Faculty of Science Botany and Microbiology Department		كليه العلوم قسم النبات والميكروبيولوجي
Microbial Ecology (B494) Time: 2 hours 50 Marks		امتحان الفصل الدراسي الثاني العام الجامعي 2018/2017

Part I

A. Answer the following questions. (10 marks)

1. Nitrogen cycle.
2. Direct mechanisms of plant growth promoting rhizobacteria

B. Differentiate between: (Answer two only) (6 marks)

1. Producers, consumers and decomposers.
2. Microbiota and macrobiota (identification, examples and function).
3. Types of remediation (according to the site).

C. Put a mark (√) in front of the correct statement and a mark (X) in front of the wrong statement with error correction: (answer nine only) (9 marks)

1. CO_2 concentration and organic nutrient content decrease with the depth soil increase ( )
2. In worm areas, the release of nutrients into the soil is very quickly and fast than cooler areas ( )
3. Light is essential for all microorganisms present in soil ( )
4. Cation exchange capacity will increase as pH increases ( )
5. Atmospheric CO_2 is fixed into organic compounds by only plants. ( )
6. In assimilatory sulphate reduction, plants convert sulfur containing amino acid into sulfate. ( )
7. In natural soil, phosphorus in soil is available to plants in iron and calcium phosphates ( )
8. Xenobiotics are naturally-occurring compounds in the environment that are present in unnaturally high concentrations ( )
9. Air is a medium in which organism can grow ( )
10. Sulphate-reducing bacteria convert the sulfate to methane ( )

انظر خلفه

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10- The common scab in beet caused by .....whereas actinomycosis caused by .....

11. Actinomycetes assemble fungi in ..... and bacteria in .....

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

13- *Frankia* live ..... or symbiotic with ..... plants.

Q2: **Identify <u>Six</u> only of the following:** (6 Marks)

A- Diazotrophs B- Biostimulant C-Siderophores D-Antibiotics

E-Quorum sensing F- N_2-fixation G-Hydrolytic enzymes

Q3: Write with drawing <u>TWO</u> only of the following: (8 Marks)

1- *Streptomyces* life cycle

2- Morphological structure of *Frankia*

3- Mechanism of action of Streptomycin

Q4: Write on <u>Four</u> only of the following: (16 Marks)

A- Classification of antibiotics according to their mode of action.

B- The increasing resistance of pathogenic organisms against antibiotics.

C- Functions of siderophores.

D- Characterization of PGP actinomycetes.

E- Role of actinomycetes in the environment.

Best wishes Dr. Naeima Yousef

Assiut University
Faculty of Science
Department of Botany & Microbiology

جامعة أسيوط
كلية العلوم
قسم النبات والميكروبيولوجى

Microbiology Students, Level 4 — Final Exam 2018

Actinomycetes (472B) — Time allowed: 2 hours

Answer the following questions: (50 Marks)

Q1. Complete 11 only of the following sentences: (20 Marks)

1- Actinomycetes secrete organic acids or ..... to solubilize Phosphate.

2- Actinomycetes classified into ..... classes and ..... orders.

3-The morphology of actinomycetes have two types of radial mycelia, ... and .....

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-IAA produced in the dependent of .....

7- Actinomycetes is a phylum of Gram ..... bacteria with ..... G+C content.

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

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

باقى الأسئلة بالخلف

11- The enzymes required to obtain wall-free /naked protoplasts are

a) Cellulase and Proteinase b) Cellulase and Pectinase

c) Cellulase and Amylase d) Amylase and Pectinasé

Q2)* Write on <u>four</u> of the following:** ***(20 Marks)

a) Production of synthetic seeds
b) Advantages of different techniques in plant tissue culture
c) Production of virus free plants
d) Microspore culture
e) Ways of Germplasm

Q3)* Explain <u>two</u> of the following:** ***(10 Marks)

a) Callus - de-differentiation and cell division
b) Browning of cultured tissues
c) Epigenetic changes and somaclonal variation

