

- d) Type IV
- 8- Which part of the antibody is responsible for most biologic activity & effector functions?**
- a) disulphide bond
 - b) Fc
 - c) Fab
 - d) paratope
- 9- Which Isotype of antibodies could protect newly born baby?**
- a) IgG
 - b) IgA and IgG
 - c) IgG and IgE
 - d) IgE
- 10- CD40 Ligand (CD154) is expressed by which of the following?**
- a) B cells
 - b) Dendritic cells
 - c) Resting T cells
 - d) Activated T cells
- 11- A Delayed hypersensitivity reaction is characterized by:**
- a) An infiltrate composed of helper T cells and macrophages
 - b) An infiltrate composed of neutrophils
 - c) Edema without a cellular infiltrate
 - d) An infiltrate composed of eosinophils
- 12- Passively acquired immunity:**
- a) Involves active generation of antibodies by the individual
 - b) Does not depend on the type or amount of immunoglobulin
 - c) Of long duration
 - d) May be brought about by the administration of preformed antibodies
- 13- Tissue injury in cytotoxic hypersensitivity reaction is initiated by**
- a) Ab interfering with the functioning of biologically active substance
 - b) Antigen reacting with cell bound Antibody
 - c) Ab reacting with cell bound Ag
 - d) Formation of Ag-Ab complex
- 14- Which of the following is true about macrophages?**
- a) Express CD4
 - b) Only involved in adaptive immunity
 - c) Play important role in killing virus infected cells by secreting granzymes.
 - d) Settle mainly in the tissue.
- 15- Which is the major difference between CD8+ and NK cell cytotoxicity?**
- a) Cytotoxic T cells recognize virus infected cells by recognizing viral antigens on the surface of the target cell
 - b) Only cytotoxic T cells kill host cells infected with intracellular bacteria
 - c) Only NK cells induce target cell death by apoptosis
 - d) Only NK cells use perforins and granzymes to induce cytotoxicity
- 16- Which cells utilize reactive oxygen species and lysosomal enzymes to kill pathogens?**
- a) Cytotoxic T cells
 - b) Macrophages
 - c) Natural killer (NK) cells

d) Th1 cells

17- C3b when bind on a microbe will make it more attractive for phagocytosis, this process is

- a) Agglutination
- b) Complement activation
- c) Neutralization
- d) Opsonization

18- Which is an effector cell involved in ADCC of viral infected cells?

- a) B cells
- b) Helper T cells
- c) Natural killer cells
- d) Regulatory T cells

19- Sequelae associated with exposure to super-antigen is due to release of large amount of:

- a) Cytokines by T cell
- b) Cytokines by B cell
- c) Cytokines by macrophage cell
- d) Antibodies

20- Non-immunogenic antigen that can be covalently linked to a carrier protein to make it an immunogenic molecule is termed:

- a) Adjuvant
- b) Carrier
- c) Hapten
- d) Superantigen

21- Cell mediated immunity is carried out by..... while humoral immunity is mainly carried out by.....

- a) B cells/T cells
- b) Epitopes/Antigens
- c) T cells/B cells
- d) Antibodies/Antigens

22- Papain can digest the entire IgG into:

- a) Two Fab fragment and one Fc fragment.
- b) One Fab fragment and one Fc fragment.
- c) Two F(ab')₂ fragment and one Fc fragment.
- d) One F(ab')₂ fragment and degraded Fc

23-Monoclonal antibodies recognize a single

- a) Antigen
- b) Bacterium
- c) Epitope
- d) Paratope

24- Which cells produces granzymes and perforins to kill pathogens?

- a) Cytotoxic T cells
- b) Macrophages
- c) Dendritic cells
- d) Th1 cells

25- Which type of antibodies is elevated in parasitic infection?

