Asclepiadaceae and Asteraceae.

III. Define 5 only of the following ..... (5×2 = 10 marks)

1. Photodormancy
2. Myrmecochory
3. Autochory
4. Pre-harvest sprouting
5. Perisperm
6. Diplochory

Best wishes

Dr. Ahmed Amro

Lecturer in Botany and Microbiology Department

Faculty of Science Botany and Microbiology Dept.		كليه العلوم قسم النبات والميكروبيولوجى
Stress physiology (451B) Course: Time: 2 hours Marks:50 marks		2019/2020 Level: Fourth 22/1/2020

Answer the following questions

First Question: Complete the following sentences (11 marks):-

1. Ephemeral plants are .....
2. ..... is classified as pathogenesis-related proteins.
3. A well-developed aerenchyma in hydrophytes is type of.....
4. Salt stress inhibition of sucrose synthesis and promotes accumulation of .....
5. In leaves ..... localized to chloroplast and cytosol and not in the vacuoles.
6. When plants sense salt they respond by creating a ".....wave".
7. .....is the performance of the plant under the stress.
8. The response of plant to stress depending on.....,.....and.....
9. ..... prevention of random crystallization of proteins.
10. Plastic biological strains are .....while elastic are.....
11. Physiological drought is the .....

Second Question: Write short notes on the following (only five) (10arks):-

1-Adaptation 2-Acclimation 3- Saponins
4-Nitric oxide 5-Pytoalexins 6- phytochelatins

Third Question: Write in details of the following (Only six) (24 mark):-

1. Injures of flood to plant and the mechanism of resistance.
2. The negative effect of ozone on plant and the mechanism of resistance.
3. Hormones and four types
4. Responses to water stress
5. HSPS
6. Hypersensitive response
7. Jasmonate and its role in plant stress.

Good luck

Dr/ Eman Aldaby

First Semester Exam

2019-2020

Assiut University	**Palynology 431B**
Faculty of Science	**Time: 2 hours**
Botany and Microbiology Department	**Total score: 50 marks**

Q1: Give the scientific term for the following (10 marks):

1. The study of pollen and other palynomorphs for evidence at a crime scene.

2. The central body of saccate pollen grains.

3. Poles cannot be distinguished in individual spore after separation from tetrad.

4. Describing a pollen grain in which the exine is very thin or absent and the intine is thick, so that no specific apertural region can be distinguished.

5. A rounded ectoaperture situated at the distal or proximal pole of a pollen grain.

6. A distinctly delimited sexine structure that covers part of an ectoaperture completely isolated from the rest of the sexine.

7. A feature of ornamentation consisting of an elongated, irregular groove in the surface.

8. A ridge that is part of the ornamentation and, for example, separates the lumina in a reticulate pollen grain or the striae in striate pollen grain.

9. A specialized organelle inside tapetal cells for synthesis and storage of lipidic materials of the pollen coat with a plastid-derived origin.

10. The ratio of the distance between the apices of two ectocolpi of a zonocolpate pollen grain to its equatorial diameter.

Q2: Illustrate with diagrams only 3 of the following (15 marks):

1. Different types of tetrads.

2. Steps of microgametogenesis.

3. Sub-divisions of the pollen surface (Apo-, Meso-, and Inter-colpium/porium).

4. Pollen wall structure.

Q3: Discuss only 4 of the following (20 marks):

1. Shape and size of pollen grains.

2. Function of tapetum in pollen wall development.

3. Three mechanisms encouraging the cross pollination.

4. Common features of anemophilous flowers.

5. Pollen grains of gymnosperms

Q4: Give the meaning of the following codes according to the NPC-system (5 marks):

a. 111 **b.** 444 **c.** 700 **d.** 243 **e.** 564

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With my best wishes

Mostafa Aboulela