Q4)* Write the scientific term for <u>ten</u> of the following** ***(10Marks)

a- Accumulation of water within the cultured tissues
b- Failure of the lateral branches to separate from the main stem during growth
c- Asexual reproduction by multiplication of genetically identical copies of individual plants
d- Fusion of isolated protoplasts to form a hybrid cell
e- The preservation of the genetic diversity of a particular plant or genetic stock for it's use at any time in future
f- 100% kill rate for bacteria, fungi, their spores, and viruses
g- The formation of abnormal callus-like growths, or tumors near the crown or base of the plant
h- The ability of a single cell to divide and produce all the differentiated cells in an organism
i- Mass of unorganized parenchyma cells derived from plant tissue for use in biological research and biotechnology.
j- The best plant part to initiate plant culturing, it could be one cell or number of cells.
k- The production of haploid plants by the induction of embryogenesis from repeated divisions of microspores or immature pollen grains

Good luck

Dr. Abeer Radi & Dr. Fatma Farghaly

Part II: Bacterial Symbiosis

A. Answer the following questions. Use well labeled diagrams where appropriate. **(12 Marks)**

1. Explain the infection process of *Agrobacterium* and discuss the function of Ti plasmid.
2. Illustrate the relationship between *Azolla-Anabaena azollae* and mention uses of *Azolla.*
3. Discuss how *Riftia pachyptila* fed depending on their endosymbionts bacteria.

B. Write short notes on: (answer two only) **(6 Marks)**

1. The signals from the host plants to bacteria during rhizobia-legume interaction.
2. Nitrogenase enzyme (function and structure).
3. Synthetic nitrogen fertilizer.

C. Put a mark (√) in front of the correct statement and a mark (X) in front of the wrong statement with error correction: (answer seven only) **(7 Marks)**

1. Commensalism is a relationship between one species benefits and the other is harmed in the process. ( )
2. The relationship between human and normal intestinal bacteria is a parasitism. ( )
3. *Frankia* synthesizes Nod factors in order to activate a plant to allow development of an infection thread in legume plant. ( )
4. leghemoglobin is synthesized only by rhizobia to facilitate an anaerobic environment for nitrogen fixation process. ( )
5. *Rhizobium* spp. whose nodulation functions (*nif, fix*) are encoded on their chromosome. ( )
6. *Vibrio fischeri* is colonizing bacteria can produce light at the high or low population density. ( )
7. *Buchnera aphidicola* is the primary symbiont of the pea aphid. ( )
8. Secondary symbionts can be transmitted horizontally to new hosts. ( )

With best wishes

Dr. Shymaa Ryhan

Assiut University

Faculty of Science

Botany&Microbiology Department

Second Semester May , 2018

The time allowed: 2 hours

Total marks: 50 Marks

Course Code: 496 B

Part I: Fungal Symbiosis

1. Write short notes on: (Answer 5 only) (15 marks)

A. Vesicles development of AM fungi.
B. Structure characteristics of Ectendomycorrhizal fungi.
C. Orchid mycorrhizae.
D. Arbuscules development.
E. Sources of mycorrhizal hyphae that penetrate the epidermal root cells.
F. Reproduction of lichen.
G. Mantle.

2. Differentiate between: (Answer 2 only) (5 marks)

A. Foliose and fructicose.
B. Arbutoid and monotropoid mycorrhizas.
C. Stages of AMF life cycle.

3. Put (√) or (x) and correct the false sentences: (5 marks)

A. Root colonization brings about the symbiotic interaction and dependent on the survival of fungal propagule.
B. Colonization of seed embryo by fungal hyphae is the main features of orchid mycorrhizae.
C. All fungal species involved in the ectomycorrhiza symbiosis belong to families in the Basidiomycotina.
D. Ericoid mycorrhizal plants characterized by formation hair roots.
E. Lichen causes air pollution.

With My Best Wishes

Dr. Nivien Allam

Part II

Answer all the following questions:

The first question: Write short notes about **four only** of the following: **(12 marks)**

1. *Salmonella* in foodborne infection
2. Control of microorganism in food by cleaning and saintation removal
3. The principles of Hazard Analysis Critical Control Points
4. Important Factors in Microbial Food Spoilage
5. General characteristics of food poisoning

The second question: **Compare between two only of the following:** **(5 marks)**

1. Vacuum packaging and gas flushing
2. Neurotoxin and enterotoxins
3. D, Z and F-values

The third question: **put (√) or (x) sign in front of each of the following, and then correct the wrong one:** **(8 marks)**

