



second Semester final Examination 2023 / 2024

Subject: Course 314 Bot

(Fermentation industry)

Students: (Industrial chemistry section)

General Instructions: -Answer the following questions.

Q1. Choose the correct answer: (5 marks)

- Which one of the following represents the correct members of lactone rings in macrolides?
a. 10
b. 11
c. 13
d. 15
- For any one of the following groups is erythromycin related to?
a. Macrolides
b. Tetracyclins
c. β -lactam
d. Polypeptides
- Which one of the following is applied for streptomycin production?
a. *Aspergillus flavus*
b. *Streptomyces griseus*
c. *Penicillium notatum*
d. *Streptomyces erthrens*
- Which one of the following is the main producer of itaconic acid?
a. *Ustilago maydis*
b. *Aspergillus terreus*
c. *Candida sp.*
d. *Aspergillus flavus*
- According to the side chain, which one of the following is the chemical name of ampicillin?
a. Benzylpenicillin
b. Phenoxymethylpenicillin
c. D- α Amino benzyl penicillin
d. 1- amino cyclohexyl

Q2. Place (✓) or (X) on the following: (21 marks)

- Continuous culture is a closed system in which nutrients are utilized in relatively high rate. ()
- Industrial microbes must be slow growing ones. ()
- Products of fermentation must be easily isolated and determined. ()
- Maintenance on physiological and genetical characters of microbes during fermentation is necessary. ()
- The aim of primary screening is the selection of the most effective microbial isolate for certain fermentation process. ()
- Amino glycosides are bacteriostatic antibiotics that act on the outer membrane of the bacterial cell. ()

7. During ethanol fermentation, the pyruvate molecules break down to acetaldehyde ones, a step catalyzed by pyruvate decarboxylase. ()
8. Soil surface is a suitable location for microbes isolation. ()
9. Tetracyclines inhibit bacterial cell wall synthesis. ()
10. Lincomycins are sulfur-containing compounds. ()
11. Ring expansion of isopenicillin N gives deacetoxycephalosporin C. ()
12. The tripeptide ACV forms a bicyclic ring by oxidative ring closure. ()
13. Incubation under shaking is not suitable method during preparation of industrial microbes biomasses. ()
14. Glycolysis is carried out in the cytosol of living cell. ()
15. Thiozolidine ring in penicillin is the same in cephalosporin. ()
16. B-lactam thiozolidine ring is constructed from 2 amino acids. ()
17. Penicillin production is carried out by fed batch process under anaerobic conditions. ()
18. Citric acid production by fungi is oxidative fermentation. ()
19. Itaconic acid is considered as alkyne dicarboxylic one. ()
20. The bioreactor should provide withdrawal of medium. ()
21. Gramicidin is a cyclopolypeptide structure with free amino groups. ()

Q3. Discuss each of the following: (12 marks)

- a- Metabioses as a relation between microorganisms.
- b- Uses of antibiotics.
- c- Modes of action of antibiotics.
- d- Uses of acetic acid.

Q4. Show with equations each of the following: (12 marks)

- a- Penicillin production by fermentation.
- b- Production of citric acid from glucose.
- c- Ethanol fermentation.

Good luck
Prof. Dr. Ahmed Lotfy El-Sayed

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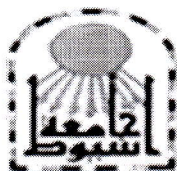
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Assiut University
Faculty of Science
Botany & Microbiology Department



Final Second Term Examination
Bryophyta, Pteridophyta & Gymnosperm
Subject: Course 312 B



Second Semester 2024
Date: 4-6-2024 for 2 Hours
Botany and Chemistry

Answer the following questions [50 Marches]

Q₁. Write all information's about TWO ONLY of the following [10 Marches]:

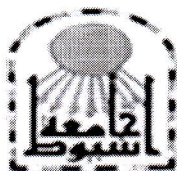
1. Peristome teeth in *Funaria* and *Polytrichum*.
2. Vegetative reproduction *Marchantia* gametophyte.
3. *Marsilea* rhizome and *Lycopodium clavatum* steler structure

Q₂. Answer TWO ONLY of the following [20 Marches]:

1. Rearrangement the following gametophyte from most advanced to most primitive *Riccia*, *Pellia*, *Funaria*, and *Adiantum*.
2. Flow up the capsule dehiscence in *Hepaticae* and rearrangement the genus from primitive to the most advanced.
3. Draw the LS in *Sphagnum* and *Anthoceros* sporophytes and clearing the development characters.

Best Wishes & Good luck

Prof. Eman Mostafa Mohamed



Assiut University
Faculty of Science
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Q3. Choose the Correct Answer (6 Marks):

[1]. have thalloid structure and undifferentiated into root, stem and leaves?

- a. Gymnosperms b. Pteridophyta c. Mosses d. Bryophyta

[2]. synangium are the aggregation of three sporangium.

- a. *Marsilea* b. *Equisetum* c. *Psilotum* d. *Anthoceros*

[3]. Different kinds of sori in ferns includes.....

- a. Simple b. Gradate c. Mixed d. all choices are correct

[4].has 2-5 antheridia in the antheridial chamber.

- a. *Marsilea* b. *Adiantum* c. *Riccia* d. *Anthoceros*

[5]. Young leaves in ferns are circinate in?

- a. Hepaticae b. Ferns c. Gymnosperms d. Bryophyta

[6] are named naked seed plants (Phanerogams).

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- a. *Marsilea* b. *Adiantum* c. *Riccia* d. *Anthoceros*

[8].....is sharp brown hairs found on the young leaves of ferns.

- a. Ramenta b. Spine c. Scales d. all choices are correct

[9] Vegetative leaves are needle like in

- a. *Selaginella* b. *Polytrichum* c. *Marchantia* d. *Pinus*

[10] Sub order: Anacrogynae has many forms includes

- a. Thalloid (*Pellia*) b. Transitional (*Blasia*) c. Leafy (*Porella*) d. all choices are correct

[12] have naked seed plants (Phanerogams)

- a. *Pinus* only b. *Cycas* & *Pinus* c. *Equisetum* d. All gymnosperms

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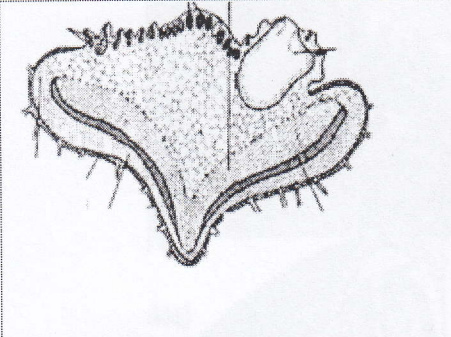
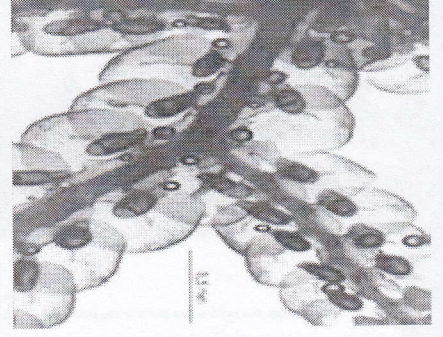
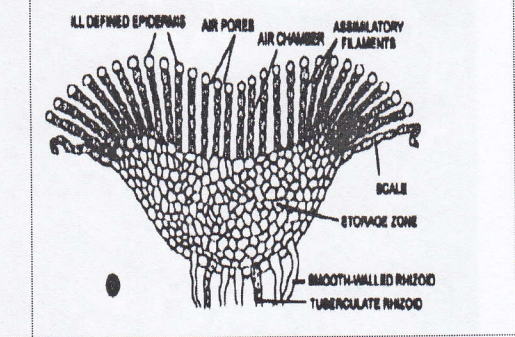
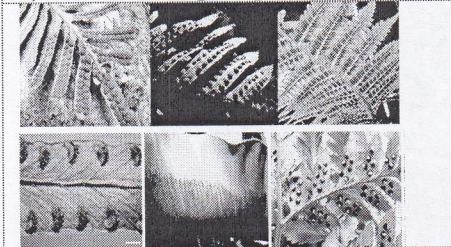
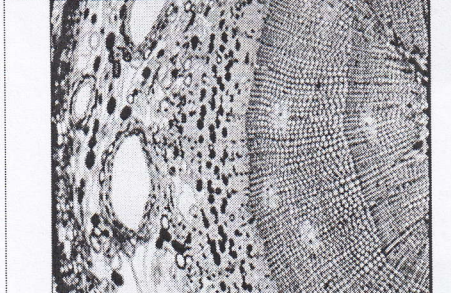
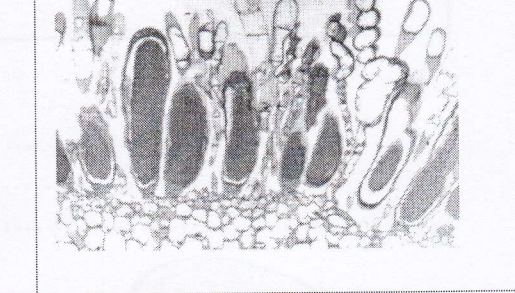
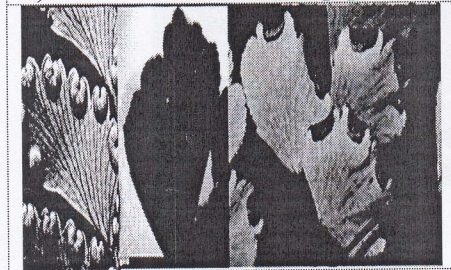
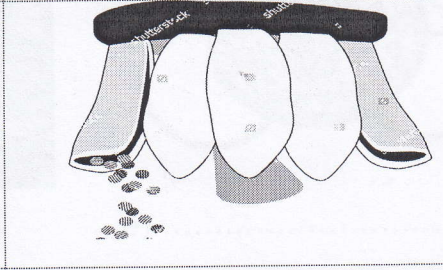
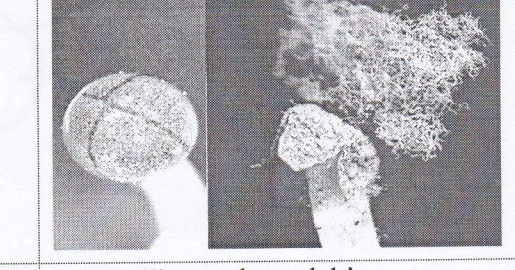
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Q4. Answer by (true) or (false) the following (7 Marks):-

