

Assiut University
Faculty of Science
Department of Botany & Microbiology



جامعة أسيوط
كلية العلوم
قسم النبات والميكروبيولوجي

Food Microbiology & Biotechnology (406B)
4th level (Biotechnology Students)

Final Exam: 18th May 2025
Time allowed: 2 hours

Answer the following: (50 Marks)

Q1: Identify 10 only of the following: (15 Marks)

- | | |
|---------------------------|---------------------------------|
| a-CRISPR | b-Foodborne pathogenic bacteria |
| c-Epigenetics | d-DNA methylation |
| e-RNAi | f-Food spoilage |
| g-Pasteurization | h-Chromatin remodeling |
| i-Salmonellosis | j-Bacteriocin |
| k-fermented meat products | l-Listeriosis |

Q2: Write on 7 only of the following: (35 Marks)

- 1-Biogenesis of miRNA
- 2- CRISPR-Cas9 mode of action
- 3-Mechanism of siRNA
- 4-Delivery of siRNA
- 5-Causes of food spoilage
- 6-*E. coli* O157-H7 as foodborne bacteria
- 7-*Salmonella* as foodborne bacteria
- 8-Benefits of probiotics
- 9-Mechanism of probiotics as antimicrobial

Best wishes Prof. Naeima Yousef



Assiut University
Biotechnology
Faculty of Science
Department: Botany & Microbiology
Course Title: FUNGAL BIOTECHNOLOGY
Total Degree: 50 marks June 2025

Academic Program: Plant & Microbial
Studying Year: 2024/ 2025
Course Code BT 303
Second semester
Allowable Time: Two hours

- Q I. Briefly explain only five of the following: (20 marks, 4 for each one)**
1. The role of fungal biotechnology in the production of commercially recombinant enzymes.
 2. The process of obtaining improved fungal strains using the classical approach.
 3. Basic requirements of the production organism that must be considered during metabolic engineering strategies.
 4. Insulin production by yeast.
 5. Factors affecting the production of lovastatin using *Aspergillus terreus*.
 6. Mechanism of action of L-asparaginase as an anticancer.
- Q II. What are the advantages of only three the following? (9 mark, 3 for each)**
1. Production and use of cephalosporin instead of penicillin.
 2. Improving the fungal strain used in industry.
 3. Use of cold-adapted fungal lipase in industries.
 4. Using fungal L-asparaginase in the food industry.
- Q III. Choose the correct answer from the following answers: (8 marks, 2 for each)**
- 1- The unit of production yield from using a raw material is (g/L, g/L/h, g/g).
 - 2- The fast-acting insulin analogue named (EMP insulin, insulin aspart, insulin detemir).
 - 3- Penicillin is precipitated from the fermentation medium using (ethyl acetate, formalin, charcoal).
 - 4- Type I L- asparaginases are produced by fungal strain in the (cytosol, periplasmic spaces, extracellular).
- Q IV. Put a cross (✓) in front of the correct sentence and a cross (x) in front of the incorrect sentence of the following: (8 marks, 2 for each)**
- 1- Wild-type fungal strains cannot synthesize the preferred products at an industrial scale.
 - 2- The mechanism of action of beta-lactam antibiotics is to disrupt the structure of the bacterial cell membrane.
 - 3- Using a slowly metabolized carbon source is very effective in obtaining high amounts of lovastatin.
 - 4- Most of the fungal enzymes used in the detergent, food, and starch processing industries are recombinant products.
- Q V. Define each of the following (5 mark, 1 for each)**
Functional genomics, induced mutation, Microbial cell factory, Human insulin EMP, GRAS.

Good Luck...

Prof. Dr.: A. A. Zohri



Final Exam
2024-2025



Assiut University

Flora 334B

Faculty of Science

Time: 2 hours

Botany and Microbiology Department

Total score: 50 marks

Q1: Choose the correct answer (15 marks):

1. A scientist described lotus and papyrus from Egypt.
A) Forsskål B) Boissier C) Delile D) None of the above
2. The most widespread family in the flora of Egypt is.....
A) Asteraceae B) Brassicaceae C) Fabaceae D) None of the above
3. The phytogeographical regions in Egypt are divided into..... regions
A) 5 B) 6 C) 7 D) None of the above
4. *Rhizophora mucronata* is a plant of habitat.
A) Nile B) Mediterranean C) Red Sea D) None of the above
5. *Halocnemum strobilaceum* may grow in
A) Mediterranean B) Red Sea C) A & B D) None of the above
6. The fern plant *Ophioglossum polyphyllum* grow in Egypt in
A) Gebel Elba B) Mediterranean C) Red Sea D) None of the above
7. can be used for oil production
A) *Brassica nigra* B) *Ricinus communis* C) *Calotropis procera* D) All of the above
8. is among the plants of orchards.
A) *Achillea santolina* B) *Carthamus glaucus* C) *Centaurea alexandrina* D) None of the above
9. *Thymelaea hirsuta* is a plant of
A) Coastal sand dunes B) Rocky ridges C) Salt marshes D) None of the above
10. includes the area North of Wadi Tumilat (east of the Delta) and the North plateau of Sinai extending from El-Tih Mountains to the Mediterranean coast.
A) Arabian Desert B) Isthmic Desert C) Galala Desert D) None of the above
11. The number of species in makes up about 50% of the total plants of the Egyptian flora.
A) Nile B) Mediterranean C) Red Sea D) None of the above

18	Agar-Agar can be extracted from phaeophyta	
19	The growth of cyanophyta caused damage to the ship and plastic material	
20	Some symbiotic relationships are obligate as lichens	
21	Many soil algae produce growth substance and antibiotic which affect the soil flora	
22	Trentepohliaceae, penetrates into the stomata of tropical plants, and live as parasitic algae	
23	Algae grow along the shores of lakes and ponds are called Epactiphytes	
24	Lichens have been used in making dyes, perfumes, and in traditional medicines	
25	Algae can be live in symbiosis relationship with bacteria and viruses	

Q2: Choose the correct answer (5 marks)

- Halophytes algae are those algae live in
 A) Invertebrate animals B) the rock surface C) High saline water
- Epizotic are a group of algae live on
 A) Marine environment B) rock surface C) Animal surface
- Freshwater environments includewater
 A) lotic B) lentic C) Acid rain D) A&B
- Algal productivity means the amount of ... present in a unit area per specified time
 A) Carbon dioxide B) Organic matter C) Fats and oils
- The algae which float on the surface of the water are called
 A) Planktophytes B) Benthophytes C) Epiphytic algae

Q3: Write short notes on Two only from the following (20 marks)

- A: Factors affecting productivity of algae
 B: Algal parasitism and algal –Invertebrate symbiosis relationship.
 C: Economic importance of algae

