الإمتحان النظري للفصل الدراسي الثاني
للعام الجامعي 2018- 2019

القسم الذي يقدم المقرر: قسم الوراثة الفرقة: الرابعة - ساعات معتمدة – كلية العلوم الزمن: ساعتان

اسم المادة وكودها: وراثة (402) وراثة العشائر لجنة الممتحنين: د./ محمود أبوالسعود الراوي

السؤال الاول: (15 درجة)

1- اختبر مدى اتزان العشائر التالية وإذا لم تكن متزنة احسب تكرارات الاتزان. (10 درجات)

2- هل يوجد فرق بين التكرارات الأليلية في العشيرتين اذا علمت ان قيمة $t_{(0.05)}$ الجدولية 1.96. (5 درجات)

العشيرة	AA	Aa	aa	N
1	285	115	100	500
2	562	375	63	1000

السؤال الثاني: (15 درجة)

تم تمييز 500 فرد من أفراد عشيرة ما بالنسبة لموقعين A ، B فكانت أعداد الأفراد على النحو التالي :

$$Z_0 = \begin{array}{|ccc|c} BB & Bb & bb & \\ \hline 18 & 24 & 8 & AA \\ 36 & 48 & 16 & Aa \\ 126 & 168 & 56 & aa \end{array}$$

1- احسب التكرارات الجاميطية الناتجة من Z_1. (5 درجات)

2- أحسب قيمة D بعد ثلاثة اجيال من التزاوج العشوائي. (5 درجات)

3- اكتب مصفوفة كل من الجاميطات والتراكيب الوراثية عند الاتزان. (5 درجات)

السؤال الثالث: (10 درجات)

الجدول التالي يوضح تكرار التراكيب الوراثية لصفة مرتبطة بالجنس أنقل الجدول في كراسة الإجابة ثم أكمل مكان النقط.

	الإناث					الذكور				
	التكرار الاليلي		تكرارات التراكيب الوراثية			تكرارات التراكيب الوراثية		التكرار الاليلي		
الجيل	p	q	AA	Aa	aa	A	a	r	s	q - s
G_0	.....	.....	0.70	0.20	0.10	0.30	0.70	.....	.....	.....
G_1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
G_2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
G_∞	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

السؤال الرابع: : (10 درجات)

في العشيرة التالية اذا علمت أن الانتخاب يزيل الأفراد aa تماماً جيلاً بعد جيل.

التراكيب الوراثية	AA	Aa	aa
تكرارات التراكيب الوراثية	0	1	0

1- إحسب التكرار الأليلي بعد ثلاثة أجيال من الانتخاب. (5 درجات)

2- إحسب عدد الأجيال اللازمه لخفض التكرار الأليلي إلي العشر. (5 درجات)

نتمني لكم التوفيق،،،،،

د. محمود الراوي

Faculty of Science Botany& Microbiology Department		كلية العلوم قسم النبات والميكروبيولوجى
Food Microbiology (498 B) **Time: Two hours** **Total degree: 50 marks**	**Second semester exam - the academic year 2018/2019** **Fourth Level** **Exam date: Thursday, 13/06/2019**	

Part (1)

Answer all the following questions:

The first question: Write short notes about **four only** of the following: **(16 marks)**

1. Food preservation inhibiting principles.
2. *Escherichia coli* food borne infection.
3. Control of microorganisms by reducing O–R.
4. Microbial attachment to food and equipment surfaces.
5. Clostridium botulinum and Foodborne Illness

The second question: put (√) or (x) sign in front of each of the following, then correct the wrong one: **(9 marks)**

1. Spoilage means a food is unsafe to eat. ( )
2. The internal part of meat is usually very low in microbes. ( )
3. Aquaculture fish will have less bacterial load than wild caught. ( )
4. Proper cooking can prevent scombroid poisoning. ( )
5. Physical methods of food preservation are rarely used today. ( )
6. An organism with a high D value is resistant to heat. ( )
7. Freezing will destroy toxins. ( )
8. The target microorganism in canning is *Lactobacillus bulgaricus*. ( )
9. The time required to kill microorganism at a given lethal temperature is known as Z value. ( )