- 1) Elaters in *Equisetum* has hygroscopic, spiral thickening, nutrition the spores, conducting, and dispersal the spores [].
- 2) *Selaginella* embryo has cotyledons, stem, rhizophores, and suspensor but *Isoetes* embryo has cotyledons, stem, and rhizophores only [].

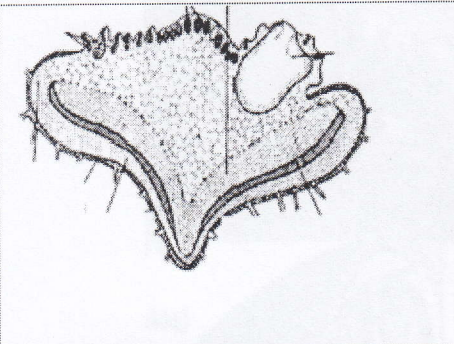
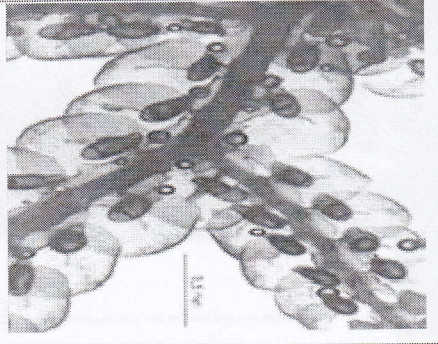
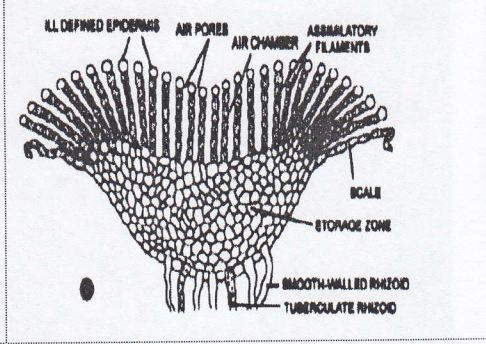
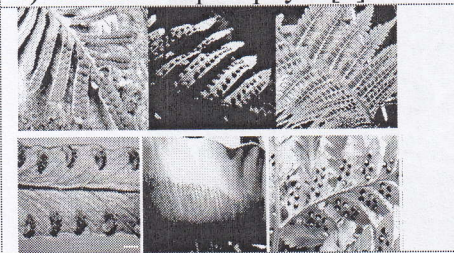
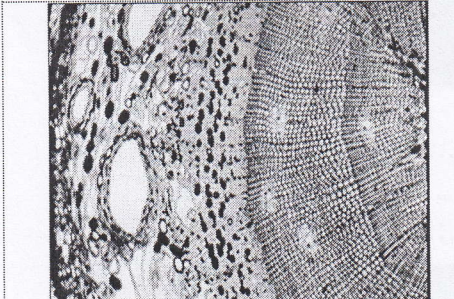
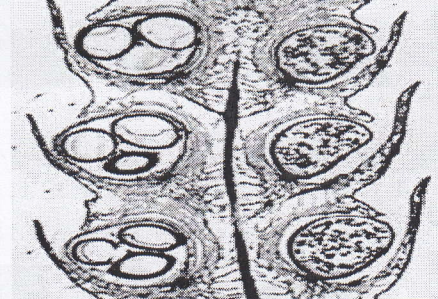
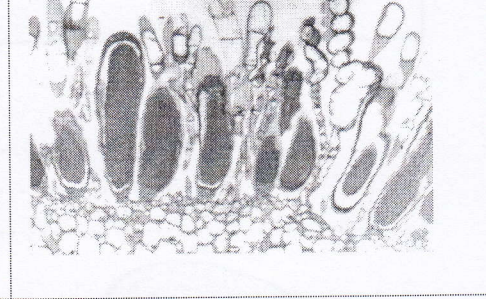
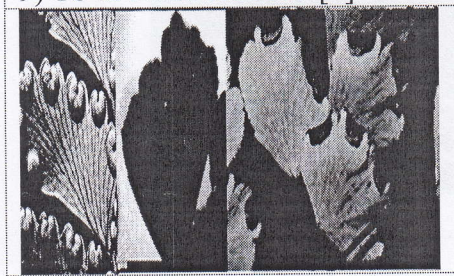
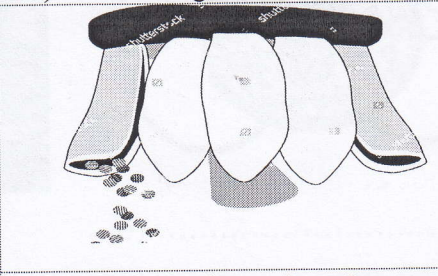
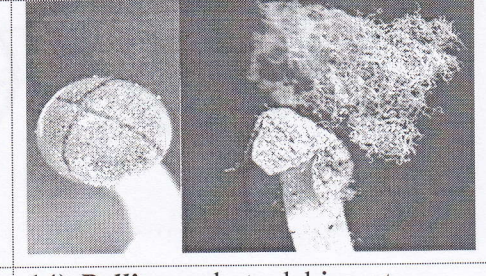
		
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6) Ferns sori []	7) <i>Marchantia</i> Archegoniophores []	8) <i>Andrea</i> capsule []
		
9) TS in Pinus old root []	10) LS in Selaginella cone []	11) Female moss flowers []
		
12) <i>Funaria</i> sori []	13) Sporangioophores in <i>sphagnum</i>	14) <i>Pellia</i> quadrate dehiscent

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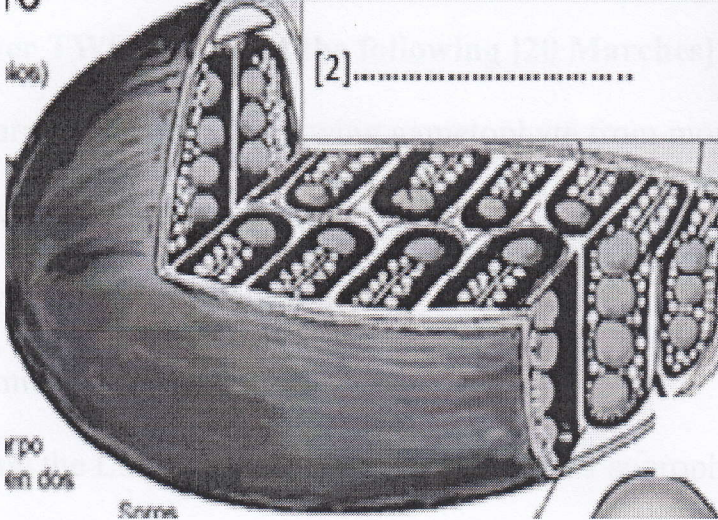
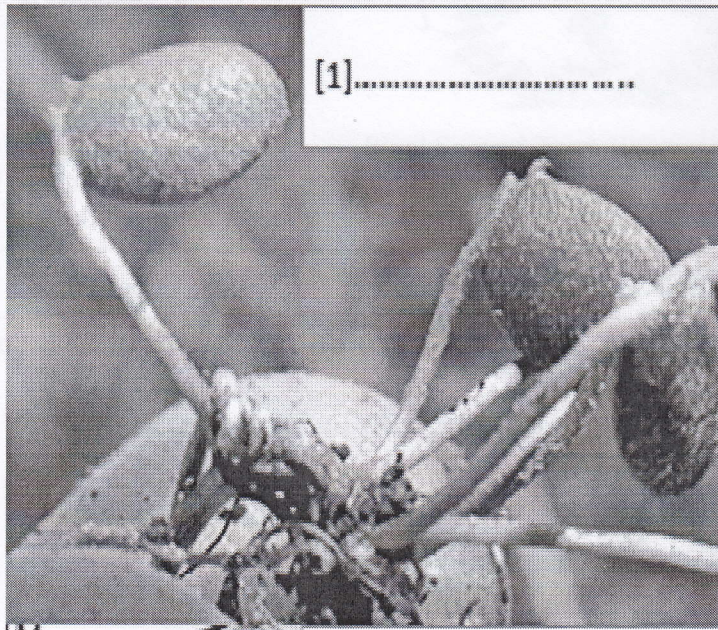
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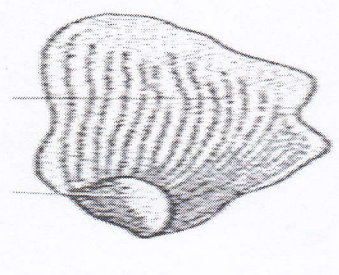
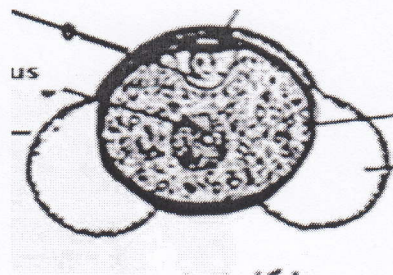
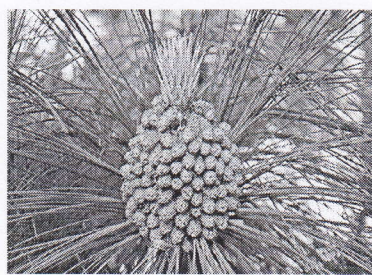
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Q5: Identify the following figures with different parts [7 Marks]:

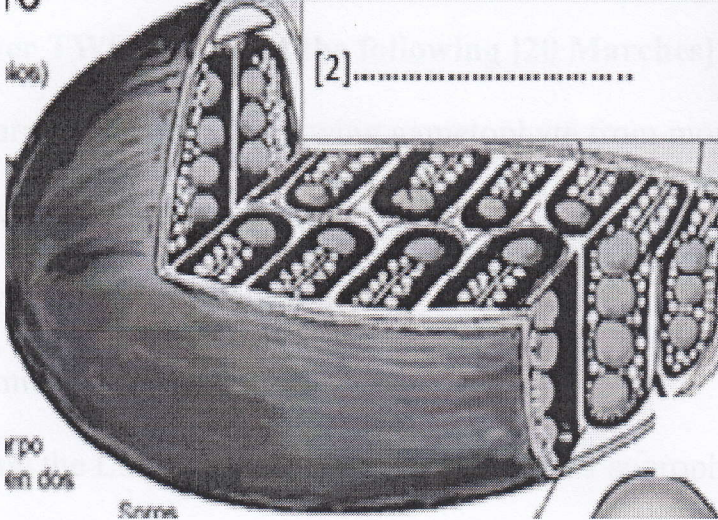
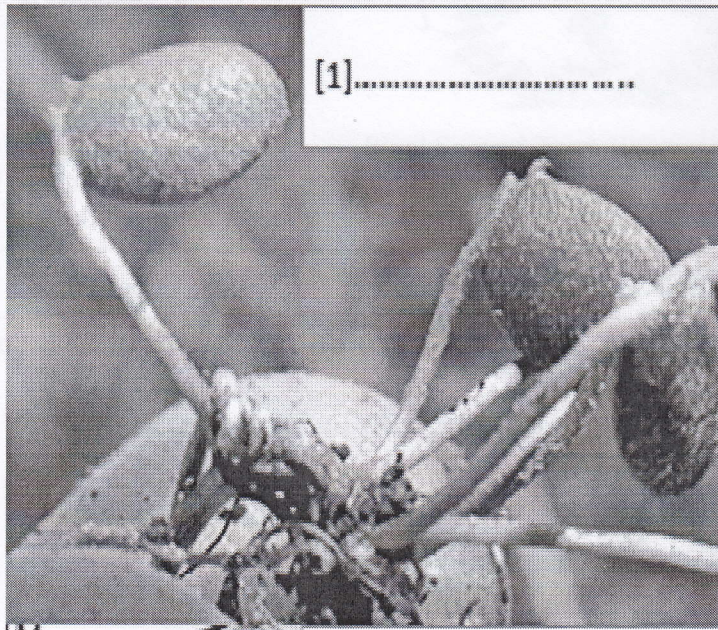


- 1).....
- 2)
- 3).....

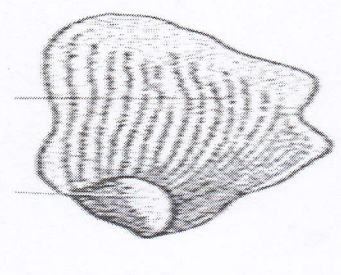
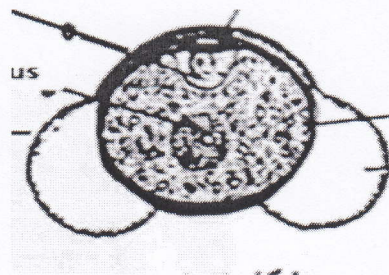
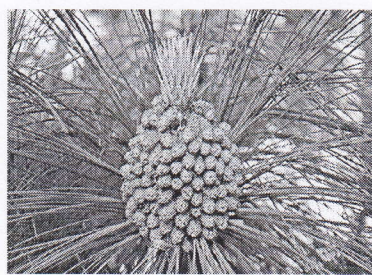


- 4).....
- 5).....
- 6).....

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Faculty of Science Botany and Microbiology Department		كلية العلوم قسم النبات والميكروبيولوجي
Introduction in Bionanotechnology (312B)		Time allowed :2 hours Score: 50 Marks

الامتحان مطبوع على ثلاث اوجه

Answer the following questions

- A. Answer Only Four questions. Use well labeled diagrams where appropriate. (20 marks)

1. Write in detail types of nanoparticles basis of origin.
2. Illustrate the uses of nanomaterials for environmental remediation.
3. Discuss the uses of nanomaterials in drug delivery (give two examples in details).
4. Write on the mechanism for formation of NPs (intracellularly and extracellularly).
5. Illustrate the toxic effect of nanoparticles on DNA.

- B. Write short notes on: (Only three) (9 marks)

1. Shapes of nanoparticles.
2. Dendrimers.
3. DNA nanotubes.
4. Synthesis of nanoparticles using bottom-up approach.

- C. Choose the correct answer: (10 marks)

1.no dimensions at the nanoscale, all are in the macroscale nanostructures with nanomaterials

A) 0D
C) 2D

B) 1D
D) 3D

2. To examine the optical properties of nanoparticles..... is used.

A) UV-Vis spectroscopy
C) Scanning electron Microscopy

B) X-ray Diffraction
D) Fourier transform infrared (FTIR) spectroscopy

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A) UV-Vis spectroscopy
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4. A cube has a side length of about 20nm. Calculate its surface to volume ratio.

A) 3
C) 0.3

B) 0.6
D) 1.3

5. Which of these is not a common application of nanoparticles?

A) Polymers
B) Cosmetics

C) Catalysts
D) Electronics

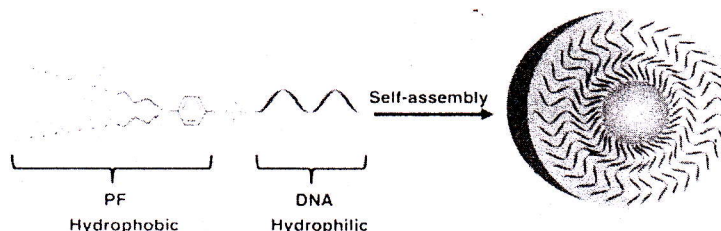
6. used for drug delivery.

A) Polymers
B) Liposomes

C) Bulk materials
D) metals nanoparticles

7. The image is identified as

A) DNA Micelle
B) Dendrimers
C) Liposome
D) Lipid bilayer



8. Why do nanoparticles have different properties than the bulk materials?

A) They have a greater surface area and are more catalytic properties.
B) They have a smaller surface area and are more catalytic properties.
C) They have a greater surface area and are less catalytic properties.
D) They have a smaller surface area and are less catalytic properties.

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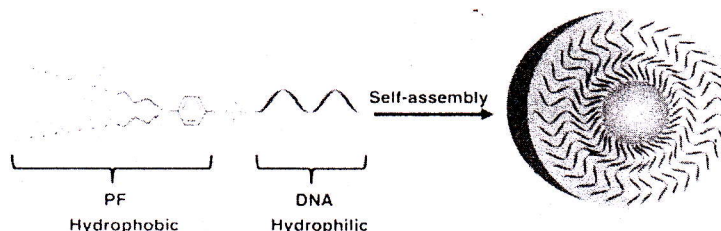
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9. **The main purpose of NP biosynthesis is to**
- A) Eliminate NP toxicity through cellular defense mechanisms.
 - B) Required to cellular metabolism.
 - C) Required to build cellular materials.
 - D) None of above
10. **The prefix "nano" comes from a ...**
- A) French word meaning billion
 - B) Greek word meaning dwarf
 - C) Spanish word meaning particle
 - D) Latin word meaning invisible

D. State true or false each of the following. Correct the wrong.

(11 marks)

1. Nanotechnology allows the manipulation of atoms or molecules to create or modify materials at the nanoscale.
2. The antimicrobial properties of nanomaterials have led to their application in food packaging.
3. Some parameters like metal ion concentration, extract composition and reaction period largely affect the size, shape, and morphology of the NPs.
4. Using an excessive amount of reducing agents leading to the aggregation of NPs.
5. Nanotubes are considered as Two-dimensional (2-D) nanomaterials.
6. In scanning electron microscope (SEM), the sample should be ultra-thin for the electrons to pass.
7. SEM provides information about functional groups of the sample.
8. In extracellular synthesis of nanoparticles, nanoparticles are released by autolysis of the cell.
9. Synthesizing nanomaterials by recovering metal ions using biological agents is not useful for medical applications.
10. The toxicity of nanoparticles is influenced by their shape.
11. It is simple for positively charged nanoparticles to enter cells. Additionally, they can attach to DNA with ease, damaging it.