Good luck

Prof. Dr . Awatief F. Hifney



Faculty of Science
Assiut university

Botany and Microbiology Department
Final and oral exam. (2024-2025), Ecology of algae (374 B)
Allowed time: 2 hours

Answer the following questions

Question no (1): Write (Yes) or (No) in the front of each sentences from the following (25 marks)

1	Endophytic algae are those algae live inside the animals	
2	Aerial epilithic algae found on surface of the rocks	
3	Soil algae are algae found on living aquatic animals such as shells, fishes	
4	Algae can be used in production of various substances as oil and biofertilizers.	
5	Potassium is absolute requirement element for the growth of diatoms	
6	Seasonal turbidity can affect photic zone depth in water habitats where algae grow	
7	The algae which float on the surface of the water are called phytoplankton.	
8	The algae occur in saline waters are known as halophytic algae.	
9	Algae are chlorophyll bearing autotrophic thallophytes with a cell wall made of carbohydrates	
10	A reef coral is a symbiotic association between bacteria and mycobiont	
11	Both temperature and carbonate content increase when vigorous photosynthesis occurs in productive waters.	
12	<i>Microcystis</i> sp. is known to inhibit several species of bacteria and effective against other algae.	
13	<i>Nostoc</i> and <i>Anabaena</i> sp. can be employed in the reclamation of alkaline user land	
14	light transmitted directly to the aquatic environment influences the distribution of both organisms and oxygen in lake.	
15	Lithophytic algae are growing , dispersed in water and unattached to solid objects	
16	Diatomite can be produced and extracted from Rhodophyta	
17	<i>Paramecium bursaria</i> cells harbor several hundred symbiotic <i>Chlorella</i> spp. in their cytoplasm	

2. In ecological sampling, it's the percentage of sample plots or quadrats in which a given species occurs. It indicates how widely a species is distributed within a study area, regardless of its abundance in any single plot.
3. A type of aquatic plant that grows in marshy or wet ground, with its roots in the waterlogged soil and its vegetative parts (stems and leaves) extending out of the water into the air. Examples include reeds and cattails.
4. The number of individuals of a particular species within a defined area or volume. It's a measure of how common or rare a species is in a given location (e.g., number of trees per hectare, number of fish per cubic meter).
5. In ecology, it refers to the degree to which a species (or group of species) is more numerous, larger, or has a greater biomass than other species in an ecological community. It often relates to the influence a species has on its environment or other species.
6. In plant sociology, it describes the tendency of individual plants of a species to grow together in groups or clusters, or to grow solitarily. It's a qualitative measure of the spatial arrangement of individuals within a population.
7. In plant sociology, it refers to the degree to which a species is restricted to a particular plant community or habitat type. A species with high fidelity is found almost exclusively in one specific community, indicating a strong ecological preference.
8. The series of community changes that occur in an area where an existing community has been disturbed or removed, but the soil or substrate remains intact. This is faster than primary succession because the soil is already present (e.g., after a forest fire, logging, or abandoned farmland).
9. The smallest area within a particular plant community that contains a statistically significant proportion of the total species found in that community, such that increasing the sampling area beyond this point does not significantly increase the number of new species found. It's used to determine appropriate sample sizes for vegetation studies.
10. A sampling method in ecology that involves making observations or collecting data along a straight line or predetermined path across an area. It's used to study how species distribution or environmental factors change across a gradient (e.g., from a forest edge into a field).
11. A quantitative measure used in ecology to determine the degree of co-occurrence or spatial association between two or more species within a community. It indicates whether species tend to be found together more or less often than would be expected by random chance.
12. A type of aquatic plant that is adapted to living wholly or partly submerged in water. This includes plants that are completely submerged, floating, or have leaves floating on the water surface (e.g., water lilies, pondweeds).

With my Best Wishes

Dr. Ahmed Amro

Assistant Professor in Botany and Microbiology Department

Q2. Use the definitions to put the suitable number in the spaces (18 marks, 12 points × 1.5 degree)

1. Dominance (.....)	2. minimal area (.....)	3. helophyte (.....)	4. 2ry succession (.....)
5. Frequency (.....)	6. Transect (.....)	7. Association index (.....)	8. Xerosere (.....)
9. Sociability (.....)	10. Abundance (.....)	11. Hydrophyte (.....)	12. Fidelity (.....)

1. A plant succession that originates in a dry habitat or area (e.g., bare rock, sand dunes). The successive stages involve the colonization of progressively more complex plant communities as the habitat gradually becomes less extreme and more suitable for plant growth.

2- Physiological changes during "hardening?"

.....

.....

.....

.....

.....

.....

.....

3- Describe the types of biological interactions and give one example for each?

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

4- The mechanisms of plants used to reduce competition for water in arid environments?

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Q3- Define:

a- The stratosphere layer

.....
.....

b- Temperate Grasslands

.....
.....

c- Food chain

.....
.....

d- Mutualism

.....
.....

e- plant zero

.....
.....

Q4- Write on:

1- Temporal variations in temperature?

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

19- What happens when light intensity is below the compensation point?

- a- Plant grows faster b- Respiration exceeds photosynthesis c- Chlorophyll increases

20- What is coevolution?

- a- Two species changing together over time b- Animals becoming plants c- Plants losing leaves

Q2- Please combines the two columns:

tropopause	1	..... The branch of biology that studies the relationship of organisms and environments.
Ocean Ecosystems	2	..... The branch of ecology that studies the relationship between plant and animal communities and their environments.
Tundra	3	..... This layer extends from the surface of the earth to 15 Km, above the sea surface. Life is restricted to this layer.
Neutralism	4	..... This layer extends from 400 Km and more above the sea surface.
bionomics, bionomy	5	..... Very large amount of Earth is covered by it (~75%) and 40% of all photosynthesis occurs in it
consumer	6	..... Precipitation 90-150 cm/year. Open, widely spaced trees, seasonal rainfall. Parts of Africa, South America & Australia
Savannas	7	..... Precipitation: 25 cm/year. Open; wind swept; dry; ground always frozen. Far northern Asia; Northern North America
Amensalism	8	..... Is an organism that obtains energy by feeding on other organisms .
Synecology	9	..... describes the relationship between two species that interact but do not affect each other.
exosphere	10	..... is an interaction where an organism inflicts harm to another organism without any costs or benefits received by itself.

9- Which of these is an abiotic factor?

- a- Sheep b- Trees c- Sunlight

10- Why is sunlight important to plants?

- a- It helps them grow food b- It makes soil wet c- It keeps animals away

11- What happens to plants when the temperature is too high?

- a- They grow faster b- They may get damaged c- They change color

12- What do plants absorb from the soil?

- a- Water and nutrients b- Air and light c- Sunlight and wind

13- Which animal helps to spread seeds by eating fruits?

- a- Lion b- Squirrel c- Worm

14- What is the range of visible light used in photosynthesis?