Good luck

Dr./ Amal Danial

Part (2)

(A) Write on only four of the following questions. **(20 Marks)**

1- Discuss the criteria used to select a microorganism for beneficial purposes in foods

2- Redox Potential and microbial growth in food

3- predominate microorganisms in foods of animal and birds origin and how to control it

4- Internal and external sources of microorganisms in foods of plant origin

5- Normal Microbiological quality of vegetables, fruits and nuts

(B) Choose the correct answer: **(5 marks)**

1- **Which of the following is NOT an intrinsic factor affecting the growth of microbes in food?**

a) Nutrients content of food b) water activity of food

c) pH of food d) Temperature of food

2- **The level of microbes in dust and air are Not controlled by…….**

a). the degree of humidity b) temperature

c) resistance of microbes to drying. d) water activity

3- ***Kluyveromyces marxianus*** **can ferment ……..and produce ethanol**

a) Pentoses b) Glucose

c) Lactose d) Fructose

4- ***Aspergillus oryzae*** **is used in……**

a) fermentation of oriental foods, such as sake b) production of citric acid

c) ripening of Roquefort d) production of gluconic acid

5- **Vitamin C is now produced by ……. using cheese whey**

a) Bacteria b) Yeasts

c) Filamentous fungi d) viruses

Good luck

Dr/ Maysa M. A. Ali

	Final- Term Exam 2019	
Botany & Microbiology Department	**Plant tissue culture (454 B) Credit hours**	**Time: 2 hours**

Q1) Choose the correct answer: ***(15 Marks)***

1-To produce plants that are homozygous for all traits, the best choice is

a) Cell suspension culture
a) Callus culture
b) Anther / pollen culture
c) Plant organ culture
d) Protoplast culture

2-The capability of any living cell of a plant in genergating an entire new plant is called as,

a) Regeneration
b) Totipotency
c) Embryogenesis
d) None of the above

3- A(*n*) _____ is an excised piece of leaf or stem tissue used in micropropagation.

a) Microshoot
b) Medium
c) Exptant
d) Scion

4- Protoplasts can be produced from suspension cultures, callus tissues or intact tissues by enzymatic treatment with

a) Cellulotyic enzymes
b) Pectolytic enzymes
c) Both cellulotyic and pectolytic enzymes
d) Proteolytic enzymes

5- In plant tissue culture, which of the following shows totipotency?

a) Meristem
b) Sieve tube
c) Xylem vessel
d) Collenchyma

6- The culturing of cells in liquid agitated medium is called

a) Liquid culture
b) Micropopagation
c) Agar culture
d) Suspension culture

7- The production of secondary metabolites require the use of

a) Protoplast
b) Cell suspension
c) Meristem
d) Auxillary buds

8- Variation in in-vitro culture is called as

a) In vitro variation
b) Mutation
c) somaclonal variation
d) all of these

9- Which of the following is best suited method for production of virus free plants

a) Embryo culture
b) Meristem culture
c) Ovule culture

d) Anther culture

10- Hormone pair required for a callus to differentiate are

a) Auxin and cytokinins
b) Auxin and ethylene
c) Auxin and abscissic acid
d) Cytokinins and gibberellins

11- The problem of necrosis and gradual senescence while performing tissue culture can be overcome by

a) Spraying auxins
b) Spraying cytokinins
c) Suspension culture
d) Subculture

12- DMSO (Dimethyle sulfoxide) is used as

a) Gelling agent
b) Alkayting agent
c) Chelating agent
d) Cryoprotectant

13- Callus is

a) Tissue that forms embryo
b) An insoluble carbohydrate
c) Tissue that grows to form embryoid
d) Un organized actively dividing mass of cells maintained in cultured