- a) IgM
- b) IgE
- c) IgG
- d) IgA

II) Put (T) true or (F) false for the following statement (1 mark x 25):

1	<i>Streptococcus pneumoniae</i> vaccine prepared from bacterial capsule is a subunit vaccine	
2	Passive immunity obtained after clinical or subclinical infection	
3	Activated T helper 17 secretes TNF that recruits neutrophils and induce inflammation	
4	Toxoid while loses its toxicity, remains is immunogenicity	
5	The membrane attack complex in the complement pathway consists of C5b, 6, 7, 8, 9	
6	Memory cells are performed after active immunity and passive immunity	
7	T cells can see and respond to antigens associated with MHC molecules on antigen presenting cells	
8	Movement of cells toward objects in response to chemical agents called chemotaxis	
9	Macrophages play a similar role of cytotoxic T cells but unlike Tc cells its action is not restricted by MHC	
10	"Magic bullet" therapy is done by using monoclonal antibodies to tumour specific antigens alone or after coupling to cytotoxic agents	
11	In type III hypersensitivity, Neutrophils are attracted by C5b and bind immune complexes by their Fc receptors and release lysosomal enzyme causing tissue damage	
12	Graft rejection is performed only by type III hypersensitivity	
13	Penicillin, anesthetics and insect venom are common antigens associated with Type V hypersensitivity	
14	T cell receptor is composed of a dimer of alpha (α) and beta (β) chains which is non-covalently associated with CD3 complex.	
15	Adjuvants boost the immune response when an Ag has high immunogenicity	
16	Transfer of antibodies From the mother to the fetus through the placenta is a type of artificial passive immunity	
17	Bacteria are cleared from the blood stream mainly by spleen.	
18	TNF α is An example of a cytokine produced by activated macrophages with a major role in the innate immune response.	
19	The sequelae associated with exposure to superantigen is due to release of large amount of Cytokines.	
20	Once T cells leave the bone marrow they are completely immature.	
21	Substances that enhance the immunogenicity of molecules without altering their composition are termed adjuvants.	
22	B cells mature in the Thymus while T cells mature in the bone marrow and gut associated lymphoid tissue (GALT).	
23	B cell receptors consist of IgM and IgD.	
24	The specificity of an antibody is due to the Light chains.	
25	First immunoglobulin class produced in primary response to an antigen is IgE.	

GOOD LUCK

	Assiut University- Faculty of Science Botany & Microbiology Department Final exam. 2025/2026 Microbiology students	Program: Microbiology Level : (3) Time: 2h Date: 24 / 5 / 2026	
Course Title: Systematic Mycology (2)		Code: 362B	
Instructors: Prof. Dr. Mohamed Ahmed Abdel- Sater			
Important:	No. of pages 1	No. of questions: 4	Total Marks: 50 degree

QI: In table compare between (6) only of the following: (12 marks)

- | | |
|--|-----------------------------------|
| 1- Eucarpic & Holocarpic fungi | 2- Homothallism & Heterothallism |
| 3- Autococious & Heterococious | 4- Hypogean & Epigean fungi |
| 5- Operculate & Inoperculate asci | 6- Holobasidium & Phragmobasidium |
| 7- Long & Short life cycle in rust diseases. | |

QII-With illustration explain one only from the following: (10 marks)

- 1- Ascocarps of Erysiphaceae are provided with appendages that vary in length and character and that, together with the number of asci produced, form the bases for generic separation. Discuss this statement?
- 2- Teleutospores in Families: Pucciniaceae and Tilletiaceae

QIII- With illustration explain three only of the following: (12 marks)

- 1- Teleomorphs in *Aspergillus*.
- 2- Mode of nutrition in fungi.
- 3- Asexual fruiting bodies.
- 4- Subgenera of genus *Penicillium*.

QIV: With drawing answer on four only from the following: (16 marks)

- 1- Origin of conidia.
- 2- Fragmentation in Fungi.
- 3- Different phases of sexual reproduction.
- 4- Somatic structures in fungi causing powdery mildews.
- 5- Naked Asci in fungus causes peach leaves curl.