- a- 330-720 nm b- 100-200 nm c- 750-1000 nm

15- plants that grow best in full sunlight?

- a- Sciophytes b- Heliophytes c- Day-neutral plants

16- Which light type promotes seed germination in some plants?

- a- Far-red light b- Blue light c- Red light

17- What term describes a plant's response to day length?

- a- Photosynthesis b- Transpiration c- Photoperiodism

18- Which plant group is best adapted to grow in shade?

- a- Heliophytes b- Sciophytes c- Intermediate plants



General Ecology 309 NT
Time: Two hours
Total degree: 50 marks

Second semester exam - the academic year 2024/2025

Exam date: Wednesday, 28/5/2025

Q1- Please choose the right answer.

- 1- Which of the following is a mutualistic relationship?
a- Plant and mycorrhizal fungi b- Parasite and host c- Predator and prey
- 2- In commensalism, one organism benefits while the other is.....
a- Harmed b- Unaffected c- Killed
- 3- What is the main resource that red clover competes for with couch grass?
a- Water b- Soil nutrients c- Light
- 4- What mechanism is most commonly involved in interference competition in plants?
a- Pollination b- Allelopathy c- Water uptake
- 5- Which of the following is a short-term interaction in ecology?
a- Mutualism b- Symbiosis c- Pollination
- 6- What is the meaning of herbivory?
a- Animals eating plants b- Plants eating animals c- Plants growing faster
- 7- Which of the following helps in pollination?
a- Rocks b- Bees c- Soil
- 8- Why do plants need seed dispersal?
a- To avoid animals b- To find water c- To grow in new places

9- The main types of endemics?

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

10- Difference between Vicarious and Endemic areas?

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

With my best wishes

Prof. Dr. Hanaa Kamal Galal

7- Some of the general types of discontinuity regardless of cause. An area is described as.....? Write 4

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

8- On the basis of the type of natural habitat change which has isolated relies, we can distinguish three main classes.....?

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

4- The types of Barriers? Write 2

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

5- Dispersal by animals? Write 2

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

6- Endemic species are localized in their area. Why endemism?

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Q2: Write on:

(20 degree)

1- Plant geography comprises three distinct elements....?

.....

.....

.....

.....

.....

.....

.....

.....

2- General principles of plant geography considering the environment?

.....

.....

.....

.....

.....

.....

.....

.....

.....

3- The principal factors seem to control temperatures?

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

- 23- area is if different component parts of the range, occupying by not identical forms.
- a- Homogeneous b- Heterogeneous c- Altitudinal
- 24- plants are the plants distributed around the top (or bottom) of the world in the austral zone.
- a- Phanerophytes b- Chamaephytes c- Circumboreal
- 25-, mostly trees or shrubs, with their renewal buds on shoots at least 25 cm. above the surface of the ground. They are especially numerous in moist areas of the tropics and subtropics.
- a- Phanerophytes b- Chamaephytes c- Therophytes
- 26- have perennial shoots and buds at ground-level or within the surface layer of soil, etc., and hence protected by the habitat.
- a- Geophytes b- Hydrophytes c- Hemicryptophytes
- 27- include all water plants, whether anchored or not, apart from microscopic free floating or swimming types which form the main basis of the separate category known as "plankton".
- a- Hydrophytes b- Phanerophytes c- Geophytes
- 28- A.....group one of three major climate groups in which temperatures are uniformly warm, no winter season occurs. No month has a mean temperature below 20 C.
- a- polar b- temperate c- tropical
- 29- are short grass vegetation in regions of semi-arid climate. Summers are commonly dry. Most extensive in central and south east Asia.
- a- Steppes b- Coniferous c- Savanna
- 30-is grassland with scattered trees, typified by tropical plains in Africa, India and South America. It has a long dry season alternating with a wet season, no winter cold.
- a- Desert shrub b - Savanna c- Ice cap

7- are perennial herbs and some under shrubs with renewal buds between ground level and 25 cm. height. These plants are usually dominated in boreal and alpine regions.

- a- Phanerophytes b- Chamaephytes c- Therophytes

8- have the perennating organs (such as bulbs, tubers, or rhizomes) well buried in the soil and therefore not exposed in unfavorable seasons.

- a- Phanerophytes b- Hemipterophytes c- Geophytes

9- forest: growth more open and scattered than tropical jungle. Long dry season alternating with a very wet season. Temperatures are high throughout the year.

- a- Coniferous b- Mediterranean scrub c- Scrub and thorn

10- are grassland widespread in central united states, Eastern Europe and Argentina Uruguay areas. They lie on the boundary between dry and humid climates.

- a- Prairie b- Coniferous c- Savanna

11- is treeless expanses in the summer less arctic regions, covered with sedges, mosses and lichens. Long and cold winters predominate, saturated ground frozen during most of the year.

- a- Desert shrub b- Tundra c- Ice cap

12- A group in which there is no summer.

- a- polar b- tropical c- temperate

13- Precipitation has profound effect on vegetation. A simple scheme may be: 20-40 inch rainfall 50-100 cm.

- a- Semiarid b- Sub humid c- Humid

14- scattered drought-resistant shrubs, extremely dry and hot deserts of the world. Rain falls low and sporadic.

- a- Desert shrub b- Tundra c- Ice cap

15- is the effect of organisms on environment.

- a- Action b- Reaction c- Coactions



Plant Geography 341 N
Time: Two hours
Total degree: 50 marks

Second semester exam - the academic year 2024/2025

Exam date: Wednesday, 28/5/2025

Q1- Please choose the right answer. (30 degree)

- 1- element is the geographical distribution and areas occupied by systematic units.
a- Floristic b- Ecological c- Edaphic
- 2- Koppen presents a more detailed classification based on the duration of these critical temperatures: belts: 4-12 months between 10 C and 20 C.
a- Subtropical b- Temperate c- Cold
- 3- Precipitation has profound effect on vegetation. A simple scheme may be:10-20 inch rainfall 25-50 cm.
a- Sub humid b- Arid c- Semiarid
- 4-forest is a great belt extensively developed in sub arctic regions of North America and Eurasia between latitudes 50 N and 65N. A zone of long cold winter and very short summer.
a-Tropical rain b- Broadleaf c- Coniferous
- 5-such plants, or detached portions bearing the seeds, tend to roll before the wind, usually scattering their seeds or fruits as they go. They are commonly short-lived herbs.
a- Winged seeds b- Tumble weeds c- Plumed seeds
- 6- seeds are these usually bear a light tuft of silky hairs at one end and are liberated from a capsular fruit which on splitting only releases them gradually, often one by one. The plants involved are usually herbs.
a- Plumed b- Winged c- Dust



Assiut University



قسم النبات والميكروبيولوجي
Botany & Microbiology Dept.