14- In tissue culture medium, the embyroid formed from pollen grains is due to

a) Cellular totipotency
b) Organogenesis
c) Double fertilization
d) Test tube culture

15- Most plant tissue cultures are initiated from

a) Calli b) Explants c) Plantlets d) Protoplasts

16- The production of haploid plants by the germination of young pollen grains inside the anther is called as,

a) Androgenesis c) Microsporogensis
b) Haploidy d) None of the above

Q2) Write note on <u>three</u> of the following: ***(15 Marks)***

a) Browning of cultured tissues
b) Production of virus free plants
c) Fasciation and tissue proliferation
d) Usefulness of suspension cultures

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

a) Organogenesis
b) Steps of micropropagation
c) Somatic hybridization

Q4) Clarify <u>two</u> of the following: ***(10 Marks)***

a) Conservation of germplasm
b) Production of synthetic seeds
c) Somatic embryogenesis

Good luck Dr. Abeer Radi & Dr. Fatma Farghaly

Assiut University
Faculty of Science
Department of Botany & Microbiology

جامعة أسيوط
كلية العلوم
قسم النبات والميكروبيولوجى

Microbiology Students, Level 4 — Final Exam 2019

Actinomycetes (472B) — Time allowed: 2 hours

Answer the following questions: (50 Marks)

Q1. Complete 10 only of the following sentences: (10 Marks)

1- The species ..... shows fragmenting substrate mycelia and limited ..... mycelia.

2- The antibiotic ..... was the first to treat tuberculosis; whereas the first chemical synthesized antibiotic was .....

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

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

5- Reproductive hyphae are called ..... mycelia.

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

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

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

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

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

11- Streptomycetes produce anticancer ..... and .....

Q2: Identify Six only of the following: (6 Marks)

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

E-Arthrospores F- N_2-fixation G- Chemotaxonomy

باقى الأسئلة بالخلف

Q3: Write with drawing TWO only of the following: (8 Marks)

1- *Streptomyces* life cycle

2- Morphological structure of *Frankia*

3- Ultra structure of aerial spores of *Streptomyces*

Q4: Write on Four only of the following: (16 Marks)

A- Actinobacteria as helper bacteria.

B- fungus-like characteristics of actinomycetes

C- Uses of streptomycin

D- Comparison between *Kitasatospora* and *Streptacidiphilus*

E- Differentiation of the genus *Streptomyces* from other genera of streptomycetaceae

Q5: Complete the following table: (10 Marks)

***Streptomyces* sp.**	**Bioactive compounds**
S. hygroscopicus	Natural herbicide .....
S.	Antibiotic neomycin
S. endus	Antibiotics ..... and .....
S.	Antibiotic erythromycin
S. virginiae	Antibiotic .....
S.	Antibiotic streptomycin
S. venezuelae	Antibiotic .....
S.	Antiparasitic drug ivermectin
S. rimosus	Antibiotic .....
S.	Jasmenic acid

Best wishes

Dr. Naeima Yousef

Faculty of Science Botany and Microbiology Department		كليه العلوم قسم النبات والميكروبيولوجي
Symbiosis Microbiology (B496) 2 hours 50 Marks		امتحان الفصل الدراسي الثاني العام الجامعي 2019/2018

Part I: Fungal Symbiosis (25 Marks)

1. Write short notes on: *(Answer 4 only)* (8 marks)

   A. Development of intraradical hyphae of AM fungi.
   B. Lichen thallus.
   C. Life cycle of AM fungi.
   D. Structure characteristics of ectomycorrhizal fungi.
   E. Sources of mycorrhizal hyphae that penetrate the epidermal root cells.

