



Question4: Put the suitable Expression for the following senescence (10 M):

- 1- Formation of callus from the explant tissue with accelerated cell division ()
- 2- Initiation of adventitious roots takes place in callus culture ()
- 3- Plants produced asexually from a single source plant ()
- 4- Plants derived from any form of cell culture involving the use of somatic plant cells ()
- 5- The process of embryo initiation and development.()
- 6- Plant cells have the ability to give rise a fully differentiated plant ()
- 7- Production of haploid plant ().
- 8- A culture without foreign or undesired life forms ()
- 9- Propagation of plants in a controlled conditions ()
- 10-Initiation of shoots takes place in callus culture ().

Good Luck

Prof. Dr. Abdel Wahab El-Enany

	Assiut University- Faculty of Science First Semester- Final Exam 2025- 2026 Botany & Microbiology Department	Program: Special Microbiology Level : (3) Date: 4/1/2026 Time: 2 h	
Course Title: Advanced Virology		Code: 381B	
Instructors: Prof. Dr. Naeima M. H. Yousef			
Important:	No. of pages 1	No. Of questions 4	Total Marks:50 degree

Answer the following:

Q1: What meant the following abbreviations: (6 marks)

ELISA ICTV
dsDNA HCV
HIV ssRNA

Q2 : Give the definitions ten only for the following: (10 marks)

a- Adjuvant b-killed vaccine c- Polycistronic transcription d-
Acquired immune
e- Haptens f- Antibodies

g-prions h- Interferon i-virion j-inclusion bodies k- defective
viruses

Q3: Explain and draw two only of the following: (14 marks)



- 1- Rolling circle DNA replication
- 2- Role of biotechnology in production of anti-HBV vaccine
- 3- life cycle of poliovirus

Q4: Write on five only of the following: (20 marks)

- 1- Importance of serology in animal and plant virology
- 2- Classification of viruses according to Baltimore classification system
- 3- Function of viral nucleic acid and viral envelope
- 4- Viral cultivation and isolation
- 5- Compare between living vaccine and killed vaccine
- 6- Compare between plant and animal viruses

Best Wishes

Prof. Naeima Yousef

	Assiut University- Faculty of Science- First Semester- Final Exam 2025-2026 Botany and Microbiology Department	Program: Biotechnology Level: 3 Date: 4/1/2026 Time: 2 h	
Course Title :Enzymology		Code: BT302	
Lecturer : Dr. Huwida Abdel-Kader Ahmed			
No. of pages 7	No. Of questions 3	Total Mark: 50 degree	

Answer the following questions

First Question:

(25 marks)

A) Put (✓) or (X) in front of the following phrases: (12 marks)

- 1- Encapsulation is the process by which the enzyme is bounded physically or chemically within semi-permeable membrane. ()
- 2-Restriction Enzymes are enzymes that cut DNA at specific sequences. ()
- 3- For enzyme purification the salt concentration and pH should adjusted. ()
- 4- Urease is an example for relative specificity of enzymes. ()
- 5- The term enzyme was first used by Wilhelm Kühne. ()
- 6- Protein kinases catalyze the removal of phosphoryl groups from protein. ()
- 7- Regulatory enzymes exhibit increased or decreased catalytic activity in response to certain signals. ()
- 8- Amylase is used to coagulate milk for cheese production. ()
- 9- The Uncompetitive inhibitor binds only to the substrate-enzyme complex. ()
- 10- Beta galactosidase in *E.coli* is a constitutive enzyme. ()
- 11- Batch reactors are suitable with all enzymes. ()
- 12- Isozymes have same k_m values. ()

B) Choose the correct answer for each of the following: (13 marks)

- 1- Protein part of the enzyme is called:
 - a) Holoenzyme
 - b) Prosthetic group
 - c) Apoenzyme
 - d) None of the above
- 2- All of the following are types of continuous flow reactors except:
 - a) Packed-bed reactors
 - b) Total recycle packed bed reactor
 - c) Hollow-fiber reactors
 - d) Fluidized-bed reactors
- 3- We can usefor elimination of pigments form enzyme extract:
 - a) Zinc hydroxide
 - b) Aluminium hydroxide
 - c) Sodium hydroxide
 - d) either of the above
- 4-The enzyme used to improve bread softness:
 - a) Amylase
 - b) Proteases
 - c) Papain
 - d) Glucose oxidase
- 5- The enzymes differ from inorganic catalysts in being:
 - a) Products of living cells
 - b) Proteinaceous in nature.
 - c) Specific in their action.
 - d) all of the above

6- Reverse Transcriptase function is:

- a) Builds new DNA strands
- b) Joins DNA fragments
- c) Creates DNA from RNA
- d) all of the above

7- According to the systematic name Hydrolases take the number:

- a) EC3
- b) EC2
- c) EC5
- d) EC6

8-used to remove lignin and enhance paper quality.