Good Luck

Prof. M. A. Abdel-Sater

	Assiut University- Faculty of Science Second Semester- Final Exam 2025-2026 Botany and Microbiology Department	Program: Level: (3) Date: 24/5/2026 Time: 2 h	
Course Title: Plant Communities		Code: 342 B	
Instructors: Prof. Dr. Ahmed Amro			
Important:	No. of pages 2	No. Of questions 1 (50 points)	Total Mark: 50 degrees

Choose the correct answer..... (50 marks)

- Vegetation is scientifically defined as: a) Non-vascular plants only b) A single individual plant c) The total assemblage of plants covering a given area d) Only woody plants in a forest
- The Minimal Area of a community is the: a) Largest area needed to sample rare species b) Smallest area where species composition is adequately represented c) Area covered by a single dominant tree d) Any quadrat larger than 10 square meters
- Which quadrat type is designed to map the exact spatial position of individuals for long-term monitoring? a) List Quadrat b) Clip Quadrat c) Count Quadrat d) Chart Quadrat
- Climatic factors that can initiate succession by destroying vegetation include: a) Drought, frost, wind, or fire b) Earthquakes and volcanic activity c) Gravity alone d) Stable temperature regimes
- Frequency in sampling refers to: a) The percentage of sampling units in which a species occurs b) Total individuals per unit area c) Canopy cover area d) Weight of harvested material
- According to Raunkiaer's Law of Frequency, a stable community follows the pattern: a) $A < B < C < D < E$ b) $A > B > C > D < E$ c) E is always the smallest class d) All classes are equal
- Abundance differs from Density in that: a) Abundance is per total sampled area b) Density is only where the species occurs c) Abundance is the number per unit where the species occurs; Density is per total area sampled d) They are identical measures
- Plant Cover (Dominance) is defined as: a) The number of individuals b) The vertical projection of aerial parts or plant base onto the ground surface c) The frequency across all quadrats d) The sociability score
- The Swedish (Uppsala) school is known for contributions to: a) Purely descriptive mapping b) Quantitative and phytosociological methods in northern vegetation c) Desert-specific studies only d) Animal ecology exclusively
- Raunkiaer's Life Forms classification is based on: a) Flower color and morphology b) Seed dispersal mechanisms c) Position and protection of perennating buds during unfavorable seasons d) Root depth only
- Which life form carries its buds high above the ground on shoots? a) Phanerophytes b) Therophytes c) Hemicytrophytes d) Cryptophytes
- The symbiotic relationship in lichens involves: a) Parasitism of algae by fungi b) Mutualistic symbiosis between fungus and algae (or cyanobacteria) c) Competition for space d) Predation
- The maximum possible value for a species' IVI in a community is: a) 150 b) 200 c) 300 d) 500
- In the Braun-Blanquet scale, the value 5 represents: a) Rare individuals b) 5-25% cover c) Plentiful but <5% cover d) >75% cover
- Vertical layering of vegetation to maximize light utilization is called: a) Horizontal distribution b) Stratification c) Physiognomy d) Ecotone development
- The most common pattern of species dispersion in natural environments is: a) Random b) Clumped (Aggregated) c) Regular (Uniform) d) Evenly spaced
- Humans often produce denuded areas primarily through: a) Planting and irrigation b) Burning, clear-cutting (lumbering), or cultivation c) Hunting alone d) Urban beautification
- Primary succession is distinguished by beginning on: a) Recently burned forests b) Abandoned agricultural fields c) Newly exposed surfaces lacking soil d) Areas with intact seed banks
- In a Hydrosere, the initial pioneer stage consists of: a) Floating leaf plants b) Emergent plants c) Phytoplankton (microscopic algae/bacteria) d) Woody shrubs
- The Reed Swamp Stage of aquatic succession is dominated by: a) Submerged plants b) Emergent plants such as *Typha* c) Floating plants d) Lichens
- In a Xerosere, the first stage to appear on bare rock is the: a) Crustose Lichen Stage b) Moss stage c) Herbaceous stage d) Shrub stage
- The general environmental trend in a Hydrosere is that the habitat: a) Becomes wetter b) Becomes more saline c) Becomes drier over time d) Remains permanently aquatic
- In a Xerosere, the habitat tends to become: a) More rocky b) More mesic (moderately moist) over time c) Permanently xeric d) More acidic