2. Discuss the function of the following: *(Answer 4 only)* (8 marks)

   A. Vesicles.
   B. Orchid mycorrhizas.
   C. Extraradical mycelium of AM fungi.
   D. Lichen.
   E. Mantle.

3. Differentiate between: *(Answer 2 only)* (4 marks)

   A. Foliose and fructicose.
   B. Arbutoid and monotropoid mycorrhizas.
   C. Apothecia and soredia.
   D. Arum and paris type of arbuscules.

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

   A. Facultative mycorrhizal plants are not dependent on the fungus for phosphorus nutrition.
   B. Ericoid mycorrhizal plants involve the colonization of epidermal cells followed by the formation of hyphal complex in each colonized cell.
   C. After Hartig net formation in ectendomycorrhiza, vesicles develop in epidermal and cortical cells.
   D. The formation of the first pelotons occurs after seed germination.
   E. Isidium is a small outgrowth of lichen thallus and mean of asexual reproduction.

With My Best Wishes Dr. Nivien Allam

Part II: Bacterial Symbiosis (25 Marks)

A. Answer the following questions. Use well labeled diagrams where appropriate. **(15 Marks)**

1. Explain in details the signal dialogue between *Rhizobium* and legume plants.
2. Discuss the relationship between the human and bacteria that live normally in its gastrointestinal tract.
3. Illustrate the relationship between pea aphids and *Buchnera aphidicola*.

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

1. *Vibrio fischeri*
2. Quorum sensing.
3. *Frankia*

C. Put a mark (√) in front of the correct statement and a mark (X) in front of the wrong statement with error correction: (answer four only) **(4 Marks)**

1. *Riftia pachyptila* depend in their nutrition on the algae that present in water. ( )
2. Mutualism is a relationship between one species benefits and the other is relatively unaffected in the process. ( )
3. Skin Microflora compete for nutrients, niches, and receptors. ( )
4. Application of chemical N fertilizer is the most suitable solution to overcome on the N request in agriculture. ( )
5. *Wolbachia* can be considered only as a parasitic organism. ( )

With best wishes

Dr. Shymaa Ryhan

Final Examination

Ecology of Xerophytes and Halophytes
Course No.: 442B
Time allowed: 2 hours

Department of Botany & Microbiology
50 Marks
2nd Semester 2018/2019
4th Level (Special Botany)

Answer the following questions:

Question 1: **3 x 6= 18 Marks**

a) What Warming was meaning by psammophytes? Account its characters.

b) Discuss the role of secretion in regulation of the plant internal ions.

c) Briefly write about the morphological adaptation of xerophytes.

Question 2: **4 x 2 = 8 Marks**

- Define the reasons from the following adaptations (Answer 4 points):

a) High root: shoot ratio.

b) Higher secretion rates during the night than during the day.

c) Succulence. How does it develop?

d) Small and vertical leaves.

e) Sunken stomata.

Question 3: **3 x 4 = 12 Marks**

- Compare between (Answer 3 points):

a) Arido-passive and arido-active plants.

b) Slow- and fast-germinating seeds of some xerophytes.

c) Hysteranthus and synanthus geophytes.

d) CO_2 concentrating mechanism in C4 or CAM plants and salt secreting halophytes.

Question 4: **3 x 4 = 12 Marks**

- Write briefly on three only of the following:

a) Classification of halophytes according to their capacity of salt tolerance.

b) Water use efficiency and physiological adaptation of CAM plants.

c) Why C4 and CAM plants are more distributed in dry and hot regions.

d) Drought evaders (or ephimerals) and true xerophytes.