- a) Lipase
- b) Mannanase
- c) Laccases
- d) Pectate lyases

9- The synthetization of DNA is the primary function of the enzyme:

- a) Phosphatase
- b) Mutase
- c) Ligase
- d) None of the above

10- Compartmentation is one form of enzyme:

- a) Purification
- b) Regulation
- c) Extraction
- d) None of the above

11- All the following are coenzyme except:

- a) NADP
- b) FAD
- c) Zinc
- d) Biotin

12- is active in acidic medium.

- a) Pepsin
- b) Trypsin
- c) Diastase
- d) sucrase

13- The technology of enzyme immobilization aimed to:

- a) Enhancing enzyme catalytic properties.
- b) Reuse of enzymes.
- c) Improve operational stability.
- d) All of the above

Second Question: (13 marks)

A) Identify three only from the following: (3marks)

1- Immobilized enzymes

2- Enzyme kinetics

3- Active site

4- Enzyme Reactors

3- What is the applications of enzyme reactors? (5 marks)

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Third Question:

(12 marks)

A) Compare between the following (5 marks)

1- Competitive inhibitors	Non-Competitive inhibitors

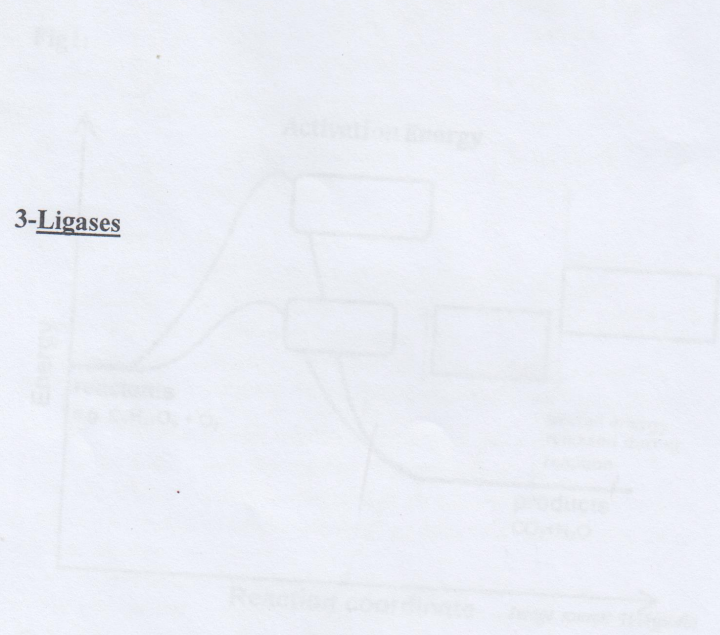
2- Batch reactor	Continuous flow reactor

B) Write about (only two points) from the following: (4 marks)

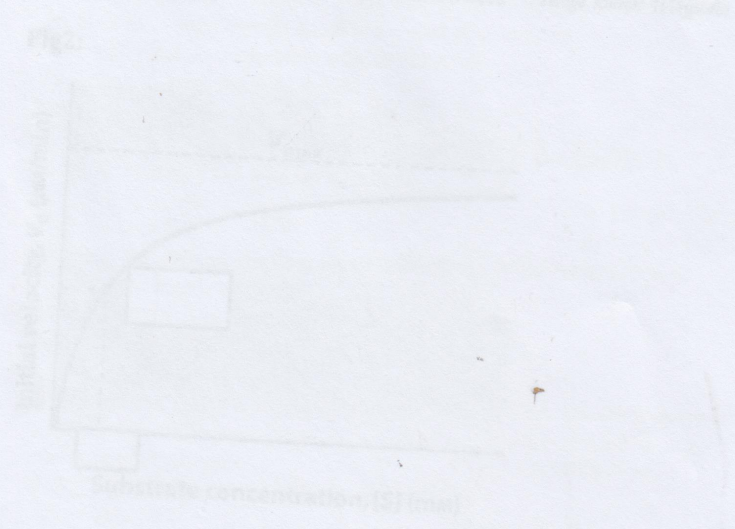
1- DNA Polymerase

2- Feedback inhibition

Complete the missing words in the following figures (marked)



3-Ligases



C) Complete the missing words inside the rectangles in the following figures (3marks)

Fig1:

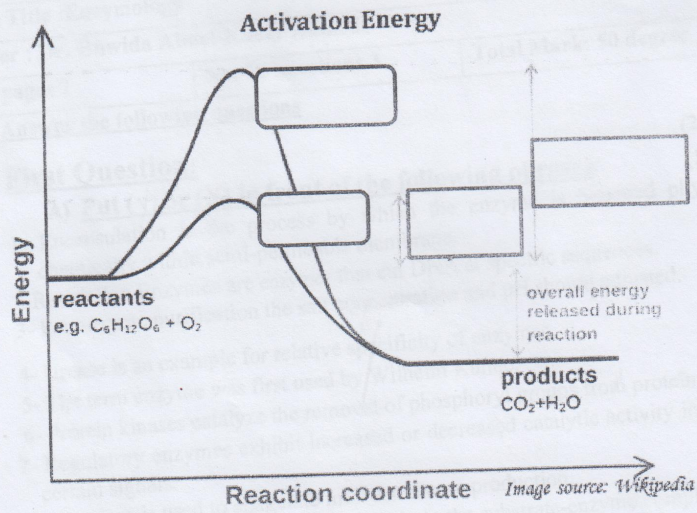
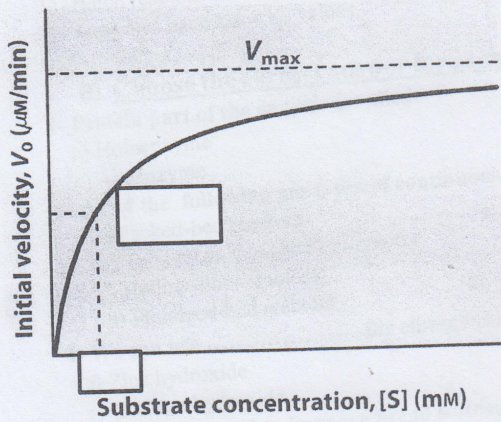




Fig2:



With my best wishes

Dr/ Huwida Abdel-kader Ahmed

	Assiut University – Faculty of Science First Semester – Final Exam 2025-2026 Botany & Microbiology Department	Program: Biotechnology Level: (3) Date: 5 /1/2026 Time: 2 h	
Course Title: Medicinal plants		Code: 319B	
Instructors: Prof. Momen Zareh & Dr. Mostafa Aboulela			
Important:	No. of pages 2	No. of Questions 2	Total Mark: 50 degree

Answer the following questions

First question: - Select the correct answer: - (25 marks, 1.0 mark each)

- (1) The ancient Egypt reported some pharmacopial plants on:-
a. Ebers walls b. colored papers c. Ebers papayrus d. all the precedings
- (2) The development of medicinal plants is difficult for lack of :-
a. technical data b. historical data c. potential data d. all of the precedings
- (3) The medicinal book named *Book of Simple Drugs* was wrote by
a. Ibn al-Baitar b. Abu Ga'far al-Ghafiqi c. Dawud Al-Antaki d. Dawud Abi.Nasir
- (4) *Anethum graveolens* is a herb used for
a. Snakebites b. skin diseases c. Lithontripic d. culinary
- (5) Seeds of are used for gallstones
a. *Cuminum cuminum* b. *Apium graveolens* c. *Ammi majus* d. *Petroselinum sativum*
- (6) Pollens forming pollinia in the family
a. Asclepiadaceae b. Abiaceae c. Brassicaceae d. Asteraceae
- (7) *Artemisia judaica* is a medicinal plant belonging to the family
a. Asteraceae b. Asclepiadaceae c. Brassicaceae d. Apiaceae
- (8) *Eclipta prostrata* is a medicinal plant used for
a. Snakebites b. skin diseases c. Lithontripic d. non of the precedings
- (9) *Sinapis nigra* is a medicinal plant used for
a. appetizer b. psoriasis c. aprains d. all of the precedings
- (10) its volatile oil is used as an anthelmintic (removing internal parasitic worms).
a. *Sinaps nigra* b. *Tamarindus indica* c. *Pimpinella anisum* d. *Chenopodium ambrosoides*
- (11) its Seeds contain about 50 % oil, used as a strong purgative
a. *Citrullus colocynthis* b. *Tamarindus indica* c. *Ricinus communis* d. *Chenopodium ambrosoides*
- (12) *Trigonella foenum-graecum* is a medicinal plant used for
a. cough syrups b. anti-inflammatory c. tooth powders d. anti-rheumatic
- (13) *Mentha viridis* oil is a domestic plant used for
a. diuretic b. chest pains c. tooth whiten d. all of the precedings
- (14) *Origanum majorana* is a medicinal plant used for
a. cough syrups b. antispasmodic c. tooth powders d. all of the precedings
- (15) *Lawsonia inermis* is a medicinal plant belonging to family
a. Euphorbiaceae b. Lamiaceae c. Cucurbitaceae d. Lythraceae

- (16) *Hibiscus sabdariffa* is a domestic plant used for
- a. herbal tea b. Expectorant c. deodorant d. all of the precedings
- (17) its sap and inner bark are reddich
- a. *Lawsonia inermis* b. *Tamarindus indica* c. *Myristica fragrans* d. *Origanum majorana*
- (18) *Eugenia caryophyllata* is a domestic plant used for
- a. Expectorant b. regulate thyroid c. herbal tea d. all of the precedings
- (19) used to make various highly addictive narcotic drugs
- a. *Papaver somniferum* b. *Tamarindus indica* c. *Lawsonia inermis* d. *Eugenia caryophyllata*
- (20) *Cymbopogon proximus* is a domestic plant used for
- a. anti-infectious b. regulate thyroid c. colic painkiller d. all of the precedings
- (21) *Zizyphus sativa* is a domestic plant used for
- a. Expectorant b. astringent c. antidote d. all of the precedings
- (22) *Nigella sativa* is a domestic plant used for
- a. Allergies b. anti-cancer c. Asthma d. all of the precedings
- (23) *Verbascum thapsus* is a domestic plant used for
- a. hemorrhoids b. anti-cancer c. Asthma d. all of the precedings
- (24) *Atropa belladonna* is the principal preparations of belladonna which composed of
- a. nicotine & atropine b. nicotine & hyoscine c. atropine & thimen d. hyoscyamine & atropine
- (25) *Zingiber officinale* is a domestic plant used for
- a. dysmenorrheal b. cholesterol c. cardiac tonic d. all of the precedings