*With my Best Wishes
Dr Shymaa Ryhan*

9. **The main purpose of NP biosynthesis is to**
- A) Eliminate NP toxicity through cellular defense mechanisms.
 - B) Required to cellular metabolism.
 - C) Required to build cellular materials.
 - D) None of above
10. **The prefix "nano" comes from a ...**
- A) French word meaning billion
 - B) Greek word meaning dwarf
 - C) Spanish word meaning particle
 - D) Latin word meaning invisible

D. State true or false each of the following. Correct the wrong.

(11 marks)

1. Nanotechnology allows the manipulation of atoms or molecules to create or modify materials at the nanoscale.
2. The antimicrobial properties of nanomaterials have led to their application in food packaging.
3. Some parameters like metal ion concentration, extract composition and reaction period largely affect the size, shape, and morphology of the NPs.
4. Using an excessive amount of reducing agents leading to the aggregation of NPs.
5. Nanotubes are considered as Two-dimensional (2-D) nanomaterials.
6. In scanning electron microscope (SEM), the sample should be ultra-thin for the electrons to pass.
7. SEM provides information about functional groups of the sample.
8. In extracellular synthesis of nanoparticles, nanoparticles are released by autolysis of the cell.
9. Synthesizing nanomaterials by recovering metal ions using biological agents is not useful for medical applications.
10. The toxicity of nanoparticles is influenced by their shape.
11. It is simple for positively charged nanoparticles to enter cells. Additionally, they can attach to DNA with ease, damaging it.

*With my Best Wishes
Dr Shymaa Ryhan*

	بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ	
Time Allowed: 2 hours	Subject: Plant Biochemistry_(352 N) <u>For the</u> Third Year (Botany) Students	Second term , June 2024

Answer The Following Questions

Question1: complete the sentences with correct answers (10 M):

- 1- The term phosphorylation means-----
- 2-. The light dependent reactions of photosynthesis called-----
- 3- The light independent reactions of photosynthesis called-----
- 4- Organelle responsible for respiration -----
- 5- The O^2 evolved in the light reaction come from-----
- 6.ATP synthase converts ----- to-----
- 7- Organelle responsible for photosynthesis.-----
- 8- Thylakoids structure means-----
- 9- Organelle responsible for protein synthesis-----
- 10- Photolysis of water means-----

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Question 2: Choose the correct answer for the following statements: (10 M)

- 1-The inactive precursor of an enzyme is called a(n):
a- activator b-apoenzyme c-proenzyme
- 2-Conversion of PGA to DHAP catalyzed by:
a- Isomerases b-Epimerases c-Ketol isomerase
- 3-fatty acids reduction uses:
a) FADH₂ b)NADPH₂ c) NADH₂
- 4-The activated donor in the synthesis of fatty acids is:
a) Acetyl-CoA b) Malonyl -COA c) Palmitoyl-CoA
- 5-Enzymes which have different molecular weight and catalyse the same reactions called:
a- Isozymes b- Isoforms c-Both
- 6-In light reaction solar energy converted into
a- ATP b-H₂O c- Glucose
- 7-The Oxygen produced in photosynthesis comes from
a-CO₂ b- H₂O c- Glucose
- 8-Electron acceptor of photosystem II is
a-Ferredoxin b-Plastoquinone c-cytochrome C
- 9-Synthesis of lipids takes place in plant cells at:
a) Cytosol b) Plastids c) Mitochondria
- 10-The oxidative phosphorylation occurs at:
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Question 3: Place a tick (✓) or (x) on the following statements(10 M):

- 1- Kinases Enzyme is catalysed phosphorylation by ATP-dependent protein ()
- 2-Competitive inhibitor induce change enzyme structure ()
- 3-A molecule bind to enzyme and increase its activity is called Alleviator ()
- 4-The final electron acceptor in oxidative phosphorylation is H₂O ()
- 5--Malic acid The acceptor of Acetyle –COA in Kreb's Cycle ()
- 6-Nitrate reductase reduce N₂ to ammonia in plant roots ()
- 7-Net ATP produced in glycolysis is 2ATP ()
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Faculty of Science Botany & Microbiology Department		كلية العلوم قسم النبات والميكروبيولوجي
Mycology2 (362B) Time: Two hours Total degree: 50 marks	Second semester exam. 2023/2024 Third Level Exam date: Thursday, 30/05/2024	

Q1: Put (√) for true sentence or (x) for false sentence (12 Only): (12 Marks)

- 1- Not all *Penicillium* teleomorphs produce cleistothecia. ()
- 2- Sexual reproduction often occurs in response to adverse environmental conditions. ()
- 3- The structural component of fungal cell wall is pectin. ()
- 4- Psychrophiles are fungi can live in wide range of temperatures. ()
- 5- A dikaryotic ascus that forms in the ascocarp undergoes plasmogamy, meiosis, and mitosis to form eight ascospores. ()
- 6- Rust and smut fungi are similar because both lack basidiomata. ()
- 7- Fungi belong to Deuteromycetes lacking anamorph. ()
- 9- *Cordyceps* fungus is restricted for the infection of termites. ()
- 10- Ergotism a disease produced when humans food or animals or birds feed on infected grains or grain products with *Claviceps purpurea*. ()
- 11- *Sphaerotheca pannosa* characterized with one ascus ascocarp. ()
- 12- *Urocystis tritici* is the causal agent of Flage smut of wheat. ()
- 13- Chromoagar medium is used as a differentiation medium for the genus *Candida*. ()

Q2: Choose the correct answer (13 Only) of the following:- (13 Marks)

- 1- Tertiary type of mycelium is formed in
A. *Ustilago* B. *Uromyces* C. *Puccinia* D. None of them
- 2- *Geotrichum candidum* belongs to
A. Pleosporaceae B. Microascaceae C. Dipodascaceae D. Erysiphaceae
- 3- Which of the following families is characterized by presence of cleistothecium?
A. Pleosporaceae B. Moniliaceae C. Nectriaceae D. None of them
- 4- Which of the following species gives the characteristic flavor to cheese?
A. *Penicillium italicum* B. *Aspergillus flavus*
C. *Aspergillus flavipes* D. *Penicillium camemberti*
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A. *Podosphaeria* B. *Chaetomium* C. *Phyllactinia* D. *Uncinula*

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- A. *Emericella nidulans* B. *Emericella quadrilineata*
 C. *Neurospora tetrasperma* D. *Pleospora allii*
- 7- Which one of the following produces filiform ascospores?
- A. *Claviceps* B. *Cochliobolus* C. *Emericella* D. *Neurospora*
- 8- An alkaloid is given to women in the third stage of labor to prevent hemorrhag
- A. Ochratoxin A B. Itaconic acid C. Aflatoxin D. Ergonovine
- 9- Which of the following is endoparasite on insects?
- A. *Claviceps* B. *Chaetomium* C. *Cordyceps* D. *Candida*
- 10- Which of the following fungi have bitunicate asci?
- A. Trichomaceae B. Erysiphaceae C. Pleosporaceae D. Saccharomycetaceae
- 11- Which of the following fungi produces statins?
- A. *Penicillium citrinum* B. *Aspergillus terreus* C. *A. niger* D. *A. flavus*
- 12- Lichens are associations between fungi and
- A. Fungi B. Bacteria C. Plant roots D. Algae
- 13- Which of the following fungi causes rust of rose?
- A. *Taphrina deformans* B. *Trichothecium roseum*
 C. *Phragmidium mucronatum* D. *Sphaerotheca pannosa*
- 14- Which of the following fungi produce ascospores with longitudinal and transverse septa?
- A. *Botryodiplodia* B. *Pleospora* C. *Lewia* D. *Nectria*

Q3: Compare between four from the following with drawing if possible: (15 Marks)

- 1- Formation of Asci and Ascospores through gametangial copulation and contact.
- 2- Flowering and seedling infection in smut fungi.
- 3- Diseases caused by Families: Pucciniaceae and Ustilaginaceae.
- 4- Teleomorphs in *Aspergillus* and *Penicillium*.
- 5- Sexual and asexual life cycle of honey dew disease.
- 6- The main differences between the causal agents of powdery mildews diseases.

Q4: Give the difference between 5 only of the following:- (10 Marks)

- 1- Unitunicate and bitunicate asci.
- 2- Holobasidium and Heterobasidium.
- 3- Gymnothecium and cleistothecium.
- 4- Telomorphs of *Tichoderma*, *Fusarium*, *Geotrichum* and *Alternaria*.
- 5- Macrocyclic (long life cycle) and microcyclic (short life cycle).
- 6- Apothecium and Acervulus.