24. The Organismic Hypothesis of Frederic Clements views a community as: a) A random collection of species b) A super-organism that develops toward maturity c) A loose assemblage d) A physical response only
25. A limitation of the Organismic Hypothesis is that communities: a) Never change in structure b) Cannot reproduce their exact identity elsewhere c) Are physically connected like tissues d) Only exist in water
26. A.G. Tansley proposed the Quasi-organism concept, suggesting that: a) Communities have no coordination b) Communities are closed systems c) Communities exhibit coordination but individual populations remain independent d) Species are identical
27. Gleason emphasized that plant communities are: a) Highly structured and predictable b) Without any history or dynamics c) Based solely on competition d) More individualistic with overlapping distributions along continua
28. Braun-Blanquet considered the basic unit of ecological classification to be: a) The individual plant b) The animal interaction c) The soil type d) The plant community (Association)
29. A Transect is a sampling tool used primarily to study: a) Biomass in a fixed plot b) Soil pH only c) Seed dispersal only d) Vegetation change along environmental gradients
30. A Belt Transect is best described as: a) A circular sampling area b) A long, narrow strip of vegetation of uniform width c) A single point measurement d) A small square plot
31. Minimal Area is determined by identifying the point on a species-area curve where: a) The curve continues to rise steeply b) The curve flattens (asymptote) c) No new species are found d) The curve reaches the origin
32. In the Single-Plot Method, area is increased through: a) Fixed arithmetic additions b) Random jumps c) Geometric progression (doubling) d) Decreasing plot size
33. Geometric progression is used in minimal area studies because: a) It requires fewer plots b) It matches the rate at which new species typically appear c) It is easier to map d) It excludes rare species
34. A Sample Stand must possess: a) High heterogeneity b) Habitat uniformity and homogeneity in plant cover c) Only dominant species d) No openings or gaps
35. In sampling, an Artifact occurs when: a) Homogeneous areas are sampled b) Sampling crosses community boundaries, creating misleading averages c) Minimal area is reached d) Common species are recorded
36. Abundance is defined as the: a) Percentage cover b) Frequency across all stands c) Estimated individuals in a sampling unit where the species occurs d) Total individuals per total sampled area
37. Relative Density is calculated by: a) $(\text{Density of a species} / \text{Sum density of all species}) \times 100$ b) Percentage of quadrats occupied c) Total biomass d) Height of the plant
38. Basal Area refers to the: a) Canopy projection b) Cross-sectional area of a stem at the base or breast height c) Number of leaves d) Frequency class
39. The transition zone between two distinct plant communities is an: a) Ecotone b) Association c) Climax d) Understory
40. Physiognomy refers to the: a) Full species list b) Internal anatomy of plants c) General outward appearance of a community d) Quantitative IVI values
41. Raunkiaer's Frequency Class E represents a frequency of: a) 1–20% b) 41–60% c) 81–100% d) 0%
42. Therophytes are life forms that survive unfavorable seasons as: a) Seeds (annuals) b) Underground buds c) Buds at the soil surface d) Buds high in the air
43. Braun-Blanquet's releve method involves: a) Random quadrats without lists b) Representative plots with complete species lists and abundance estimates for classification c) Biomass clipping only d) Transect lines exclusively
44. Disclimax refers to a community maintained by: a) Natural climate alone b) Recurrent disturbance (e.g., fire, grazing) preventing progression to climatic climax c) Permanent stability d) High nutrients
45. A Faithful species with high fidelity is most useful as: a) A pioneer species b) An indicator species for a specific association c) A dominant species d) A weeds species
46. In a Xerosere, the Moss Stage facilitates succession by: a) Breaking rock with acids b) Holding moisture and adding organic matter to thicken soil c) Shading out all trees d) Increasing evaporation
47. The eventual climax toward which both Hydrosere and Xerosere tend is a: a) Permanent aquatic stage b) Mesic climax (stable forest or grassland) c) Permanent desert d) Bare rock stage
48. Emergent plants in a hydrosere are characterized by: a) Being fully submerged b) Floating on the surface only c) Being rooted with parts extending above the water d) Lacking roots
49. A Lithosere is a successional series that begins on: a) Deep water b) Shifting sand c) Bare rock d) Burned agricultural land
50. Modern classification synthesizes different views by recognizing: a) Only super-organisms b) Recognizable patterns while acknowledging individual site uniqueness c) Only random assemblages d) No patterns at all