كلية العلوم
Faculty of Science

- A) Amino acids, Polysaccharides and Lipids
B) ATP
C) Carbon dioxide
D) All answers are correct
3. What is the main product of CO_2 fixation in the Calvin cycle?
A) Pyruvate
B) Glucose
C) Glyceraldehyde-3-phosphate
D) Acetyl-CoA
4. Which of the following is a key intermediate in the reverse TCA cycle?
A) Ribulose-1,5-bisphosphate
B) glucose
C) Citrate
D) Glyceraldehyde-3-phosphate
5. Which of the following best describes the 3-hydroxypropionate bicycle used by some autotrophic bacteria?
A) It fixes CO_2 by converting it into glucose using Rubisco.
B) It uses light energy to split water and release oxygen.
C) It incorporates CO_2 into organic acids like glyoxylate and propionyl-CoA.
D) It reduces nitrate to ammonia for nitrogen assimilation.
6. How many molecules of CO_2 are fixed per cycle of the 3-hydroxypropionate bicycle?
A) 1
B) 2
C) 3
D) 6
7. In the Hydroxypropionate-hydroxybutyrate cycle, which molecule is regenerated to keep the cycle going?
A) Pyruvate
B) Acetyl-CoA
C) Oxaloacetate
D) Ribulose-1,5-bisphosphate

With my best wishes

Dr. Shymaa Ryhan



Assiut University



قسم النبات والميكروبيولوجي
Botany & Microbiology Dept.



كلية العلوم
Faculty of Science

2nd Semester (2024-2025)
Time allowed: 2 hours

Microbial metabolism (392B part II)
Score (25 marks)

Part II

الاختبار مطبوع على صفتين الورقة

A. Write short notes on **(Five Only)**: (10 marks)

1. Gluconeogenesis
2. Ribulose biphosphate carboxylase
3. Reductive acetyl CoA pathway
4. Anabolism reactions
5. ATP Molecules
6. Beta-oxidation

B. Answer **Two Only** of the following questions. Use well labeled diagrams where appropriate. (8 marks)

1. Discuss the process of photosynthesis in green sulfur bacteria.
2. Illustrate how amino acids are synthesized.
3. Outline the steps involved in the synthesis of guanosine monophosphate (GMP).

C. Choose the correct answer for the following questions: (1Mark each)
Write the answer in the University Examination Answer Book provided.
(7 Marks)

1. What are key characteristics of anabolic reactions in microbial cells?
 - A) They require energy input.
 - B) They involve the synthesis of complex molecules
 - C) They often use NADPH as a reducing agent.
 - D) All answers are correct
2. Which of the following molecules are typically produced during microbial anabolism?



Assiut University
Faculty of Science
Botany & Microbiology Department
2nd Semester 2024-2025

Paper Exam
Subject: Microbial Metabolism
Allowable Time: 2 hours
Course Code: 392



I- Answer (**ONLY FOUR**) of the following questions (with drawing as possible)

(5 Marks each):

- Q1. Give short notes on the Chemiosmosis and the Factors affecting enzymatic activity.
- Q2. Illustrate the Pentose Phosphate pathway (PP) for carbohydrates catabolism.
- Q3. Account the importance of the primary metabolism in microorganisms.
- Q4. Enumerate the Functions of the TCA cycle (Krebs).
- Q5. Account the Major Roles of Microorganisms in Ecosystems.
- Q6. Explain the Nitrogen Catabolism with diagrammatic explanation.

II- Answer (**ONLY ONE**) of the following (5 Marks each):

- Q7. Describe the Sulfur Metabolism, SO_4 reduction pathway in filamentous fungi, and homocysteine formation in fungi.
- Q8. Compare between the Embden-Meyerhof-Parnas and Entner-Duodoroff pathways of carbohydrates catabolism.

Good luck
Khalid A. Hussein, Ph.D.

14. ATP-synthases are found in thylakoid membranes at those regions which are in direct contact with,

- a) Lumen of thylakoids
- b) Other thylakoid membranes
- c) Stroma of chloroplast
- d) All of above

15. During non-cyclic electron transport, photophosphorylation occurs at,

- a) Two places
- b) one place
- c) three places
- d) none of the above

16. Which of the following is common in both aerobic and anaerobic respiration?

- a) Alcoholic fermentation
- b) light reaction
- c) Kerbs cycle
- d) Glycolysis

17. Reduced coenzyme NADH₂ is produced in glycolysis during conversion of

- a) Glyceraldehyde-3- phosphate to 1,3-bisphosphoglycerate
- b) 3- phosphoglycerate to 2-phosphoglycerate
- c) Glyceraldehyde-3-phosphate to dihydroxyacetone phosphate
- d) None of the above

18. Except succinate dehydrogenase all other enzymes of TCA cycle are found in mitochondria in

- a) Cristae
- b) Outer membrane
- c) Matrix
- d) Stroma

19. ATP molecule is synthesized in TCA cycle by substrate level phosphorylation during conversion of

- a) Succinyle-CoA to succinate
- b) Succinate to fumarate
- c) Fumarate to malate
- d) None of the above

20. Oxidative phosphorylation takes place,

- a) In mitochondrial matrix
- b) In grana
- c) Inner membrane of mitochondria
- d) All of above

Q2) Write on three of the following:

(9 marks)

1. Nitrate Assimilation
2. Phospholipids
3. Conversion of ammonium to amino acids
4. Nitrogen cycle
5. Transamination

Q3) Mention the specific role of two of the following:

(6 marks)

1. Lipid molecules in plants
2. Leghaemoglobin
3. Nitrate Reductase

Q4) Write on three of the following:

(9marks)

1. Pathways of the excited chlorophyll for disposing of its available energy
2. Anaerobic respiration
3. Oxidative phosphorylation
4. C4 photosynthetic pathway

Q5) Define three of the following:

(6 marks)

1. CF₀
2. Quantum yield
3. Quantasomes
4. Rubisco

Good Luck

Prof. Abeer Radi

Prof. Fatma Farghaly



Botany and Microbiology
Department

Final -Term Exam
2024/2025

Plant biochemistry (352 B)
Third Level (Credit hours)



Time: 2 hours

Q1) Choose the correct answer:

(20 Marks)