1. Fermentation by some microorganisms can lead to food preservation instead of food spoilage. ( )
2. Bacteria are more sensitive than most fungi to spices. ( )
3. Microorganisms can be eliminated from, or reduced by, ethylene oxide sterilization. ( )
4. Ultraviolet radiation is used to control populations of microorganisms on the surfaces of laboratory and food-handling equipment, but it does not penetrate food. ( )
5. All food-borne diseases are associated with poor clean practices. ( )
6. Those most susceptible to E. coli O157:H7 are the young. ( )
7. Baked potatoes served in aluminum foil can provide a unique environment for disease-causing microorganisms. ( )
8. Many microorganisms in fermented dairy products stabilize the bowel microflora, and some appear to have antimicrobial properties. ( )

Good luck

Dr./ Amal Danial

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٢- فى جدول وضح عدد الاشكال المظهرية و الطرز الوراثية لصفه يحكمها ٣ اليلات مختلفة فى الحالات التالية: حالة سيادة تامة ، حالة سيادة مشتركة ، و حاله خليطة من السيادة التامة و المشتركة (كما فى مجاميع الدم)؟ (ثلاث درجات)

السؤال الثالث(١٥ درجة موزعه بالتساوى على نقاط السؤال) . أجب فقط على ثلاث نقاط

١- قد تكون العشائر مختلفة في تكرارات الطرز الوراثية ولكن لها نفس التكرار الأليلي. فسر ذلك

٢- ما فرق بين معامل التربيه الداخلية F و معامل التربية العشائرى f ؟ و ما هو الاثر الضار للتربية الداخلية؟

٣- ما الفرق فى وصول العشيرة الى الاتزان فى حالة موقع جسمى واحد و موقعين جسمين مستقلين و موقع مرتبط بالجنس؟

٤- عرف التدفق الجينى؟ و كيف يحدث؟ و ما هى الاثار الوراثية المرتبطة به؟

٥- اذكر فقط الشروط الواجب توافرها لاتزان العشيرة؟

انتهت الاسئله....مع اطيب الامنيات بالتوفيق

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	امتحـــان الفصل الدراســـــي الثانى للعـــــام الجامعـــي 2017-2018	جامعة أسيوط

القسم الذي يقدم المقرر: الوراثة — كلية العلوم — الفرقة: المسنوى الرابع

اسم المادة: (٢.ع ز) وراثة العشائر — الزمن: ساعتان

لجنة الممتحنين: أ.د/ جمال ابراهيم أحمد — د/ أحمد عاطف سلام

السؤال الاول: (٢٥ درجة موزعه بالتساوى على نقاط السؤال)

العشيرة	AA	Aa	aa	N
1	50	20	30	100
2	20	20	5	45
3	562	375	63	1000

١- اختبر مدى اتزان العشائر التالية وإذا لم تكن متزنة احسب تكرارات الاتزان

٢- اذا هاجرت ٤٠% من الافراد من **العشيرة الاولى** الى **العشيرة الثالثة**. ما عو تكرار الاليل المتنحى بعد هجرة و احسب التغير فى تكرار الاليل السائد بعد الهجرة

٣- **فى العشيرة الثالثة**: اذا كان الانتخاب ضد الافراد المنتحية بمعامل انتخاب 0.9 . ما هو تكرار الاليل المتنحى بعد **جيل واحد** من الانتخاب و احسب التغير فى الطرز الوراثية الاصيلة؟

٤- اذا كان معدل طفور الاليل A الى الاليل a يساوى 0.5×10^{-6}و معدل الطفور العكسى 0.25×10^{-7} فى **العشيرة الثانية**. احسب معدل التغير فى تكرار الاليل السائد بعد الطفرة؟.

٥- اى من تللك العشائر تعتبر مرباه داخليا؟

السؤال الثانى (١٠ درجة درجات)

١- لسلسة الأليلات المتعددة للون فراء الأرانب كان إتجاه السيادة :

C → h → a

ألبينو هيمالايا ملون

في عشيرة عشوائية التزاوج ، كانت الأعداد المشاهدة على النحو التالي :

Colored	Himalayan	albino
300	180	100

احسب **الأعداد المتوقعة** من كل فئة من الفئات المظهرية . (٧ درجات)؟

أنظر خلفة