Good luck

Prof. Dr. Mohamed Abdel Sater

Dr. Elhagag A. Hassan

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Prof. Dr. Mohamed Abdel Sater

Dr. Elhagag A. Hassan

	Assiut University – Botany and Microbiology department Final Exam (2024) for 3rd level students (Biotechnology program) Algal Biotechnology (304 BT)	
	Time allowed: 2h	Total Marks:50

Answer the following questions

Q I: Answer only two of the following questions: (15 marks)

- A) Assume that you have a living organism, a manufacturing company, and a source of funding, what is the project that you would like to work with or the research idea that you wish to implement after you study the biotechnology course.
- B) What is the construction of microbial fuel cells.
- C) Write short notes on the application of biotechnology in medicine.

QII: Put (T) in front of the correct statements and (F) in front of the false ones: (10 marks).

1	In the beauty industry, algal compounds used as antioxidants, sunscreens, thickening agents, skin sensitizers.
2	Carrageenan extracted from Phaeophyta while alginic acid found in the cell wall of the red algae.
3	Scientist can apply biotechnology in diagnosis for detecting genetically disorders disease.
4	Microbial fuel cell can help convert bio-waste into electricity.
5	At cathode of MFC, electrons combine with an electron acceptor to generate electricity
6	Algae considered as one of the cheapest sources of biofuel.
7	Bio photovoltaic devices (solar cells) utilize the photosynthetic properties of microorganisms such as algae to convert light into electric current.
8	Algae can produce high yield of oil which convert to biodiesel.
9	Unexpected impact of genetically modified organism is on of biotechnology application problem.
10	Various products produced from algae as diatomite, iodine, Astaxanthin.

QIII: Differentiate between each of the following (Answer 3 Only): (15 Marks)

1. Turbidostat and chemostat culture.
2. Heterotrophic and mixotrophic cultivation.
3. Horizontal and flat-panel photobioreactor.
4. Flocculation and floatation for algae harvesting.
5. Fucoidan and ulvan.
6. Raceway ponds and photobioreactors.

QIV: Write the scientific term for each of the following (Answer 4 Only): - (2 Marks)

1. A microalgal culture that is free of any microorganisms except the target alga.
2. A process in which fungal hyphae is used for harvesting the microalgal cells.
3. An important element for algae as a constituent of chlorophyll.
4. Bioplastic polymers produced by prokaryotic microalgae.
5. Polyphenolic compounds in the brown algae.

QV: Write short notes on the following: (8 Marks)

1. Chemical structure and extraction of alginate from brown algae.
2. Chemical structure and extraction of carrageenan from red algae.

With all best wishes,,,,,,,,,,,,,,,,,,,,,Prof. Dr./ Awatief F. Hifney & Dr./ Mohamed Gomaa

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Q2: Multiple True Choice:**(20 marks) (40 questions)**

31. Cleistothecium ofcontains several asci
(A) *Erysiphe* (B) *Microsphaera* (C) Both a & b
32. Scab lesions located on the woody tissues infected by *V. inaequalis* produce....
(A) Conidia (B) Ascospores (C) White mycelium
33. Biological control of *Rhizopus* on stored peaches has been achieved experimentally by treating them with.....
(A) *Candida* (B) *Pichia* (C) Both a & b
34. When the asci of *Taphrina* open to release their spores, they tend to split across.....
(A) The tip (B) The bottom (C) Both a & b
35. Formation of brown streaks in infected sapwood is a symptom of disease.
(A) Nectria canker (B) Dutch elm (C) Peach Leaf Curl
36. Fungal spores are disseminated by wind and infect the shoot of plant.
(A) Air-borne disease (B) Seed-borne disease (C) Soil-borne disease
37. Infection by *Ustilago nuda* occurs through.....
(A) Ovary (B) Embryo (C) Both a & b
38. The growth of pathogen from the point of entry to varying extents without showing adverse effect on tissues through which it passes.
(A) Endemic (B) Systemic infection (C) Sporadic disease
39. Hooked outgrowths called clamp connections are formed in members of.....
(A) Ascomycetes (B) Basidiomycetes (C) Both a & b
40. *Rhizopus* hyphae secreteenzymes, which break down and dissolve the middle lamella pectic substances of the plant cells.
(A) Cellulolytic (B) Pectinolytic (C) Hydrolytic
41. Indirect losses of vines caused by *Plasmopara viticola* can result from premature defoliation due to.....
(A) Water-soaked (B) Foliar infections (C) Rotting inflorescences
42. Resting sporangia of *Synchytrium endobioticum* divide meiotically and germinate producing.....
(A) Zygote (B) Prosporangia (C) Spherical zoospores
43. When smut spores are exposed they are blown by to flowers of healthy plants
(A) Wound (B) Wind (C) Soil

44. Spores formation in loose smut of barley is complete at
 (A) Ovary wall (B) Spike emergence (C) Flowering
45. Zoospores of downy mildews fungi, germinate by producingthat enters the leaf through stomata on the lower leaf surface.
 (A) Germ tube (B) Flagella (C) Both a & b
46. A fungus in which the entire thallus is differentiated into a reproductive sporangium when mature.
 (A) Holocarpic (B) Holocarpism (C) Both a & b
47. Naked asci containing ascospores of the pathogen are produced on the surface giving them.....
 (A) Curled (B) Proliferate quickly (C) Dusty appearance
48. *Phytophthora infestans* produceon the surface of potato stems and leaves.
 (A) Sporangia (B) Zoospores (C) Both a & b
49. Non-infectious plant disease due to abiotic causes such as adverse soil conditions.
 (A) Disorders (B) Colonization (C) Harmful changes
50. *Albugo candida* growsthe plant stimulating various types of deformities.
 (A) Inside (B) Outside (C) Both a & b
51. Most of the deterioration of grains and legumes after harvest, during storage or transit, is caused by several species of the fungus.....
 (A) *Aspergillus* (B) *Penicillium* (C) Both a & b
52.causing a root diseases of cereals and grasses.
 (A) *Polymyxa* (B) *Pythium* (C) Both a & b
53. Cool damp nights and warm sunny days favor the development of Powdery Mildew and temperatureis favorable for infection.
 (A) 11-28 °C (B) 12-20 °C (C) 15-30 °C
54. *Plasmopara viticola* grows out through the stomata of infected tissue and produces sporangiophores during periods of high humidity and temperatures above.....
 (A) 5 °C (B) 13 °C (C) 26 °C
55. Fresh fruits and vegetables should be harvested and handled carefully to avoid.....
 (A) Moisture (B) Wounds (C) Ventilation
56. When loss of moisture is rapid, infected organs by *Rhizopus* finally
 (A) Mummify (B) Dry up (C) Both a & b

57. Young shoots infected by *Plasmopara viticola* usually are
 (A) Stunted (B) Thickened (C) Both a & b
58. Inflorescences and flowers of infected Crucifers plants become due to hypertrophy and hyperplasia of affected cells.
 (A) Thickened (B) Browing (C) Water soaked
59. *Graphium ulmi* is the anamorph stage of
 (A) *Ophiostoma* (B) *Venturia* (C) *Malus*
60. Prior to development of the ergot bodies, the fungus develops.....
 (A) Sclerotia (B) Honey dew (C) kernel
61. The fungus *Sclerotinia* spreads in infected tissue and the plant becomes
 (A) Slimy (B) Water-soaked mass (C) Both a & b
62. *Puccinia graminis* var. *tritici* has a highly complex life cycle called.....
 (A) Macrocytic (B) Polycyclic (C) Both a & b
63. *Tolyposporium ehrenbergii* belonging to family.....
 (A) Ustilaginaceae (B) Pucciniaceae (C) Melampsoraceae
64. Head and loose smut of sorghum caused by genus.....
 (A) *Sphacelotheca* (B) *Ustilago* (C) *Urocystis*
65. Black, whiplike sorus arising from the terminal meristem of a stalk infected by *Ustilago scitaminea*
 (A) Bunt smut (B) Loose smut (C) Sugarcane smut
66. Parasites or saprophytes may have the faculty to change their mode of
 (A) Movement (B) Nutrition (C) Reproduction
67. Degree of pathogenicity in a qualitative sense.....
 (A) Virulence (B) Aggressiveness (C) Pathogenesis
68. Root rot of ginger caused by
 (A) *Pythium myriotylum* (B) *Pythium debaryanum* (C) *Rhizoctonia*
69. Sclerotia of *Claviceps purpurea* produced in small grains fall on the surface of
 (A) Wheat plants (B) Soil (C) Heads of cereals
70. The anamorph of *Taphrina* is a single- celled budding yeast named.....
 (A) *Bremia* (B) *Lalaria* (C) *Sclerotinia*

With My Best Wishes,,,,,,,,, Dr. Nivien Nafady



Final Exam
2023-2024



Assiut University

Advanced taxonomy 332B

Faculty of Science

Time: 2 hours

Botany and Microbiology Department

Total score: 50 marks

Q1: Choose the correct answer (15 marks):

1. The other accepted name for the family Umbelliferae is

- A) Clusiaceae B) Apiaceae C) Poaceae D) None of the above

2. The ornamentation type confined only on members of tribe Lactucae of the Asteraceae.....

- A) Echinate B) Scabrate C) Lophate D) None of the above

3. The fruit in the family Iridaceae is a.....

- A) Capsule B) nut C) follicle D) None of the above

4. Morphine is an example of

- A) Alkaloids B) Flavonoids C) Non-protein amino acids D) None of the above

5. The 10-base long primers used for amplification of products of unknown sequence is used in

- A) AFLP B) RAPD C) RFLP D) None of the above

6. Primers of are usually designed based on the repeat sequence motifs of microsatellites such as (GA)_n or (CA)_n.

- A) AFLP B) RAPD C) SSR D) None of the above

7. BLASTN algorithm is used for.....

- A) Homology search B) Multiple Sequence Alignment C) Phylogenetic tree re-construction D) All of the above

8. "DNA barcodes are standardized short sequences of DNA ranged betweenbase pairs long that in theory can be easily isolated and characterized for all species of plant on the planet.