- The root nodules of legumes contain a pink pigment which has high affinity for oxygen is
a) Nod haemoglobin b) Leghaemoglobin c) Haemoglobin d) Bacterial haemoglobin
- What is the most common way that nitrogen fixation occurs?
a) Lightning b) Nitrogen fixing bacteria c) Fossil fuel combustion d) Forest fires
- Organic nitrogen is converted back to inorganic nitrogen like ammonium through the process of
a) Nitrogen fixation b) Nitrification c) Decay d) None of the above
- How many molecules of ATP are required to fix one molecule of nitrogen?
a) 12 b) 20 c) 6 d) 16
- Which of the following equations is most correct for biological nitrogen fixation?
a) $N_2 + 6H^+ + 6e^- + 12 ATP \rightarrow 2NH_3 + 12ADP + 12Pi$
b) $N_2 + 8H^+ + 8e^- + 16 ATP \rightarrow 2NH_3 + H_2 + 16ADP + 16Pi$
c) $N_2 + 6H^+ + 6e^- + 18 ATP \rightarrow 2NH_3 + 18ADP + 18Pi$
d) None of the above
- What is the first stable product of nitrogen fixation in the root nodules of leguminous plants?
a) Glutamate b) NO_3^- c) Ammonia d) NO_2^-
- Which of the following is required for the action of the nitrogenase enzyme?
a) Light b) High input of energy c) Super oxygen radicals d) Mn^{2+}
- Which of the following is correct for nitrifying bacteria?
a) They convert free nitrogen to nitrogen compounds
b) They oxidize ammonia to nitrates
c) They reduce nitrates to free nitrogen
d) They convert proteins into ammonia
- This element plays a key role in nitrogen fixation
a) Manganese b) Molybdenum c) Zinc d) Copper
- What is the precursor for fatty acid synthesis?
a) Acetyl CoA b) Succinyl CoA c) Propionyl CoA d) Acetoacetyl CoA
- Core complexes (CCI and CCII) in two photosystems consist of
a) Reaction centers I & II respectively b) Reaction centers and electron donors
c) Reaction centers, electron donors and electron acceptors d) None of the above
- Which of the following pigments have open conjugated system of four pyrrole rings in their molecule?
a) Chlorophylls b) Carotenoids c) Phycobillins d) All of above
- Cellular respiration starts by glycolysis in the
a) Matrix b) Chloroplast c) Stroma d) Cytoplasm

IV) Give the teleomorphs for 5 of the following:

(5 marks)

- *Scopulariopsis* - *Fusarium* - *Alternaria*
- *Stemphylium* - *Curvularia* - *Trichoderma*

V) Choose the correct answer for ten only of the following:

(10 marks)

- 1) The standard ending for subclass of fungi:
* -aceae * -mycetidae * -mycetes * -mycota
- 2) A fungus causing powdery mildew disease of Rose?
* *Uncinulla* * *Plasmidiophora* * *Plasmopara* * *Sphaerotheca*
- 3) Which of the following fungi forms teleomorph of *Talaromyces*?
* *Aspergillus* * *Penicillium* * *Geotrichum* * *Saccharomyces*
- 4) Which of the following fungi produces citric acid?
* *Penicillium chrysogenum* * *Aspergillus terreus* * *A. niger* * *A. flavus*
- 5) Which of the following *Penicillium* species causes blue rot of Apple?
* *Penicillium expansum* * *P. marnefei* * *P. allii* * *P. citrinum*
- 6) Which of the following fungi has Apothecium?
* *Peziza* * *Claviceps* * *Taphrina* * *Eupenicillium*
- 7) Which of the following fungi produces two types of conidia?
* *Alternaria* * *Curvularia* * *Fusarium* * *Eurotium*
- 8) Ascomycetes closely associated with human skin are called.
* Dermatophytes * Entomopathogen * Saprophytes * Endophytes
- 9) Which of the following ascomata is produced by *Eupenicillium*?
* Apothecium * Gymnothecium * Perithecium * Cleistothecium
- 10) Which of the following orders forms ascomata beneath the soil surfaces?
* Pezizales * Tuberales * Taphrinales * Uredinales
- 11) Which one of the following fungi forms synnemata?
* *Graphium* * *Fusarium* * *Alternaria* * *Geotrichum*

Good Luck

Prof. M. A. Abdel- Sater



Assiut University- Faculty of Science
Department of Botany & Microbiology

3rd level (Microbiology & Chemistry-Microbiology Students)
Mycology 2 (362 B) Final ex.: 24/5/2025

Time allowed: 2 hours

Answer the following questions (the exam is in two pages) (50 marks)

I) Answer one only of the following: (10 marks)

- Rust fungi may produce as many as five different stages in their life cycles. With drawing, explain this sentence?
- Ascomata of Erysiphaceae are provided with appendages that vary in shapes and characters together with the number of asci which are the bases of generic separation. With drawing, discuss this statement?



II) With illustration explain 4 only of the following: (16 marks)

- Formation of asci and ascospores through gametangial copulation.
- Aspergillus* groups that produce teleomorphs.
- Asexual life cycle in honey dew disease.
- Classification of *Penicillium* species according to Penicillus structures.
- Clamp connection and basidiospores formation in Basidiomycota.

III) Compare in a table between 3 only of the following: (9 marks)

- Teleutospores in Families: Pucciniaceae and Tilletiaceae.
- Anamorph stages in *Fusarium* and powdery mildew fungi.
- Flowering and seedling infections in smut fungi.
- Sexual and asexual fruiting bodies.

من فضلك أنظر خلفه

	Assiut University – Botany and Microbiology department	
	Final Exam (2025) for 3 rd level students (Biotechnology program) Algal Biotechnology (304 BT)	
	Time allowed: 2h		Total Marks:50

Answer the following questions

Q #I: Define the following terms: (Answer 6 only).....18 Marks

- 1- Axenic microalgal culture
- 2- Bio-flocculation
- 3- Horizontal tubular photobioreactor
- 4- Fed-batch algal culture
- 5- Chemostat culture
- 6- Polyhydroxyalkanoates
- 7- Phlorotannins

Q #II: Write on the following: (Answer 4 only).....24 Marks

- 1- Lipid extraction methods from microalgae and their conversion into biodiesel.
- 2- Alginate structure and extraction methods from brown algae.
- 3- Algal growth curve.
- 4- Role of calcium, magnesium, and silicon in algal metabolism.
- 5- Different nutritional modes for algal growth and their advantages and disadvantages.

Q #III: Put (✓) for true sentence and (X) for wrong ones: (Answer 8 only).....8Marks

- 1- Ammonium nitrogen is converted inside the algal cells into nitrates.
- 2- Molybdenum is essential for blue green algae for nitrogen fixation.
- 3- Algae can be harvested by flotation using inorganic and organic compounds.
- 4- Carrageenan is found in Rhodophyceae.
- 5- Decreasing nitrate and phosphate concentrations in the culture medium can increase lipid content.
- 6- Outdoor algal cultivation is cheaper than indoor cultivation.
- 7- Horizontal tubular photobioreactor has high surface to volume ratio.
- 8- Fucoidan is a sulphated polysaccharide in brown algae.
- 9- All photobioreactors should have minimal illuminated surface.