End of Exam

Best Wishes Prof. Dr. Ahmed Amro

	Assiut University- Faculty of Science First Semester- Final Exam 2025-2026 Botany and Microbiology Department	Program: Microbiology Level: (3) Date: 1/6/2026 Time: 2 h	
Course Title: Microbial metabolism		Code: 392B	
Instructors: Dr. Shymaa Ryhan & Dr.Mysa M. Ali			
Important:	No. of pages 2	No. of questions 6	Total Mark:50 degree

Part I

25 Marks

Q1. Answer Two Only of the following questions. Use well labeled diagrams where appropriate. (8 marks)

1. Explain the biosynthesis of thymine nucleotides (dTMP)
2. Describe the microbial ammonium assimilation using Gs-GOGAT pathway.
3. Explain the biosynthesis of amino acids.

Q2. Compare between (Answer 2 only): (10 marks)

1. Anabolism and catabolism.
2. Anoxygenic Photosynthesis & Oxygenic Photosynthesis
3. Dicarboxylate/4-hydroxybutyrate cycle and 3-hydroxypropionate bicycle

Q3. Choose the correct answer (7 marks)

1. IMP can be converted into:

A) UMP and CMP	C) ATP only
B) AMP and GMP	D) DNA directly
2. The main precursor for fatty acid synthesis is:

A) Glucose	C) Pyruvate
B) Acetyl-CoA	D) Oxaloacetate
3. Nitrogen assimilation refers to:

A) Conversion of NH_3 to N_2	C) Oxidation of ammonia
B) Breakdown of amino acids	D) Incorporation of inorganic nitrogen into organic compounds
4. Which of the following is an anabolic pathway?

A) Glycolysis	C) Calvin cycle
B) TCA cycle	D) Entner-Doudoroff pathway
5. The reducing power in lipid biosynthesis is mainly:

A) NAD^+	B) NADH	C) ATP	D) NADPH
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6. Fatty acid synthesis involves repeated addition of:

A) 1 carbon	B) 2 carbon units	C) 3 carbon units	D) 5 carbon units
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7. Purine nucleotides are synthesized on:

A) ATP	B) PRPP	C) NADH	D) Glycine
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انظر خلفه

Part II

25 marks

(A) Write on all of the following: (12 marks, 4 for each)

- 1- Sequence of events in the Citric Acid Cycle
- 2- Oxidative Phosphorylation
- 3- Steps in the utilization of fatty acids for energy production

(B) Answer with (X) or (✓) for all of the following: (5 marks, 1 mark for each)

- 1- Fungi utilize some amino acids by direct uptake across the hypha membrane ()
- 2- Pyruvate is the end product of the second phase of glycolysis ()
- 3- Embden-Meyerhof-Parnas (EMP) pathway doesn't need oxygen ()
- 4- Xylose can enter the glycolytic pathway through the pentose phosphate pathway ()
- 5- During anaerobic respiration final e- acceptor is O₂ ()

(C) Choose the correct answer for all of the following: (8 marks, 1 mark for each)

- 1- Phosphorylation of glucose during glycolysis performed in presence of enzyme
A) Phosphohexoseisomerase B) Hexokinase C) Aldolase D) Enolase
- 2- Where does the activation of fatty acid occur during lipid catabolism?
A) Mitochondrial matrix B) Cytosol
C) Mitochondrial membrane D) Cytoplasm
- 3- During urea cycle Arginine converted toin presence of Arginase enzyme
A) Citrullin B) Aspartate C) Ornithine D) Fumarate
- 4- Acyl Carnitin converted to Carnitin and Acyl CoA in
A) Cytoplasm B) Plasma membrane
C) Mitochondrial matrix D) Mitochondrial membrane
- 5- The fourth reaction of fatty acid oxidation is
A) Oxidation to 3-Ketoacyl CoA B) Hydration to L-3-Hydroxylacyl CoA
C) Thiolysis to produce Acetyl-CoA D) oxidation to *trans*- Δ^2 -Enoly-CoA
- 6- What is the first reaction should happen to Amino Acid during protein catabolism?
A) Decarboxylation B) Dehydrogenation C) Dehydroxylation D) Deaminatic
- 7- Which one of the following carries e from complex III to complex IV during Electron Transport Chain?
A) Coenzyme Q₁₀ B) Cytochrome c reductase C) Cytochrome c D) Ubiquinone
- 8- Pyruvate decarboxylase converts Pyruvate to
A) Ethanol B) Lactic acid C) Acetaldehyde D) Acetic acid