Second question: - Write short notes about the following plants and their uses



as a domestic plants:-

(25 marks, 5 mark each)

- *Ammi majus*
- *Solenostemma argel*
- *Citrullus colocynthis*
- *Tamarindus indica*
- *Glossostemon bruguieri*

Best Wishes ...

Prof. Dr. Momen Zareh & Dr. Mostafa Aboulela

	Assiut University- Faculty of Science First Semester- Final Exam 2025-2026 Botany & Microbiology Department	Program: Microbiology, Chemistry & Microbiology Level: (3) Date: 21/1/2026 Time: 2 h	
Course Title: Systematic Mycology (2)		Code: 362B	
Instructor: <i>Prof. Nemmat A Hussein</i>			
Important:	No. of pages: 2	No of questions: 4	Total Mark: 50 degrees

Answer the following five questions

I. Write on 5 only of the following: (15 Marks)

1. Stages of heteroecious, macrocyclic fungus.
2. The differentiation between various causal agents of powdery mildews.
3. Beneficial and deleterious roles of different species of genus *Aspergillus*.
4. Ascospores are produced within different structures, discuss this statement.
5. Reproduction in yeasts.
6. The main criteria used for species recognition within the genus *Penicillium*.

II. Compare between each two of the following: (15 Marks)

1. *Fusarium* & *Alternaria*.
2. Primary & tertiary mycelia of Basidiomycota.
3. Ascomata of *Claviceps* & *Peziza*.
4. Sporodochium & acervulus.
5. Ascomycota & Zygomycota.

III. Give the meanings of 5 only of the following scientific terms: (10 Marks)

1. Mitosporic fungi
2. Gymnothecium
3. Holobasidium
4. Staurospora
5. Clamp connection
6. Corticolous fungi

IV. Choose the correct answer for the following: (10 Marks)

1. Which of the following is named the red bread mold?
 - a. *Penicillium purpurogenum*
 - b. *Neurospora crassa*
 - c. *Rhizopus stolonifer*
 - d. *Fusarium graminearum*
2. Example of hypogaeal ascomycetes is
 - a. *Tuber*
 - b. *Terfezia*
 - c. *Tirmania*
 - d. All the above
3. Which of the following fungi is endoparasite on insects?
 - a. *Cordyceps*
 - b. *Candida*
 - c. *Chaetomium*
 - d. *Claviceps*

Δ Remember ■ Understand ● Apply ◇ Analysis *Evaluate ○ Create



4. means formation of two types of asexual spores
 a. Dimorphism b. Didymosporae c. Synanamorph d. Dikaryon
5. Fungi living at wide range of temperature degrees are called
 a. Thermophilic b. Halophilic c. Thermotolerant d. Psychrophilic
6. *Taphrina* causes disease
 a. White rust b. Leaf curl c. Wilt d. Smut
7. In hemiangiocarpous basidioma
 a. The hymenium is not covered and remains naked.
 b. The holobasidia each contain typically two basidiospores.
 c. The hymenium layer is enclosed by the incurving margin of the pileus.
 d. The hymenium is enclosed by tissues of the basidioma.
8. Which of the following diseases is flowering infection that occurred in season and symptoms appear in another season?
 a. Candidiasis b. Wheat rust c. Smut d. White rust
9. Unitunicate asci are found in
 a. *Aspergillus* b. *Sordaria* c. *Puccinia* d. *Candida*
10. Which of the following *Penicillium* species causes spoilage of apple fruits?
 a. *P. marneffi* b. *P. italicum* c. *P. allii* d. *P. expansum*
11. Which of the following is not matching with *Ustilago maydis*
 a. Common smut disease
 b. Perithecial ascomata
 c. Local infection
 d. Single spores, not surrounded by fungal hyphae

انتهت الامتحان

End of Exam

Best Wishes *Prof. Nemmat A Hussein*

△ Remember ■ Understand ● Apply ◇ Analysis *Evaluate ○ Create

	Assiut University- Faculty of Science First Semester- Final Exam 2025-2026 Botany and Microbiology Department	Program: Material Science Level: (3) Date: 17/1/2026 Time: 2 h	
		Code: 341 Bot	
Course Title: Biogeography			
Instructors: Prof. Dr. Suzan Abd el-Moneim Sayed			
Important:	No. of pages 2	No. Of questions 3	Total Mark:50 degree

Answer the following questions:

1. Write briefly Three only of the following: (18marks)

- Willis (age and area theory) and other Hypotheses proposed to explain why endemism. (6 marks)
- The main types of Continuous, Intercontinental Range. (6 marks)
- The environment is holocoenotic - The general types of discontinuous ranges. (6 marks)
- Vicarious areas - The principal agencies of dispersal. (6 marks)

2. Answer briefly only Three of the following: (21marks)

- What is the difference between Prairies and Steppes temperate grass lands? (7 marks)
- Compare between adaptation of both Tundra - and Taiga plants. (7 marks)
- Write about mangrove forest vegetation. (7 marks)
- Describe the Semi-deserts and deserts vegetation. (7 marks)

3. Choose the correct answer: (11 marks)

- The type of endemic species that is relatively young, and confined to a restricted area is called: (1mark)
 - Paleoendemic
 - Neoendemic
 - Relict species
 - Cosmopolitan species
- If a plant species struggles to spread into a new region, the limiting factor is most likely related to: (1mark)
 - Its inherent adaptability to the new soil's pH.
 - A physical barrier (like a mountain range) or poor seed dispersal mechanism.
 - The age of the adult plants in the source population.
 - Competition with other plants for mates
- The key difference between an absolute relict and an endemic species is: (1mark)
 - Relics are always rare, while endemics are abundant.



Assiut University- Faculty of Science
First Semester- Final Exam 2025 – 2026
Botany and Microbiology Department

Program: Microbiology
Level: (3)
Date: 13-1-2026
Time: 2 h



Course Title: Microbial toxin

Code: 393B

Instructors: Prof. Dr. Hassan Ahmed H. Hasaan

Important:

No. of pages 1

No. of questions 4

Total Mark: 50 degree

Answer the following questions

1- Select the correct answer in the following

15 marks

1- Maximum limit of aflatoxin in food	a- 1 ppm	b- 10 ppm	c-1 ppb	d- 10 ppb
2-Tenuazonic acid produced by	a- <i>Aspergillus</i>	b- <i>Penicillium</i>	c- <i>Alternaria</i>	d- <i>Fusarium</i>
3-Trichocethins are derived from	a-acetate	b-lipids	c-mevalonate	d-carbohydrate
4-Carcinogenesis didn't cause by	a-aflatoxin	b-zearalenone	c- ochratoxin	d-patulin
5-Oesophageal-cancer caused by	a-aflatoxin	b-fumonisin	c-alternariol	d-all of them
6-Difuran rings found in	a- aflatoxin	b-fumonisin	c- ochratoxin	d- patulin
7- Ochratoxins are derived from	a- tetraketide	b- pentaketide	c- heptaketide	d- nonaketide
8-Zearalenone is derived from	a- acetate	b- lipid	c- amino acid	d- carbohydrate
9-Nephrotoxicity caused by	a- alternariol	b-zearalenone	c- ochratoxin	d- patulin
10-Maximum limit of Ergot in food	a-0.5%	b-0.1%	c-0.05%	d-0.01%
11- Saxitoxin produced by	a-freshwater algae	b-marine algae	c- (a and b)	d-not of them
12-Domic acid belongs to	a- PSP	b- DSP	c- NSP	d-ASP
13- Fresh water toxins produced by	a- Chrysophyta	b- Pyrrophyta	c- Cyanophyta	d- Phaeophyta
14-H ₂ S toxin produced by	a- <i>Shigella</i>	b- <i>Chlostridium</i>	c- <i>Vibrio</i>	d- <i>Bacillus</i>
15-Aflatoxicol produced from B ₁ by	a-hydroxylation	b-epoxidation	c-reduction	d-oxidation

2-What is the toxicity and the producing microorganisms of the following?

10 marks

1- Patulin 2-Aflatoxin 3-Nodularin 4-Anatoxin 5-Anthrax

3-Write on each of the following

12 marks

- Classification of mycotoxins on basis of their precursors and algal toxins.
- Stratiges for pre-harvest prevention of mycotoxins.

4- Explain each of the following

13 marks

- Biosynthesis of trichothecene.
- Cholera toxin mode of action.

Good luck



Assiut University - Faculty of Science
Botany & Microbiology Department



جامعة أسيوط - كلية العلوم
قسم النبات والميكروبيولوجي

Mineral Nutrition
Time: 2 Hours
351 B

First Term Examination 2025 – 2026
3rd and 4th Levels: Botany and Chemistry
Exam Papers: Three

Answer the following questions:

Q1- Read carefully and choose the correct answer of ten only: (10 marks)