With all best wishes,,,,,,,,,,,,,,,,,,,,, Dr./ Mohamed Gomaa

15	Fruits of <i>Ceratonia siliqua</i> are used as hypo-allergenic and anti-diarrhea	
16	Fruit pulp of <i>Sinaps nigra</i> is used in syrup and juice concentrates	
17	The volatile of <i>Chenopodium ambrosoides</i> is used as an anthelmintic	
18	Family Euphorbiaceae is characterized by cythium inflorescence	
19	The papilionaceous corolla is characteristic to Asclepiadaceae	
20	<i>Trigonella foenum-graecum</i> is a medicinal plant used as anti-rheumatic	
21	<i>Mentha viridis</i> is a medicinal plant used as a cough syrups	
22	Family Lythraceae is characterized by bilabiate corolla	
23	<i>Lawsonia inermis</i> fruits and leaves is used as a natural pigments	
24	Family Myristicaceae is characterized by syndrimum stamens	
25	<i>Origanum majorana</i> fruits is used as medullary carcinoma of the thyroid	
26	Myrtaceae is characterized by numerous stamens and inferior ovary	
27	<i>Eugenia caryophyllata</i> is used as anti-infectious, regulate thyroid and antifungal	
28	<i>Lawsonia inermis</i> buds have a warming effect easing away stress and tension	
29	<i>Cymbopogon proximus</i> is is a domestic plant used for colic painkiller	
30	Ranunculaceae is characterized by showy flowers and polycarpellary gynoecium	
31	<i>Nigella sativa</i> is a domestic plant used for allergies, anti-cancer and asthma	
32	<i>Salvadora persica</i> is a domestic plant used as toothbrush	
33	Family Scrophulariaceae is characterized by axial placenta and inferor ovary	
34	<i>Atropa belladonna</i> and <i>Nicotiana tabacum</i> are belonging to family Atropaceae	
35	<i>Nicotiana tabacum</i> leaves is used for smoked	

Third question: - (15 marks)

Write short notes about three only of the following plants and their uses as a domestic plant:- *Ammi majus*, *Solenostemma arghel*, *Matricaria chamomila*, *Tamarindus indica* & *Glossostemon bruguieri*

Best Wishes ...

Prof. Dr. Momen Zareh & Dr. Mostafa Aboulela

- (22) *Lawsonia inermis* is a medicinal plant belonging to family
- a. Euphorbiaceae b. Lamiaceae c. Cucurbitaceae d. Lythraceae
- (23) *Hibiscus sabdariffa* is a domestic plant used for
- a. herbal tea b. Expectorant c. deodorant d. all of the precedings
- (24) its sap and inner bark are reddich
- a. *Lawsonia inermis* b. *Tamarindus indica* c. *Myristica fragrans* d. *Origanum majorana*
- (25) *Eugenia caryophyllata* is a medicinal plant belonging to family
- a. Myristicaceae b. Lythraceae c. Myrtaceae d. Lamiaceae
- (26) Family is characterized by lactiferous, milky or watery latex
- a. Myristicaceae b. Lythraceae c. Papaveraceae d. Myrtaceae
- (27) *Papaver somniferum* is a domestic plant that characterized by
- a. 5 united petals b. cythium c. milky latex d. all of the precedings
- (28) *Zizyphus sativa* is a domestic plant used for
- a. anti-infectious b. regulate thyroid c. antidote d. all of the precedings
- (29) Family Ranunculaceae is characterized by
- a. bilabiate corolla b. legume fruits c. indefinite stamens d. inferor ovary
- (30) *Salvadora persica* is a medicinal plant belonging to family
- a. salvadorecea b. Poaceae c. Myrtaceae d. Ranunculaceae
- (31) Family is characterized by 4-5 united petals forming a bell shape or a tube
- a. Scrophulariaceae b. Lythraceae c. Papaveraceae d. Poaceae
- (32) *Verbascum thapsus* is a domestic plant used for
- a. hemorrhoids b. anti-cancer c. Asthma d. all of the precedings
- (33) *Datura stramonium* is a medicinal plant belonging to family
- a. salvadorecea b. Poaceae c. Solanaceae d. Scrophulariaceae
- (34) *Hyoscyamus muticus* is a domestic plant used as a source of
- a. hyoscine b. atropine c. hyoscyamine d. all of the precedings
- (35) The roots of *Atropa belladonna* is the basis of principal preparations of
- a. hyoscine b. belladonna c. smoked d. nicotine

Second question: - Put (✓) beside the correct answer and (X) beside the wrong answer:- (17.5 marks, 0.5 mark each)

1	The ancient Egyptian reported some pharmacopial plants on Ebers papayrus	
2	Medicinal plants can be used in different forms such as active constituent	
3	The world-wide sales of phytomedicines are estimated to be \$ 2 billion	
4	Dioscorides produced a work on medicine named <i>Materia Medica</i>	
5	Ibn Sina wrote a section in his book of medicine named Canon of Medicine	
6	The medicinal book named <i>Book of Simple Drugs</i> was wrote by Ibn al-Baitar	
7	Poaceae is the first family recognized by botanists and subjected to systematic	
8	Seeds and leaves of <i>Anethum graveolens</i> are used dried as a seasoning	
9	Seeds of <i>Cuminum cuminum</i> are used for gallstones	
10	Foeniculum vulgare is a herb used for Analgesic	
11	Seeds and leaves of <i>Solenostemma arghel</i> is a used for neuralgia and bronchitis	
12	<i>Artemisia judaica</i> is a medicinal plant belonging to the family Apiaceae	
13	<i>Eclipta prostrata</i> is a medicinal plant used for Snakebites	
14	<i>Sinapis nigra</i> is a medicinal plant used for appetizer and rubefacient	