End of exam
Best wishes

	Assiut University- Faculty of Science Second Semester- Final Exam 2025-2026 Botany & Microbiology Department	Degree (Biotechnology): Third level Date: 03/6/2026 Time: 120 mints	
Course Title: Introduction to Bio-Nanotechnology		Code: BT 312	
Instructors: Prof. Dr. Ghada Abd-Elmonsef Mahmoud			
Important:	No. of pages 7	No. Of questions 4	Total Mark:50 degree

Answer the following question

Q1): Put true (✓) or false (×) in front of 20 statement only

(20-mark, one mark for each)

1	Bacteria were highly utilized in the synthesis of nanoparticles because of their fast growth and relative ease of genetic manipulation.	
2	In silver NPs synthesis the colour changes from light yellow to greenish.	
3	The term "Nano-technology" had been coined by Richard P. Feynman 1959	
4	Biological synthesis of nanoparticles by fungi can achieved by reducing enzyme intracellular only.	
5	Several enzymes including α -NADPH-dependent reductases, and nitrate-dependent reductases were implicated in silver nanoparticle synthesis.	
6	Extracellular gold nanoparticle synthesis was demonstrated by <i>Fusarium oxysporum</i> , <i>Aspergillus niger</i> , and <i>Candida albicans</i> .	
7	Nanomaterials are defined as materials where at least one of their dimensions is in the nanoscale.	
8	Extracellular synthesis of silver nanoparticle has been demonstrated by <i>Verticillium</i> species, and <i>Neurospora crassa</i> .	
9	Plant extracts have active compounds acts as natural reducing and stabilizing agents.	

10	External gold nanoparticle synthesis was attributed to laccase, while intracellular gold nanoparticle synthesis was attributed to ligninase	
11	Atoms and small molecules size from 2500 to 10,000 nm.	
12	Carbon-based NPs have unique electrical conductivity, high strength, electron affinity, optical, thermal, and sorption properties.	
13	Gold nanoparticles were synthesized using the essential oils of <i>Anacardium occidentale</i> .	
14	One-dimensional nanomaterials (1-D) includes quantum dots, fullerenes, and nanoparticles.	
15	Zero-dimensional nanomaterials (0-D) includes nanotubes, nanofibers, nanorods, nanowires, and nanohorns.	
16	Scanning electron microscope shows the nanoparticles texture and surface.	
17	<i>Spirulina platensis</i> has been for the extracellular synthesis of gold, silver, and Au/Ag bimetallic NPs.	
18	Nanoparticles can deliver drugs directly into targeted human cells.	
19	Nano-clay and nano-silica amendments can enhance the soil properties and fertility.	
20	<i>Sargassum wightii</i> and <i>Fucus vesiculosus</i> have been used for the synthesizing Ag NPs.	
21	Inorganic NPs are made of proteins, carbohydrates, lipids, and polymers.	
22	Nanomaterials challenges include potential toxicity, environmental concerns and high production costs.	

Q2): Select the correct term for each statement

(10 marks, one mark for each)

(Biogenic nanoparticles), (Top-Down approach), (Mycogenic nanoparticles)
(Nano-sensors), (Nanomaterials), (Nano-pesticides), (Nanometer), (Green synthesis), (Bottom-Up approach), (Nano-fertilizers)

1	involves breaking down bulk materials into nanosized particles using physical or mechanical methods.	
2	bottom-up approach that uses biological materials such as plants, bacteria, fungi, and algae to reduce metal ions into nanoparticles.	
3	use nanoparticles to deliver active ingredients more effectively to pests.	
4	nanoparticles synthesized using biological systems.	
5	devices that detect biological or chemical signals at the nanoscale.	
6	fertilizers engineered at the nanoscale to improve nutrient availability and uptake by plants.	
7	is a unit of length equal to one billionth of a meter.	
8	builds nanoparticles atom by atom or molecule by molecule through chemical or biological reactions.	
9	metal nanoparticles synthesized using fungal species	
10	are defined as materials where at least one of their dimensions is in the nanoscale.	