- A) 200-400 B) 400-800 C) 1000-1600 D) None of the above

9. The stamens are numerous in the family.....

- A) Amaranthaceae B) Asclepiadaceae C) Poaceae D) None of the above

10. The flowers are unisexual in the family

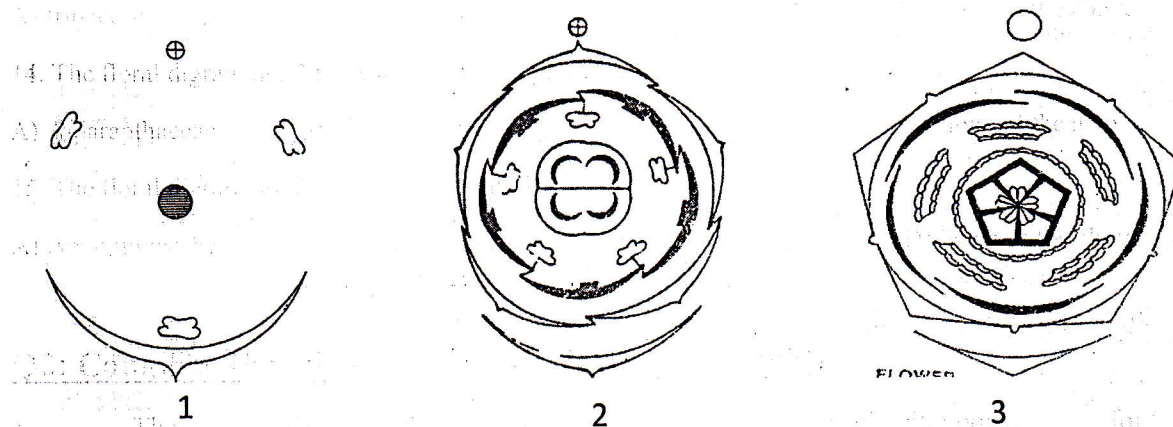
- A) Amaranthaceae B) Casuarinaceae C) Orobanchaceae D) None of the above

11. The fruit is follicle in

- A) Amaranthaceae B) Bombacaceae C) Asclepiadaceae D) None of the above

12. is a family of flowering plants with an inferior ovary.

- A) Amaranthaceae B) Asclepiadaceae C) Acanthaceae D) None of the above



13. The floral digram no. 1 represents the family

- A) Iridaceae B) Poaceae C) Cyperaceae D) None of the above

14. The floral digram no. 2 represents the family.....

- A) Amaranthaceae B) Asclepiadaceae C) Boraginaceae D) None of the above

15. The floral digram no. 3 represents the family.....

- A) Amaranthaceae B) Asclepiadaceae C) Acanthaceae D) None of the above

Q2: Complete the followings (15 marks; 1 mark each):

1. The vernacular names are disadvantageous for
and

2. is a member of the family Asclepiadaceae.

3. Pollenkitt is

4- The pollinium apparatus is made up of
and

5- Of the most popular families that have been studied chemo-taxonomically are
and

- 6- Polyploidy is
- 7- Fluorescent in-situ hybridization (FISH), is a technique used for
- 8- The families and have inverted small chromosomes with non-localized centromeres.
- 9- Generally, marker polymorphisms in organisms are caused by..... and
- 10- has the largest genome size (149,000 Mbp) of any organism analyzed to date.

Q3: Give the scientific term for the following (10 marks).

- 1- Hook-like lignified outgrowths in the fruit of the family Acanthaceae.
- 2- The basic element (a specimen, or a description or a figure) of a taxon to which the name is permanently attached.
- 3- A duplicate of the holotype (always a specimen).
- 4- When the pollen grain has three or more apertures distributed at equal distances around its equatorial line.
- 5- The appearance of the basic chromosome set (genome) under the light microscope.
- 6- A group that originated from a single common ancestor, but does not contain all descendants from this ancestor.
- 7- A class of Angiosperms that contains 19 orders and 65 families.
- 8- A family of Angiosperms that is an extremely natural group, very distinct from any other known family and considered most primitive living family.
- 9- A structure exists between the junction of leaf blade and leaf sheath in grasses.
- 10- Small sacs that inflate to spread apart the floret of grasses.

Q4: True or False (10 marks):

- 1- In *Albizia lebbek* (L.) Benth., the author after brackets is called the combination author.
- 2- Citric acid is one of the primary metabolites.
- 3- Plants containing betalins do not contain anthocyanins.
- 4- DNA is a primary semantide while RNA is a secondary semantide.

- 5- Amino acid sequencing studies confirmed by closeness of *Delphinium* to *Aconitum*.
- 6- The highest recorded chromosome number in an angiosperm is $2n = 1260$.
- 7- AFLP is a hybridization-based marker (non-PCR based).
- 8- *Echium* is a genus of the family Amaranthaceae.
- 9- The stem is triangular in cross-section and the leaf sheath is open in the family Cyperaceae.
- 10- *Cocos nucifera* is a plant of the family Poaceae.

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With my best wishes

Mostafa Aboulela



Environmental Bioremediation (BT306)



Final Examination

Department of Botany & Microbiology

2nd semester 2023/2024
3rd Level (Biotechnology)
50 Marks

Time allowed: 2 hours

Q1) Identify the choice that best completes the statement or answers the question. (10 Marks)

- 1) microorganisms are principally responsible for the degradation of organic contaminants in the environment.
(a) Autotrophic (b) Photoorganoheterotrophic
(c) Chemoheterotrophic (d) Photolithoautotrophic
- 2) Stimulating biodegradation through the mixing of contaminated water and soil, fertilizers and carbon dioxide in a bioreactor is a bioremediation technique.
(a) Composting (b) Slurry-phase bioremediation
(c) In situ hybridization (d) Biopile treatment
- 3) The process of bioremediation that utilizes plants to break down pollutants is
(a) Composting (b) Biopile
(c) Phytoremediation (d) Land farming
- 4) Bioaugmentation involves
(a) eliminating sludge (b) plants usage for bioremediation
(c) addition of microbes to cleanup a site (d) bioventing
- 5) This cleanup approach includes removal of groundwater or soil from its natural setting to permit for bioremediation
(a) Bioaugmentation (b) in situ bioremediation
(c) ex situ bioremediation (d) Phytoremediation
- 6) In phytoremediation, are involved in remediation
(a) Plants (b) Yeast
(c) Animals (d) All of these
- 7) Using microorganisms that are already present in the environment to biodegrade harmful contaminant is known as
(a) Phytostabilization (b) Intrinsic bioremediation
(c) Accelerated bioremediation (d) Biosorption
- 8) Injection of air under pressure below the water table to increase groundwater O₂ level and enhance the biological degradation rate of contaminants by naturally occurring bacteria.
(a) Bioventing (b) Biosparging
(c) Biostimulation (d) Rhizostimulation
- 9) is an example of the solid phase treatment system.
(a) Bioreactors (b) Composting
(c) Biopiles (d) Bioleaching
- 10) Using the plants to control the migration of contaminants is known as
(a) Phytovolatilization (b) Rhizosphere bioremediation
(c) Phytostimulation (d) Phytohydraulics

1	2	3	4	5	6	7	8	9	10

Q2) Write the scientific term for each of the following:- (10 Marks)

1) The contaminant is taken up by microbes and is not used as food, but it is metabolized alongside the organism's food into a less hazardous chemical.	
2) Supplying air and nutrients through wells to contaminated soil to stimulate the indigenous bacteria.	
3) A containment vessel used in particular for fermentation or bioremediation under control.	
4) Adding the substrate or nutrients to the environment to help break down the contaminants by making the microorganisms grow more rapidly.	
5) Combining the contaminated soil with non-hazardous organic compounds to support the development of a rich microbial population for the purpose of bioremediation.	
6) The use of plants for accumulating heavy metals in the harvestable parts and removing contaminants from the soil.	
7) The contaminant is up taken by plants, metabolized, modified and released to the atmosphere via stomata.	
8) Sequentially removing of halogen atoms from the organic molecule and replacing them with hydrogen.	
9) The chemical compounds that found in an organism but it are not normally produced or expected to be present in it.	
10) The synthesis of a degradative enzyme for a complex substrate is inhibited when the easily degradable substrate is present.	