الدرجة	السؤال	م																								
(10)	<p>8. أجريت دراسة لتحديد العلاقة بين درجة حموضة التربة (x) والنسبة المئوية للفطريات الجذرية (y)، حيث تم الحصول على النتائج التالية:</p> <table border="1"> <thead> <tr> <th>SS xy</th> <th>SS xx</th> <th>SS yy</th> <th>n</th> <th>\bar{x}</th> <th>\bar{y}</th> </tr> </thead> <tbody> <tr> <td>55</td> <td>5</td> <td>875</td> <td>4</td> <td>6.5</td> <td>52.5</td> </tr> </tbody> </table> <p>احسب معامل الانحدار. اوجد معادلة خط الانحدار. قدر النسبة المئوية للفطريات الجذرية المتوقع إذا كانت درجة حموضة التربة = 9 احسب قيمة معامل الارتباط. احسب معامل التقدير، وما هي دلالاته في هذه التجربة.</p>	SS xy	SS xx	SS yy	n	\bar{x}	\bar{y}	55	5	875	4	6.5	52.5													
SS xy	SS xx	SS yy	n	\bar{x}	\bar{y}																					
55	5	875	4	6.5	52.5																					
(10)	<p>9. أكمل ما يلي: علما بأنه تم استخدام أربع معاملات وثلاث مكررات وتباين التجربة = 100.</p> <table border="1"> <thead> <tr> <th>Source of Variation</th> <th>SS</th> <th>df</th> <th>MS</th> <th>F</th> <th>F crit</th> </tr> </thead> <tbody> <tr> <td>Treatment</td> <td>....</td> <td>....</td> <td>....</td> <td>14.75</td> <td>4.07</td> </tr> <tr> <td>Error</td> <td>....</td> <td>....</td> <td>....</td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>....</td> <td>....</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>وما هو القرار بشأن فرضية العدم؟</p>	Source of Variation	SS	df	MS	F	F crit	Treatment	14.75	4.07	Error			Total				
Source of Variation	SS	df	MS	F	F crit																					
Treatment	14.75	4.07																					
Error																							
Total																								
(5)	<p>10. حدد مع الرسم ما إذا كان هناك تفاعل بين العامل A، والعامل B طبقا لما هو معطى في الجدول التالي:</p> <table border="1"> <thead> <tr> <th rowspan="2">Factor A</th> <th colspan="2">Factor B</th> </tr> <tr> <th>B low</th> <th>B high</th> </tr> </thead> <tbody> <tr> <th>A low</th> <td>10</td> <td>20</td> </tr> <tr> <th>A high</th> <td>30</td> <td>40</td> </tr> </tbody> </table>	Factor A	Factor B		B low	B high	A low	10	20	A high	30	40														
Factor A	Factor B																									
	B low	B high																								
A low	10	20																								
A high	30	40																								

انتهت الأسئلة

أطيب الأمنيات بالتوفيق!



الامتحان العملي
الفصل الدراسي الثاني
العام الجامعي 2025/2024



القسم الذي يُقدم المقرر: المحاصيل | المستوى: مرحلة البكالوريوس (طلاب كلية العلوم) | الزمن: ساعتان

أسم وكود المقرر: تصميم تجارب (316 ز)

يوم وتاريخ الامتحان: الخميس، الموافق 2025 /05 /22م

القائم بالتدريس: أ.د. عاطف أبو الوفا أحمد، أ.د. محمد بدري محمد علي

المراجع الداخلي: أ.د. باهي راجب بخيت

أجب عن جميع الأسئلة الآتية: (50 درجة)

الدرجة	السؤال	م
(3)	1. ما هو الفرق بين الصفات الكمية المتقطعة والمستمرة؟ مع ذكر أمثلة.	
(3)	2. فيما يستخدم معامل الاختلاف $coefficient\ of\ variability$ ؟	
(3)	3. ما هو الخطأ من النوع الأول $Type\ I\ error$ ؟	
(3)	4. أذكر الفروض التي يلزم توفرها قبل إجراء تحليل التباين ANOVA.	
(3)	5. اكتب فقط $null\ and\ alternative\ hypotheses$ في حالة اختبار معنوية معامل الانحدار.	
(5)	6. ارسم فقط التخطيط التجريبي $Experimental\ layout$ لتجربة بسيطة يُستخدم فيها 4 مضادات حيوية في تصميم المربع اللاتيني $Latin\ square\ design$.	
(5)	7. أُجريت تجربة لدراسة تأثير نوعين من المطهرات على البكتريا، اجر اختبار t في مجاميع لتحديد ما إذا كان هناك اختلافات معنوية بين المطهرين في تأثيرهما على البكتريا عند مستوى معنوية 5%، إذا علم أن:	

	Mean	Variance	n	t critical
A	18	6.667	4	2.447
B	15	6.667	4	

الصفحة رقم 2 ←

Page 1 of 2

المراجع الداخلي

لجنة الممتحنين

3- Which one of the following effective in wound healing?

- a) *Adiantum philippense*
- b) *Ophioglossum reticulatum*
- c) *Adiantum caudatum*
- d) *Tectaria cicularia*

4- Which one of the following uses as ornamental in big gardens and greenhouses?

- a) *Adiantum* sp.
- b) *Marattia* sp.
- c) *Lycopodium* sp.
- d) *Osmunda* sp.

5- Which one of the following is an indicator of cobalt in soil?

- a) *Actinopteris australis*
- b) *Lycopodium obscurum*
- c) *Asplenium adulterinum*
- d) *Marsilea minuta*

(E) Put (√) or (×) on each of the following: (5 marks 1 for each)

- 1- All gymnosperms are anemophily
- 2- Neck canal cells are absent in gymnosperm
- 3- All living pteritophytes are herbaceous
- 4- Sexual reproduction in *Marchantia* is oogamous
- 5- Chloroplasts of *Riccia* sp contain pyrenoid

Good luck

DR/MAYSAM. A. ALI

Assiut University
Faculty of Science
Botany & Microbiology Dept.
Date: 19/5/2025

Final exam of: Bryophyta, Pteridophyta & Gymnosperm
Code: 312 B
Time: 2 hrs
Total marks: 50 marks

(A) Write on each one of the following: (20 marks, 4 for each)

- 1- General characters of archegoniate plants
- 2- Gametophyte of Bryophyta
- 3- External morphology of *Pellia*
- 4- General characters of Order Jungermanniales
- 5- Vegetative reproduction *Anthoceros* sp

(B) Compare between all of the following: (10 marks, 5 for each)

- 1- Class Psilopsida and Class Lycopsida
- 2- Primitive and Advanced Characters of *Anthoceros*

(C) Define all of the following: (10 marks, 2 for each)

- 1- Archegonium
- 2- Heterosporous
- 3- Apogamy phenomena
- 4- Protandrous
- 5- Phanerogams plants

(D) Choose the correct answer: (5 marks, 1 for each)

- 1- Which one of the following has a symbiotic association with nitrogen fixing cyanobacterium *Anabaena*?
 - a) *Azolla*
 - b) *Marsilea*
 - c) *Salvinia*
 - d) All of them
- 2- Which one of the following pteridophytes is aquatic habitat?
 - a) *Selaginella* sp
 - b) *Salvinia* sp
 - c) *Lycopodium* sp
 - d) *Equisetum* sp



Q7: Briefly explain the following:

a) Classification of antibiotics according to the producer- organism.

b) Selection of raw materials used in fermentation .

انتهت الاسئلة

Answer five questions only from the following (20 marks; 10 for each one)

Q1: Define each of the following-

a) Continuous cultures
 b) Antibiotics
 c) Fermentation
 d) Biostatistical fermentation technique

Q2: Explain the process conditions that control citric acid fermentation on the surface cultures.

Q3: Discuss the upstream and mid-stream processes for biotechnical production.

Q4: Write on the chemical structure, producing microbe, mode of action and biological activities of penicillin G.

Q5: Write on characteristic for selection of potent yeast strain for high productivity of fresh yeast, showing foam control methods during fermentation process.

Q6: Discuss in detail the hydrogenation and dehydrogenation reactions effected on steroid structures by microorganisms.