Q3): Discusses two only of the following and put your answer in table

(10 marks)

1. Classification of NPs based on their composition.
2. Characterization of nanomaterials using different analysis.
3. Compare between bacteria and fungi in the biosynthesis of nanomaterials.

Q4): Write short notes on two only from the following marks)

(10

- 1. How can nanoparticles properties be used to protect the environment?**
- 2. Applications of nanomaterials in various fields.**
- 3. Biosynthesis mechanisms of gold nanoparticles from bacteria.**
- 4. Green synthesis of nanoparticles using plants.**



جامعة أسيوط - الزراعة



الفصل الدراسي الثاني 2026/2025
المقرر: 316 ز "تصميم تجارب"
لجنة الممتحنين: أ.د. عاطف أبو لوفيا احمد
أ.د. عادل محمد محمود
طلاب المستوى الثالث - كلية العلوم - جامعة أسيوط
الزمن: ساعتان
المراجع الداخلي: أ.د. باهي راغب بخيت
(الامتحان النظري) (الامتحان في صفحاتين)
السؤال الأول (15 درجة): ضع في جدول رقم العبارات التالية وعلامة (✓) أو (X) أمام كل منها:

رقم	العلامة	العبارة
1		لا يتساوى عدد معاملات التجربة 4*4 مع التجربة 4 ⁴ .
2		تكون درجات حرية الخطأ التجريبي 21 في تجربة 3 ³ منفذة في 4 مكررات.
3		يُعتبر التصميم التجريبي RCBD من التصميمات غير الكاملة لاختلاف عدد كل من المعاملات والمكررات.
4		التوزيع العشوائي للمعاملات في تصميم LS يكون أقل من CRD.
5		يكون تحليل البيانات في اتجاهين عندما تكون الوحدات التجريبية تختلف في اتجاهين بالتجربة.
6		تكون قيمة MS Error=4 عندما Total SS=268; Row SS=60; Col. SS=40; Treat. SS=120 عند t=5.
7		يكون النموذج الرياضي لتحليل RCBD هو $X_{ij} = \mu + T_i + R_j + \xi_{ij}$
8		$C.F. = (G)^2/tr = (X_{..})^2/tr$
9		يساعد تكرار المعاملات على الوحدات التجريبية للتجربة من حساب الخطأ التجريبي.
10		إذا كانت قيمة F المحسوبة هي 9.99 لمقارنة عينتين فإن قيمة t لهما تكون غير معنوية بمعلومية $t_{tab. 0.05} = 2.22$
11		يمكن للباحث تحويل البيانات بأخذ اللوغاريتم لها إذا كانت في صورة نسب مئوية.
12		لا يهم تجانس تباين المعاملات لإجراء تحليل صحيح لبيانات التجربة.
13		توضح عدم معنوية Non-additivity لاختبار Tukey لعدم توافر فرض الإضافة في البيانات.
14		يمكن تحويل تحليل تصميم LS إلى تصميم CRD عند معنوية الصفوف فقط Rows عند مستوى 0.05.
15		قيمة LSD تكون أكبر من قيمة LSR عند 2 مدى فأكثر.

السؤال الثاني ((15 درجة)): أكمل ما يلي:

1- أكمل الجدول التالي في كراسة الإجابة إذا كانت Total SS = 101، r = 4، t = 4 (5 درجات):

S.O.V.	d.f.	SS	MS	F cal.	F tab. 0.05	0.01
Reps. SS			12		3.49	5.95
Treat. SS					3.26	5.41
Error SS		20				

2- أكمل في جدول بوضح رقم العنصر والرقم المناسب له من الوظيفة المناسبة (5 درجات):

الوظيفة المناسبة	العنصر
أ يقارن بين المتوسطات بعد تنفيذ وتحليل بيانات التجربة	1 اختبار Tukey
ب أصغر وحدة في التجربة	2 الموديل الإحصائي لتصميم CRD
ج يقيس فرض الإضافة لبيانات التجربة	3 اختبار LSR
د $X_{ij} = \mu + T_i + \xi_{ij}$	4 الوحدة التجريبية
هـ الخطأ التجريبي بالتجربة.	5 التباين المشترك S^2P