Good Luck

Prof. Dr. Taha Ramadan

Faculty of Science Botany and Microbiology Department		كليه العلوم قسم النبات والميكروبيولوجي
Microbial Ecology (B 494) 2 hours 50 Marks		امتحان الفصل الدراسي الثاني العام الجامعي 2019/ 2018

Part I (25 Mark)

A. Answer the following questions. (10 marks)

1. Sulfur cycle.
2. Soil microorganisms and their role in the soil.

B. Write short account on 3 only of the following: (9 marks)

1. Ammonification and nitrification
2. Organic phosphate solubilization
3. Microbial degradation of feathers
4. Species richness and species abundance

C. Put a mark (√) in front of the correct statement and a mark (X) in front of the wrong statement with <u>error correction</u>:

(6 marks)

1. Ecosystem is populations of species plus their habitat or environment. ( )
2. Biodegradation involves complete mineralization of a wide variety of contaminants. ( )
3. Phosphorus in soil is available to plants in organic form. ( )
4. Biofertilizer contains only organic compounds which directly increase soil fertility. ( )
5. Production of antibiotics is considered one of direct mechanisms of biofertilizer. ( )
6. Aggregation of soil particles affects on movement of water and availability of oxygen ( )
7. The factors affecting on bioremediation is the presence of microorganisms in the soil. ( )

انظر خلفه

Part II (25 Marks)

Question no(1): Define each of the following and put your answer in table (8 marks)

1	Resident flora	2	Probiotic	3	Mutualism	4	Barophilic
5	Ammensalism	6	Guilds	7	Picoplankton	8	Allelopathy

Question no(2): Put true √ or false × in front of each sentence and correct the wrong answers (8 marks)

1. Nails, skin and eyes represents a sterile parts of human ( )
2. Nanoplankton size between 20 and 200 μm including diatoms and larvae ( )
3. Pleuston and Neustons are organisms that living in the bottom zone of water ( )
4. Bacteria account for up to 1/3 of the faeces mass ( )
5. Healthy human bladder contains *E. coli* and *Proteus* ( )
6. Lotic are slow moving water like ponds and lakes ( )
7. Opportunistic pathogens not cause a disease in healthy individuals ( )
8. Species abundance represents the proportion of each species in an ecosystem ( )

Question no(3): Write short notes on three only of the following (9 marks)

1. Advantages and disadvantages of human normal flora.
2. Formation of dental plaque.
3. Factors affecting on the growth of water microorganisms.
4. Determination of water quality using MPN.

Best Wishes

Dr. Shymaa Ryhan ***Dr. Ghada Abd-Elmonsef***

Assiut University

Faculty of Science, Botany and Microbiology Department

First Term Examination: 2018 – 2019 , Fourth Level :

Special Botany Subject : Secondary Plant Metabolism

(B 452) Time Allowed: 2 hours

==========

EXAM. 4 PAGES

FIRST - Write on : (24 marks)

1- Mevalonic acid pathway of the synthesis of 5-C units of terpencs from acetyl-CoA in plants.
2- Physiological role of akJaloids in plants•
3- Biological Functions of phenolic compounds occur in plants as secondary metabolits

SECOND - Read carefully and choose the write correct answer on your paper for at least 26 questions: (26 marks).

1- Organic compounds produced by some plants of certain genera and families which are not in manistream of metabolism and appear to have no direct function in growth and development of plants and appear to have no

direct function in growth and developmentof plants are called as,

(a) secondary metabolites (b) secondary plant products
(c) natural products (d) all of above

2. Which of the following are not examples of secondary plant products?

(a) Fats and hemes . (b) Alkaloids
(c) Lignins and tannins (d) Essen ial oils, steroids and rubber

3. Secondary plant products are of great importance in commence in making,

(a) medicinal drugs (b) poisons (insecticides)
(c) flavours and perfumes (d) all of above

4- Which of the following organic compounds are not plant phenolics?

(a) Lignins (b) Tannins (c) Essential oils (d) Flavonoids

5- Which of the following pathway is not involved in secondary carbon metabolism in plants?