- 1- Ions appear to move from cell to cell through the entire plant by simple diffusion through the.....
a) apoplast (b) symplast (c) osmosis (d) none of the previous
- 2- The plant cannot complete its life cycle without element.
a) macro- (b) beneficial (c) essential (d) micro-
- 3- Compared with other liquids, water requires a relatively energy input to raise its temperature.
a) equal (b) high (c) low (d) small
- 4- is the attraction of water to a cell wall.
a) Surface tension (b) Adhesion (c) Cohesion (d) Turgor pressure
- 5- is the concerted movement of groups of molecules in masse, most often in response to a pressure gradient.
a) Diffusion (b) Bulk flow (c) Osmosis (d) Imbibition
- 6- Stoma when its guard cells gain K^+ and water from surrounding cells.
a) flaccid (b) closes (c) opens (d) none of the previous
- 7- Proteins that serve as ion channels are always:
a) integral (b) peripheral (c) anchored (d) none of the previous
- 8- The presence of the allows the plant to maintain a higher ionic concentration in the xylem than exists in the soil water surrounding the roots.
a) imbibition (b) osmosis (c) Casparian strip (d) diffusion
- 9- Nutrient functions in plants; strengthens cell walls is:
a) Fe (b) K (c) Ca (d) P
- 10- dissipates transmembrane proton gradients.
a) NH_4^+ (b) NO_2^- (c) NO_3^- (d) NaCl

11- Nitrite is immediately transported to and

- a) plastids and mitochondria
- (c) plastids and cytoplasm
- (b) plastids and glyoxysomes
- (d) plastids and chloroplasts

12- ATP sulfurylase, has two forms: The major one is found in, and a minor one is found in the

- a) plastids, chloroplasts
- (c) plastids, mitochondria
- (b) plastids, cytoplasm
- (d) glyoxysomes, cytoplasm

Q2- Put (✓) in front of the correct sentence and (X) in front of the wrong sentence and correct it (Answer ten only): (20 marks)

- 1- At night the guard cells close the stomata to increase evaporation of water.
- 2- *Hypotonic*: The solution has a lower concentration of solutes and a lower concentration of water than inside the cell.
- 3- Transpiration increases water potential in leaves.
- 4- Osmosis is the movement of water molecules across a selectively permeable membrane from a region of low water concentration to high.
- 5- Ions cannot enter the tracheid and vessel elements of the xylem by simple passive diffusion.
- 6- Most peripheral proteins span the entire width of the phospholipid bilayer.
- 7- Nutrient assimilation generally requires small amounts of energy to convert stable, low-energy inorganic compounds into high-energy organic compounds.
- 8- ATP sulfurylase, has two forms: The major one is found in plastids, and a minor one is found in the mitochondria.
- 9- In the dark glucose-1-phosphate is converted into starch in the presence of enzyme phosphorylase.
- 10- Once absorbed, Si is deposited as amorphous silica throughout the plant, mainly in the vacuoles.
- 11- Plants assimilate ammonium near the uptake site to avoid toxic effects.
- 12- Na is essential for many, but not all C₄ species, and it is not essential for C₃ species.

Q3- Write on the following:.....(20 marks)

A- Compare between five of the following:(10 marks)

- 1- Symport transport and antiport transport.
- 2- Channels and carriers.



Assiut University- Faculty of Science
First Semester- Final Exam 2025-2026
Botany & Microbiology Department

Program: Plant &
Microbial Biotechnology
Level: (3)
Date: 17/1/2026
Time: 2 h





Course Title: Fungal Biotechnology		Code: BT 303	
Instructors: Prof. Dr. Abdel-Naser A. Zohri			
Important:	No. of pages 1	No. Of questions 5	Total Mark:50 degree

- Q I. Explain only five of the following: (20 marks, 4 for each)
- 1- Fungal cells, their contents, and metabolites can be used as prominent sources of useful products.
 - 2- The different techniques used to enhance enzyme properties.
 - 3- The role of artificial intelligence in experimental research.
 - 4- Production of insulin aspart by yeast.
 - 5- The difference between submerged and fed-batch fermentation for penicillin production.
 - 6- Key performance indicators that should be considered to achieve a successful transition from laboratory-scale production to large-scale commercial production.
- Q II. What are the advantages of only three of the following? (9 mark, 3 for each)
- 1- Production of penicillin as β -lactam antibiotic.
 - 2- Improving the fungal strain using genetic engineering.
 - 3- Applying pharmacogenomics in drug manufacturing.
 - 4- Using immobilization techniques as a form of enzyme applications.
- Q III. Choose the correct answer from the following answers (8 marks, 2 for each)
- 1- Cyclosporin A used as (immune-stimulator, immune-suppressive, growth-stimulator).
 - 2- (Plants, Fungi, and Bacteria) are exceptional eukaryotic models of microbial cell factories.
 - 3- The fast-acting insulin analogue named (EMP insulin, insulin aspart, insulin detemir).
 - 4- Lovastatin, Simvastatin, Compactin) is the active ingredient in the drug Mevacor.
- Q IV. Put a cross (\surd) 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- Modern biotechnology can be used to prevent fruit spoilage.
 - 2- The mechanism of action of beta-lactam antibiotics is to disrupt the structure of the bacterial cell membrane.
 - 3- Studies have shown that extraction with methanol or ethanol produces the highest amount of lovastatin.
 - 4- Insulin detemir was generated by replacing proline residue at position 28 with aspartic acid in the B-chain.
- Q V. Define each of the following (5 mark, 1 for each)
- Myco-remediation, Carbapenem, Fungal cell factory, Metagenomics, 3-hydroxyl-3-methylglutaryl coenzyme A reductase.