بسم الله الرحمن الرحيم
1



Assiut University

Academic program: Microbiology + chemistry & Microbiology

Faculty of Science

Final Term Exam

Studying Year: 2024 / 2025

Department: Botany & Microbiology

Course Code: B 369

Course Title: Industrial Microbiology

Third level

Second semester

Total Degree: 50 marks

June 2025

Allowable Time: Two hours

Answer five questions only from the following (50 marks; 10 for each one)

Q1: Define each of the following:-

- Continuous cultures
- Anabioses
- Fermentation
- Biotransformation fermentation technique

Q2: Explain the processes conditions that control citric acid fermentation on the surface cultures.


Q3: Discuss the upstream and mid-stream processes for bioethanol production.

Q4: Write on the chemical structure, producing microbe, mode of action and biological activities of penicillin G.

Q5: Write on characteristic for selection of potent yeast strain for high productivity of fresh yeast, showing foam control methods during fermentation process.

Q6: Discuss in detail the hydrogenation and dehydrogenation reactions effected on steroid structures by microorganisms.

باقي الاسئلة خلف هذه الورقة

Department of Botany and Microbiology		Final Examination of Microbial Enzymes (394 B)	
Faculty of Science		Microbiology (Third level)	2024 / 2025
Assiut University		Second Semester	Time: 2 hours

Answer the following questions (50 marks)

1: Put (✓) for True statements or (X) for False statements and correct the false: 10 marks

1-Hyaluronidase belongs to isomerases and plays role in medicine diagnoses.	
2-Coenzymes can be mineral salts, or organic molecules.	
3-A change in the configuration of an enzyme's active site induced by all inhibitors	
4-In competitive inhibitors: Enzyme can bind to substrate and inhibitor at one time and V_{max} changed.	
5-Enzymes can be denatured under extreme Low temperature.	
6-Almost 2/3 of all enzymes use metal ions for catalytic activity. They are bound to Apoenzyme by Prosthetic groups.	
7-In non-competitive inhibitors: Cyanide combines with the SH groups in the enzymes cytochrome oxidase. These can be removed by washing with ethanol	
8- Nanoparticles increased activity of enzymes at size 20 nm	
9-Enzymes of microbial cell as adenylate kinase and glucose isomerase are located in mitochondria.	
10- EC numbers are 4 digits and in Lyases the digit 3 represents the reaction position.	

2-Describe Two only of the following: 15 marks

- a-Classification of enzymes according to formal systemic catalog (International Enzymes Commission (EC) with giving a reaction example for classes 1 and 6.
- b-Production, extraction of enzymes and Microbial species used in industry.
- c-Purification of Microbial enzymes to powder form **with drawing**.

3-Explain each of the following: with drawing: 15 marks

- a-Application of Bioengineering in improving enzymes activity.
- b-How can the cell enzymes regulate energy and metabolic pathways?

4-Write on ROLE OF MICROBIAL ENZYMES IN OUR LIVES. 10 marks

Good luck

Prof. Dr. Hassan A. H. Hasaan



Faculty of Science



قسم النبات والميكروبيولوجي
Botany & Microbiology Dept.



Assiut University

Final exam of Host-Parasite Relationship (B366)
Academic year: 2024 -2025 (2nd Semester): May 2025
Time allowed: 2 hours Total Marks: 50 marks

Answer the following questions

Question I: Mark each sentence with (✓) if it is true, or (X) if false. (10 marks)

1. The pathogen's propagules that cause spreading of the disease are called initial infection. []
2. Under ideal conditions where every advantage is given to the pathogen a single spore of *Pythium* can cause successful infection. []
3. Once the stimulation for germination has been received by the spore, it goes toward the haustorium formation. []
4. At the point where germ tube of the fungus contact the host surface, the tip grows to enter the host. []
5. Invasion is the distributing of the pathogen mycelia through the host tissues. []
6. *Verticillium* is among fungal pathogens that could not be disseminated by nematodes. []
7. Soil and plant debris could serve as media for survival of biotrophs. []
8. Powdery mildews fungi can infect large numbers of plants within different families. []
9. The major chemical substances in the cuticle are cutin, with waxes embedded in chitin layer. []
10. Wood rotting fungi are reported to produce a high amount of amylases. []

Question II: Identify each of the following: (10 marks)

- a) Auxins
- b) Pathogenesis
- c) Incubation period
- d) Inanimate causes
- e) Inoculum potential

Question III: Write a short note on each of the following: 10 marks

- a) Effect of pathogens on translocation of water and nutrients in the host plant.
- b) The symptoms of plant diseases due to appearance of visible pathogen.
- c) Koch's postulates.
- d) Survival of the plant pathogen.

Question IV: Write in detail on the following: 10 marks

- a) Dissemination of the plant disease.
- b) Effect of infection on transpiration and photosynthesis in the diseased plant.

Question V: 10 marks

- a) Discuss the mechanism and path of the penetration process.
- b) Describe how the plant pathogens could survive.

Good Luck
(Prof. M. Hashem)

Final exam of Plant Pathogenic Fungi (B364)
Academic year: 2024 -2025 (2nd Semester): May 2025
Time allowed: 2 hours Total Marks: 50 marks

Answer the following questions using drawings when possible

Question I: Copy the sentences to your answer booklet, and mark each one with (✓) if it is true, or (X) if false. (10 marks)

1. Infections on peach leaves by *Taphrina deformans* occur at temperatures of 10-21°C. []
2. Seedlings infected by *Pythium* are pulled up and show browning and rotting of the smaller roots or stems and stem lesions at soil level. []
3. Loose smut of wheat and barley by *Ustilago nuda* is embryonic infection. []
4. Haustoria of powdery mildew fungi extend into the plant cortical cells to obtain nutrition. []
5. Dutch elm disease results in the blockage of the water-conducting tissue within the tree. []

Question II: Identify each of the following: (10 marks)

- a) Obligate parasite
- b) Virulence
- c) Inoculum potential
- d) Systemic infection
- e) Syndrome

Question III: Write a short note on each of the following: 10 marks

- a) Classification of plant diseases according to the kind of symptoms.
- b) *Penicillium* blue and green mold rot of citrus and other fruits.
- c) Heterothallism in fungi.
- d) *Plasmodiophora brassicae*.
- e) White blister disease.

Question IV: 10 marks

- a) Compare the genera involved in both powder and downy mildew disease (use illustration)
- b) Give a full account on late blight disease: the causing agent, symptoms, disease cycle, factors affecting the progress, and management of the disease

Question V: 10 marks

- a) With the aid of drawing, construct the life cycle (macrocytic) of black stem rust disease of wheat.
- b) Write a short essay on *Rhizopus* soft rot of fruits and vegetables.

Good Luck
(Prof. M. Hashem)