Q3) Give the reason for each of the following: (5×2=10 Marks)

1- Plants belonging to Chenopodiaceae, in comparison with other families, were found to take up the highest concentrations of cesium-137.

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2- The reductive dechlorination of halogenated organic compounds can only proceed in the presence of an appropriate source of carbon for microbial growth.

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3- Mycorrhizae-associated plants accumulate radionuclides more than the non-inoculated plants.

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4- Aerobic systems are usually preferred for bioremediation.

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5- Long-chain aliphatic hydrocarbons are more easily degraded than short-chain hydrocarbons.

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Q4) Briefly define and answer Four only of the following: (4×3=12 Marks)

1) Account the factors which affect slurry-phase biodegradation?

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2) The characteristics of heavy metals accumulated and hyperaccumulated plants and define their benefits in phytoremediation.

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3) Dioxygenases and their role in biodegradation.

4) Uses, advantages and disadvantages of Riparian corridors or Buffer strips.

5) Briefly follow the fate of contaminants in plants.

Q4) Follow the biodegradation sequence leading to complete oxidation of the aliphatic hydrocarbon "n-Octadecane ($C_{18}H_{38}$)" by microorganisms. Calculate the net energy gain from one mole.

Q1) I

1

Good Luck
Prof. Dr. Taha Ramadan

Page 5 of 5

Assiut University
Faculty of Science
Botany and Microbiology
Department

Host parasite relationship (B 366)
Time allowed: 2 hours
2023-2024
5/2024

Q1 Shade the Correct Answer; A, B, C or D (15 marks, One mark each)

1. The germ tube of the pathogen attached itself on the host surface by special structure called: A) Haustorium B) Infection hypha C) Appressorium D) Penetration hypha
2. The propagules that cause the spreading of the disease are called: A) Sufficient inoculum B) Primary inoculum C) Secondary inoculum D) Inoculum potential.
3. The following are the most common necrotic symptoms except: A) Leaf spots B) Blights C) Wilts D) Damping off
4. The time lapsing between inoculation and appearance of symptoms is called: A) Invasion period B) Inoculation period C) Resistant period D) Incubation period.
5. In absence of their cultivated host, animate pathogens must find alternate source of: A) Infection B) Penetration C) Incubation D) Survival.
6. The propagules of the pathogen when come in contact with the host surface are called: A) Inoculum B) Appressorium C) Haustoria D) Mucilagenous sheath
7. Entry through non- cutinized surfaces is represented by one only of the following: A) Root hairs. B) Stomata C) Lenticels D) Wounds
8. The propagules that initiate the infection are called: A) Sufficient inoculum B) Primary inoculum C) Secondary inoculum D) Fungal inoculum
9. Some pathogens are host specific because: A) Spores germinate only in presence of nutrients exuded by the pathogen B) Spores germinate only in presence of nutrients exuded by the host C) Many fungal pathogens must

grow first before penetration D) Many fungal pathogens need fast multiplication before penetration.

10. Spores of *Tilletia* sp. only germinate A) as soon as they are fully formed until the following spring C) until the chains of spores are broken D) after exposure to temperature below 10 °C

11. The relationship between the parasite and the host is known as:
A) Parasitism B) Pathogenicity C) Survive D) Penetration

12. In foolish seedling disease of rice, the rice seedlings infected with *Fusarium moniliforme* grow rapidly and become much taller than the healthy plants due to fungal secretion of: A) Dormin B) Auxins C) Cytokinins D) Gibberellins.

13. Following are considered structural changes occur in diseased plants except A) Wilt B) Sterile flowers C) Hairy roots D) Crown galls

14. Fungal spores first germinate forming: A) Stomata B) Appresorium C) Haustoria D) Germ tube

15. In indirect penetration the germ tubes enter the host through:
A) Wounds. B) Intact plant surfaces. C) Floral parts. D) Root hairs.

Q2 write (T) for true statements or (F) for false statements: (15 marks, One mark each)

1. () Indirect penetration can occur through injuries or wounds.
2. () The germination process of spores is being stimulated by diffusion of secretions from the pathogen.
3. () The infective propagules coming in contact with the living host are known as inoculum potential.
4. () Symptoms associated with overgrowths include Warts.
5. () Fungi obtain pectinolytic enzymes are important in soft and dry rot diseases.
6. () Leaf curl is a symptom associated with hypogrowths.

7. () Unfavorable intensity of light is considered as one of the animate causes of plant disease.
8. () Symptoms associated with hypogrowths include Dwarf.
9. () In several plant diseases, the pathogen interfere directly with the reproduction of the host plant by killing the embryo of the seed.
10. () Pathogens can cause balance in hormonal system of the diseased plants.
11. () Chlorosis is the yellowing resulted from infection by viruses, fungi, and bacteria.
12. () The word rust means sooty or charcoal-like powder.
13. () Incubation period is necessary between penetration and to the appearance of symptoms.
14. () In normal conditions, the abscission layers are formed in plants by the action of growth regulators.
15. () Air is considered as a habitat for several plant pathogens.

Q3. Write short note on two only of the following: (10 marks, five marks each)

- a) Structural and physiological changes occurred in diseased plants.
- b) Conditions that necessary for a success of infection.
- c) Give the inoculum potential in each of the following cases: *Plasmopara viticola*, *Rhizoctonia solani*, *Pythium debaryanum*, *Armellaria mellea*.

Q4. Explain two only of the following(10 marks, five marks each)

- a) Some pathogens can cause disbalancing in growth of their host.
- b) Direct penetration is more complicated than indirect penetration.
- c) Host range.

انتهت الاسئلة

WITH MY BEST WISHES - Prof. A. Y. Abdel-Malek

Faculty of Science Botany & Microbiology Department		كلية العلوم قسم النبات والميكروبيولوجي
Recycling and waste management (310BT) Time: Two hours Total degree: 50 marks	Second semester exam - the academic year 2023/2024 Third Level Exam date: Saturday, 01/06/2024	

Q1: Write in details about Five only of the following: (20 marks)

1. Sanitary landfills
2. Factors affecting composting
3. Halophytes as suitable crops for saline agriculture
4. Cultivation of edible mushrooms.
5. Preparation and advantages of composting.
6. Phases of biogas production.

Q2: Compare between each of the following: (14 marks)

1. Open dumps and Ocean dumping as methods of solid waste disposal.
2. Advantages and disadvantages of silage.

Q3: Answer the following questions: (10 marks)

1. Can newspapers be composted?
2. Does compost have any value as a fertilizer?
3. Is it necessary to add inoculum to the compost pile to activate the composting process?
4. Is plastic packaging recovered for recycling than paper packaging?
5. Using rechargeable batteries is a good way to reduce waste?

Q4: Choose the correct answer for each of the followings: - (6 Marks)

1. Municipal Solid Waste is the term used to describe which kind of solid waste?

- a. Hazardous b. Toxic c. Non-hazardous d. Non-toxic

2. Why do plastics fall under a difficult material to recycle?

- a. Because it is a very hard material b. Because plastic is very adhesive in its nature
b. Because of different types of polymer resins Because of the different sizes of plastic

3. How Does an organic material decompose in the buried solid waste?

- a. By the action of microorganisms b. By the action of oxidation
b. By the soil particles d. By the flow of water

4. What is called for the method of burning municipal solid waste under operating conditions and suitable temperature?

- a. Landfill b. Recycling c. Vermicomposting d. Incineration

5. Wastes burning is not an acceptable practice of solid waste management because ____?

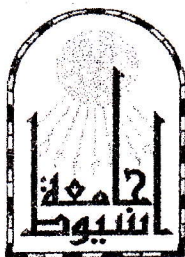
- a. It requires a lot of space. b. It is very costly.
c. It causes several environmental issues. d. It requires modern technologies.