Good Luck...

Prof. Dr.: A. A. Zohri

	Assiut University- Faculty of Science Botany & Microbiology Department First Semester- Final Exam 2025- 2026	Program: (Biotechnology) Level: 3 Date: 12/1/2026 Time: 2 h	
Course title: Bacteriology		Cod: 315 BT	
Instructor: Prof. Dr. Ahmed Loffy Elsayed			
Important:	No. of Pages: 2	No. of questions:4	Total Mark: 50 degrees

General Instructions: -Answer the following questions in examination book provided.

Q1. Place (True) or (False) on the following. (10 marks)

1. Exotoxins are soluble carbohydrates secreted by living bacteria during exponential growth phase. ()
2. Anthrax infection can be occurred by inhalation. ()
3. Ozonation and filtration are non-efficient in the removal of cyanobacterial toxins. ()
4. Patulin toxin have been reported in vegetables, cereal grains and animal silage. ()
5. Domoic acid is potent phosphatase inhibitors and this property is linked to inflammation of the intestinal tract and diarrhoea in human. ()
6. Bacterial endotoxins are byproducts of bacterial metabolism. ()
7. Water content in grains is the limiting factor of mycotoxins formation in these grains. ()
8. Self-depuration is an effective mean to get rid of marine toxins, but it's expensive and needs long time. ()
9. In bacterial protein toxins, the enzymatic component is active until it is released from the native (A+B) one. ()
10. Carcinogenic potency of sterigmatocystin is estimated as 0.4 of that of aflatoxin B₁. ()

Q2. Give the scientific term or scientific meaning for each of the following (10 marks)

1. The most fastest death factor (MFDF) causes death within few minutes/hours.
2. Closely related tetrahydropurine compounds and are classified into 4 subgroups.
3. The Ergot alkaloid which is medically used in obstetrics to prevent bleeding after child E.

4. The mycotoxin which chemically comprised xanthone nucleus + bifuran and causes skin cancer.
- 5- Fungal secondary metabolite that exhibit teratogenic effect.
- 6- Sterigmatocystin derivative that analogues to afl. M1.
- 7- A fatal disease caused by digestion of eating moldy cereal grains contaminated with trichothecenes.
8. Detoxified toxins which retain their antigenicity and their immunizing capacity.
9. Microbial isolates that can produce microbial toxins.
- 10-The secondary metabolite produced by partial metabolism of Afla.B2.

Q3. Write on target site, action mechanism and the main producing microorganisms of 6 only of the following (15 marks)

1-Diphtheria toxin	5- Cylendropermopsin
2 Cholera toxin	6- Saxitoxin
3- Anatoxin-a	7- T2-toxin
4. Nadularin .	8- Zearalenone

Q 4-Show with illustration each of the following:

1-The chemical structure of aflatoxins B and G groups.

Arrange these aflatoxins according to potency of toxicity and refer to reasons of your answer.

2- Mode of action of Fumonisin B1.

Good luck

Prof. Dr. Ahmed Lotfy El-Sayed



Assiut University- Faculty of Science
First Semester- Final Exam 2025-2026
Botany and Microbiology Department

Program: Plant &
Microbiology Biotechnology
Level : 3
Date: 23/1/2026
Time: 2 h



Course Title: Biological Control and Antimicrobial Agents		Code: BT307	
Instructors: Prof. Dr. Mohamed Hashem			
Important:	No. of pages 2	No. Of the questions 5	Total Mark: 50

Question I: Mark the sentence with [✓] if it is true and with [X] if it is false. 2 marks for each (Δ, ■).

1. Biological control agents always provide complete and immediate pest control. []
2. Induced systemic resistance (ISR) is mediated mainly by salicylic acid. []
3. Mycorrhizae generally reduce nutrient uptake by plants. []
4. Fungistasis is mainly caused by excessive fungal growth in soil. []
5. An ideal antimicrobial agent should be toxic to host cells. []

Question II: Choose the correct answer. 2 marks for each (Δ, ■).

1. Which organism is best known for mycoparasitism?
 - a) Pseudomonas
 - b) Bacillus
 - c) Trichoderma
 - d) Agrobacterium
2. Siderophores mainly help microorganisms to compete for:
 - a) Carbon
 - b) Nitrogen
 - c) Iron
 - d) Phosphorus
3. Which is NOT a microbial biocontrol agent?
 - a) Fungi
 - b) Bacteria
 - c) Viruses
 - d) Herbicides
4. The main target of β -lactam antibiotics is:
 - a) Cell membrane
 - b) Protein synthesis
 - c) Cell wall synthesis
 - d) Nucleic acid synthesis
5. Which is a key disadvantage of biological control?
 - a) High specificity
 - b) Environmental safety
 - c) Slow action
 - d) Sustainability

Question III: Analyze Only 2 of the following. 5 marks for each (●,◇).

1. Formulation of a biocontrol agent.
2. Disk diffusion assay.
3. Essential oils in biological control
4. Natural Products as Antimicrobial Agents

Question IV: Discuss each of the following. 5 marks for each (◇, *).