(a) Mevalonic acid pathway (b) Pentose phosphate pathway
(c) Malonic acid pathway (d) Shikimic acid pathway

6- The fundamental 5-C unit of terpenoids (i.e., isoprene) has,

(a) branched carbon skeleton (b) unbranched carbon skeleton
(c) ringed carbon skeleton (d) none of the above

7- Sesquiterpene contains,

(a) 10 carbons (b) 15 carbons (c) 20 carbons (d) none of the above

8- Isoprene units are synthesized ill plants from acetyl-CoA through,

(a) malonic acid pathway (b) shikimic acid pathway
(c) mevalonic acid pathway (d) all above

9 - Which of the following statements is not correct?

(a) All organic compounds containing nitrogen and heterocyclic ring are alkaloids

(b) Alkaloids are bitter in taste and soluble in most of organic solvents

(c) Most alkaloids are colourless, crystalline non-volatile solids and are optically active

(d) Many alkaloids exhibit important pharmacological properties.

10 - Which of the following alkaloids does not contain nitrogen in heterocyclic ring?

(a) Narcotine (b) Ephedrine (c) Morphine (d) Quinine

11- In plants, alkaloids usually accumulate in,

(a) young actively growing parts (b) epidermal and hypodermal cells (c) bundle sheaths and latex vessels (d) all of above

12- In tobacco plant, nicotine is synthesized in,

(a) leaves (b) stems (c) roots (d) all of above

13- An alkaloid which is known to inhibit mitotic spindle formation in cells is,

(a) colchicine (b) coniine (c) quinine (d) none of the abvoe

14 - which of the following alkaloids is not synthesized in opium poppy?

(a) Morphine (b) Thebaine (c) Codeine (d) Atropine

15 - An example of indole alkaloids is,

(a) pilocarpine (b) reserpine (c) papaverine (d) all of above

16 - Approximately how many alkaloids have been isolated from plants so far?

(a) 500 (b) 1000 (c) 2000 (d) 3000

17 - Terpenoid containing alkaloids (sterol alkaloids) occur in plants in combination with.

(a) Carbohydrates (b) Proteins c) both (a) and (b) (d) none of the above

18 -Most important function of alkaloids in plants appears to,

(a) act as growth hormone (b) provide protection against predators

(c) to attract animals for pollination (d) none of the above

19 - The basic carbon skeleton of flavonoid is,

(n) C6 – C3 – C6, (b) [C6 – C3 – C6]n (c) [C6 – C3]n (d) c6, - C2 – C6

20 - How are flavonoids synthesized in plants?

(a) By mevalonic acid pathway (b) By malonic acid pathway

(c) By shikimic acid pathway (d) by both (a) and (b)

21 - Which one of the following is not a simple plant phenolic?

(a) Caffeic acid (b) Salicylic acid (c) Abietic acid (d) Ferulic acid

22 - Which of the following is building block of lignins? .

(a) Coniferyl alcohol (b) Sinapyl alcohol

(c) p-Coumaryl alcohol (d) All of above

23 - Primary function of lignin• in plants is,

(a) to provide mechanical support to plant

(b) to provide protection from physical, chemical and biological attack (c) both (a) and (b) (d) none of the above

24- Flavonoids are phenolic compounds that contain,

(a) 15 - C (b) 10 - C (c) 30 - C (d) none of the above

25 -Which of the following is not an important monoterpene component of conifer resins?

(a) Myrcence (b) Menthol (c) a -Pinene (d) Limonene

26 -Essential oils such as peppermint oil produced by nowering plants have,

(a) insects repelling property (b) insects attracting property
(c) insecticidal property (d) none of the above

27 -Monoterpene esters called pyrethroids, which occur in leaves and flowers of Cll1Y-santhemum are used on commercial scale in making,

(a) perfumes (b) medicinal drugs (c) insecticides (d) all of above

28 - Gossypol, which is found in cotton plants and provides resistance to insects, fungal and bacterial pathogens is a,

(a) monoterpene (b) sesquiterpene (c) diterpene.
(d) sesquiterpene dimer Abietic

GOOD LUCK Prof.Dr. M. A. ZIDAN

M. Azida