6. When the matter present inside the sanitary landfill breaks down, Which of the following gas generates?

- a. Methane b. Nitrogen c. Hydrogen d. All of the above

Good luck

Dr. Amal Danial



Assiut University Academic Program: Microbiology + Chemistry & Microbiology
Faculty of Science Final Term Exam Studying Year: 2023/ 2024
Department: Botany & Microbiology Course Code B 396
Course Title: Industrial Microbiology Third level Second semester
Total Degree: 50 marks 26-5-2024 Allowable Time: Two hours

I- Choose the correct answer from the following answers:

(10 marks, one for each)

- 1- Propagation of starter in any fermentation process is a step of:
a) Up-stream process b) Med-stream process
c) Down-stream process d) Follow-up process.
- 2- The drying temperature of active dry yeast is nearly:
a) 25 °C b) 35 °C
c) 65 °C d) 98 °C
- 3- The suitable sugar concentration at the beginning of ethanol production cycle is:
a) 1 – 5 % b) 7 – 10 %
c) 15 – 17 % d) 18 – 22%.
- 4- Glycerol formed during ethanol fermentation in the presence of:
a) Sodium chloride b) Sodium sulfite
c) Sodium nitrite d) Sodium nitrate.
- 5- Cider vinegar produced by bacterial acidification of:
a) Concentrated apple juice b) Diluted apple juice
c) Clarified apple juice d) Fermented apple juice
- 6- The ideal method for microbial citric acid production is:
a) Submerged fermentation b) Continues fermentation
c) Semi-continues fermentation d) Surface culture fermentation.
- 7- Microbial poly-hydroxylation of progesterone followed by dehydrogenation leads to the formation of:
a) Cortisone b) Cortisol
c) Prednisone d) Androsten 3, 17 dione
- 8- Dehydrogenation after side chain degradation of progesterone by *Trichurus* formed:
a) Androsta-1,4 diene 3,17 dione b) Δ^4 androsten 3,17 dione
c) Testosterone d) Δ^4 dehydrotestosterone
- 9- The suitable carbon source for penicillin production is:
a) Glucose b) Lactose
c) Fructose d) Molasses
- 10- Gramicidin is one of:
a) B-lactam antibiotics b) Tetracycline
c) Macrolide antibiotics d) Polypeptide antibiotics

من فضلك لاحظ باقي الأسئلة في ظهر الصفحة

II. Answer by True (T) or False (F) on the following statements

(10 marks, one for each)

1. Selection of raw materials for any fermentation process depend on sterilization requirements.
2. The ideal drying method of fresh baker yeast is using flush plate and frame filter operation.
3. Treatment of molasses for ethanol production achieved by only dilution into suitable concentration.
4. In ethanol fermentation, aeration is very important during yeast propagation.
5. Sterilization of vinegar achieved by microfiltration or pasteurization.
6. All sugar used for citric acid fermentation converted to citric acid.
7. Epoxidation of a steroid hormone lead to increase their activity.
8. Epi-cortisol is 11α , 17α , 21 trihydroxyprogesterone.
9. Cephalosporin has a 4-member cyclic amide
10. Streptomycin is sulfur-containing antibiotics.

III. Explain only five of the following

(25 marks, 5 for each)

1. Preparation of sugarcane molasses for ethanol fermentation.
2. Different applications of Baker yeast.
3. Clarification, sterilization and bottling processes for natural vinegar.
4. Isolation of citric acid from fermented mash.
5. A general fermentation method that can be used for a B-Lactam antibiotic production.
6. Different types of microbial side chain degradation of steroid hormones.

IV. What are the advantages and/or disadvantages of using the following

(5 marks, 2.5 for each)

1. Using tetracycline to treat microbial infections.
2. Using batch fermentation to produce ethanol.

Good Luck...

Prof Dr: S. S. El-Maraghy & Prof Dr: A. A. Zohri



The exam is five pages long

Answer the following questions

(Total 50 marks)

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- Higher K_m means higher affinity of an enzyme to its substrate. ()
- 3- For enzyme purification the salt concentration and pH should adjusted. ()
- 4- In enzyme reactors the enzyme must be immobilized. ()
- 5- Polypeptide is the structural unit of enzyme. ()
- 6- The uncompetitive inhibitor is similar to the substrate. ()
- 7- Regulatory enzymes exhibit increased or decreased catalytic activity in response to certain signals. ()
- 8- Peroxidases can be used in cosmetics. ()
- 9- Allosteric enzymes have three binding sites. ()
- 10- Beta galactosidase in *E.coli* is a constitutive enzyme. ()
- 11- Batch reactors are suitable with all enzymes. ()
- 12- Malate dehydrogenase occurs in different forms in the cytoplasm. ()

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) Apo enzyme | 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- All of the following are enzyme purification methods except:

- | | |
|------------------|--------------------------------|
| a) Adsorbent gel | b) Electrophoresis |
| c) Heating | d) Altering salt concentration |

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- The goals of engineering therapeutic and detoxifying enzymes are:

- a) Increase their deliver
- b) Develop their stability
- c) Improve their potency and specificity
- d) all of the above

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

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

8-All the following can use as a detergent except:

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

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

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

10- Compartmentation is one form of enzyme:

- a) Regulation
- b) Purification
- 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 alkaline 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:

(10 marks)

1- Write what you know about enzymes specificity. (5 marks)

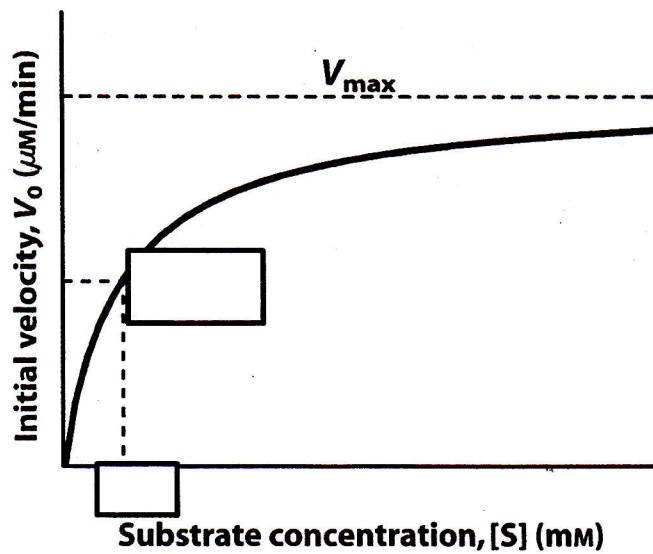
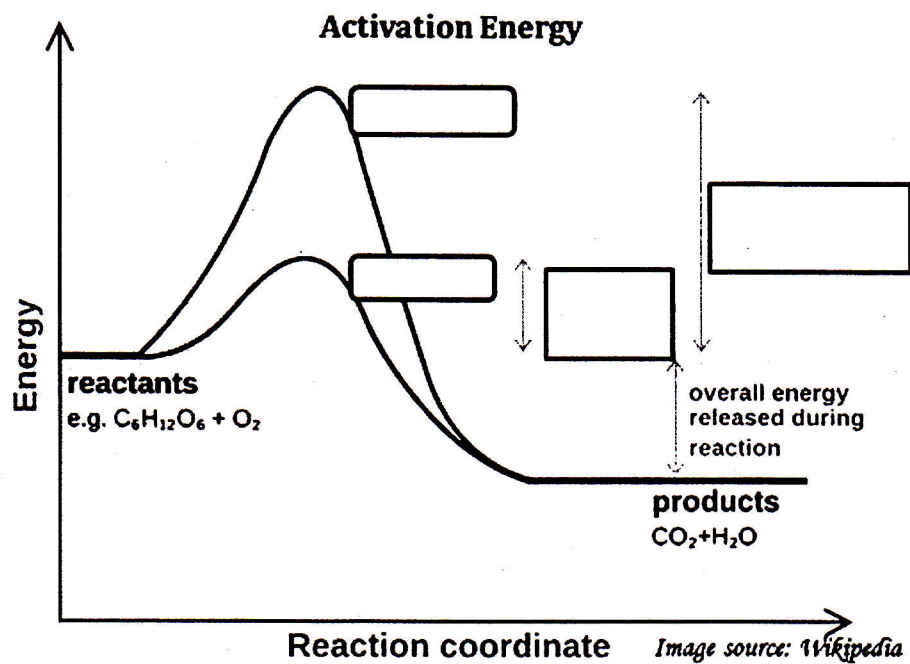
2- Using enzymes in industry is best and save .Explain? (5 marks)

Third Question**(15 marks)****a. Compare between the following (8 marks)**

1- Competitive inhibitors	Non-Competitive inhibitors
2- Lock & key theory	Induced fit theory

b. Write about the rule of enzymes in the manufacturing of drugs (only four points). (4 marks)

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



With my best wishes

Dr/ Huwida Abdel-kader



second Semester final Examination 2023 / 2024

Subject: Course 314 Bot

(Fermentation industry)

Students: (Industrial chemistry section)

General Instructions: -Answer the following questions.

Q1. Choose the correct answer: (5 marks)

1. Which one of the following represents the correct members of lactone rings in macrolides?
a. 10
b. 11
c. 13
d. 15
2. For any one of the following groups is erythromycin related to?
a. Macrolides
b. Tetracyclins
c. β -lactam
d. Polypeptides
3. Which one of the following is applied for streptomycin production?
a. *Aspergillus flavus*
b. *Streptomyces griseus*
c. *Penicillium notatum*
d. *Streptomyces erthrens*
4. Which one of the following is the main producer of itaconic acid?
a. *Ustilago maydis*
b. *Aspergillus terreus*
c. *Candida sp.*
d. *Aspergillus flavus*
5. According to the side chain, which one of the following is the chemical name of ampicillin?
a. Benzylpenicillin
b. Phenoxymethylpenicillin
c. D- α Amino benzyl penicillin
d. 1- amino cyclohexyl

Q2. Place ($\checkmark$) or (X) on the following: (21 marks)

1. Continous culture is a closed system in which nutrients are utilized in relatively high rate. ()
2. Industrial microbes must be slow growing ones. ()
3. Products of fermentation must be easily isolated and determined. ()
4. Maintenance on physiological and genetical characters of microbes during fermentation is necessary. ()
5. The aim of primary screening is the selection of the most effective microbial isolate for certain fermentation process. ()
6. Amino glycosides are bacteriostatic antibiotics that act on the outer membrane of the bacterial cell. ()