1. Fungi as biocontrol agents.
2. Penicillin as an antibiotic.

Question V: Compare each pair of the following: 2.5 marks for each (○).

1. Antibiosis and competition
2. Biofilm and mycorrhizae
3. Phenolics and Quinones' compounds
4. Bacteriostatic and Bactericidal Drugs

End of Exam



Best Wishes Prof. Dr. Mohamed Hashem

.....	اسم الطالب
.....	الرقم الجامعي

ملحوظة هامة: تسلم ورقة الأسئلة هذه مع ورقة الإجابة

الامتحان مطبوع على وجهي الورقة

مع تمنياتي بالتوفيق والنجاح

	Assiut University- Faculty of Science First Semester- Final Exam 2025-2026 Botany and Microbiology Department	Level : (3) Date: 22/1/2026 Time: 2 h	
Course Title: Biotechnical Analysis		Code: B453	
Instructors: Prof. Dr. Eman S. Aldaby			
Important:	No. of pages 2	No. of questions 2	Total Mark:50 degree

Answer the following questions

First Question: Put true (✓) or false (×) in the following (20 degree):-

1. Microtiter plat is a plastic plate that contains 95 wells pre-coated with antibodies directed specifically to the antigen of interest. ()
2. Flame photometer is used in inorganic chemical analysis to analyze the elemental composition of samples. ()
3. $RCF = 1.12 \times 10^{-5} \times r \times \text{rpm}$ ()
4. Paper chromatography using a non-polar solvent and sample, they will have relatively high R_f values. ()
5. Light source in ultraviolet light is deuterium lamp. ()
6. Washing solution is a buffer that removes bound antibodies floating in the well. ()
7. A chromatography is equipment that enables a sophisticated separation. ()
8. The analyte is the substance to be separated during chromatography. ()
9. A bonded phase is a stationary phase that is covalently bonded to the support particles or to the inside wall of the column tubing. ()
10. Two way paper chromatography gets around the problem of separating out substances which have very similar R_f values. ()
11. GC is a common type of chromatography used in analytical chemistry for separating and analyzing compounds that can be vaporized with decomposition. ()
12. The eluent is the solvent that will carry the analyte. ()
13. Incubator is an instrument that consists of copper steel chamber around which warm water/air is circulated by electric current. ()
14. Decrease of particles size of stationary improves separation. ()
15. Chromatography classification according to the packing of the stationary phase into PC, TLC and CC. ()
16. Retardation factor is high when both solvent and analyte are polar. ()
17. To increase retention time, adding more organic solvent to the mobile phase. ()



18. Physical lysis methods use reagents such as surfactants, lysis buffers to solubilize lipids and proteins. ()
19. The disadvantages of the citrate buffers are binding to some protein and forms metal complex. ()
20. The color of the filter in colorimeter is complementary to the solution. ()

Second Question: Write in details about (only 6) of the following:-
(30 degree)

1. The appropriate cleaning solution for the pH meter according to the potential contaminants.
2. Types of centrifuge rotors.
3. Elution techniques of mobile phase.
4. Five types of immunoassay tests.
5. Different types of liquid chromatography (four in table).
6. The electromagnetic spectrum and different types.
7. Single and double beam spectrophotometer.

Good luck

Prof. Dr/ Eman S. Aldaby

	Assiut University- Faculty of Science Frist Semester- Final Exam 2025-2026 Botany and Microbiology Department		Program: Biotechnology Level : (3) Date: 11/1/2026 Time: 3 h	
			Course Title: Plant tissue Culture and Genetic Engineering Instructors: Prof. Dr.A.E. El-Enany	
Important:	No. of pages 4	No. Of questions 4	Tota Mark:50 degree	

Answer The Following Questions:

Question I: Choose the correct answer for the following statements:

(10 M):

1- Production of haploid plants come from culturing:

- a- An Explant b) An Embryo c) Anther

2-Formation of organs directly on the surface of explants called:

- a-Differentiation b- Dedifferentiation c- Organogenesis

3-An Embryo developed from a single plant cell called:

- a)Zygotic Embryo b)Somatic Embryo c) Karyogenesis

4-The material used in desiccated synthetic seeds is:

- a)Hydrated Gel b)Alginat c) Polyox

5- High ratio of kinetin to auxins led to formation of:

- a) Roots b) Shoots c) Both roots and shoots

6-Periodic addition of fresh medium and draining it out of culture called:

- a) Suspension culture b) continuous culture c) Batch culture

7)Culture in which the cell dividing rapidly result in a linear shape called

- a) Log Phase b) Lag Phase c) Stationary phase

8)When the cells stained with red in Tetrazolium chloride solution called:

- a) Viable cells b)No-viable cells c) Friable cells

9)High ratio of auxins to cytokinins led to formation of :

- a) Roots b)Shoots c) Both

10) For callus induction use:

- a)IAA + GA3 b) IAA + Kin c) 2,4-D + GA3