3- أكمل جدول تحليل التباين التالي: (5 درجات)

S.O.V.	d.f.	SS	MS	F cal.	F _{0.05}	F _{0.01}
Row. SS	3		5.50		3.58	5.51
Col. SS		2				
Treat. SS			12.83			
Error SS						
Total SS		65				

1

أ.د. باهي راغب بخيت

أ.د. عاطف أبو لوفيا احمد

أ.د. عادل محمد محمود

السؤال الثالث: (15 درجة) ضع في جدول رقم العبارات التالية وعلامة (✓) أو (X) أمام كل منها:

رقم	العلامة	العبارة
1		يمكن استخدام تصميم RCBD في التجارب العاملية.
2		يعتبر دراسة التفاعل بين عوامل الدراسة من مميزات التجارب العاملية.
3		يمكن حساب عدد التفاعلات من الدرجة الأولى من $n(n-1)/2$.
4		التأثيرات الرئيسية أهم في تفسير النتائج عندما يكون التفاعل بين العوامل غير معنوي.
5		قد تكون قيمة التأثير الرئيسي لبعض العوامل سالبة.
6		يكون عدد التفاعلات من الدرجة الثانية هو ثلاثة في تجربة 2^3 .
7		تجربة عاملية 4^4 منفذة في مكررتين تكون فيها درجات الحرية للتفاعل من الدرجة الثانية = 9.
8		التكرار الخفي في التجارب العاملية هو حساب المتوسط من عدد تكرارات أكبر بالتجربة.
9		تُقاس معنوية التفاعل عن طريق MSE في جدول ANOVA بالتجارب العاملية.
10		ينتج 8 تفاعلات من الدرجة الأولى من التجربة 3^5 .
11		تستخدم طريقة Orthogonal لحساب التأثيرات الرئيسية للعوامل ذات المستويات من النوع Equally space بالتجربة.
12		تجربة عاملية 2^4 في تصميم RCBD في ثلاث مكررات فتكون درجات الحرية للخطأ التجريبي = 30.
13		تستخدم التجارب العاملية في التجارب المعملية فقط.
14		لا تستخدم التصاميم الكاملة في التجارب العاملية.
15		تفسير معنوية التفاعل في التجارب العاملية هو الأكثر أهمية في نتائج التجربة العاملية.

السؤال الرابع: (15 درجة) 1- أكمل في جدول يوضح رقم العنصر والرقم المناسب له من الوظيفة المناسبة (5 درجات):

العنصر	الوظيفة المناسبة
1 التجربة العاملية	أ تجربة عاملية بها ثلاثة عوامل ولكل منها ثلاثة مستويات
2 التفاعل	ب يكون به $MSE(a) > MSE(b)$
3 3^3	ج تدرس تأثير أكثر من عامل والتفاعلات بينها
4 Split Plot Design	د قياس فشل تساوى تأثير مستويات عامل تحت مستويات العامل الآخر
5 تجانس تباين المعاملات	ه يعطى مؤشر لمدى لدقة قياسات التجربة.

2- أكمل جدول تحليل التباين التالي إذا كانت $a = 3, b = 3, r = 4$ (5 درجات):

S.O.V.	d.f.	SS	MS	F cal.	$F_{0.05}$	$F_{0.01}$
Reps. SS			6.95		3.86	6.99
Treat. SS			26.82			
A SS					5.12	10.56
B SS				5.32		
AB SS		22.25				
Error SS						
Total SS		333.75				

3- هل التأثير الخطي Linear SS للعامل B معنوياً لتجربة منظم في 3 مكررات بمعنوية $f_{0.05} = 4.33$: (5 درجات)

	A_0B_0	A_0B_1	A_1B_0	A_1B_1
	20	24	28	44
B	+	-	-	+

انتهت الأسئلة مع التمنيات بالتوفيق،

طه داند

المعلم

	Assiut University- Faculty of Science Second Semester- Final Exam 2025-2026 Botany & Microbiology Department	Programs: Microbiology + Chemistry & Microbiology Level: (3) Date: 20/5/2026; Time: 2 h	
Course Title: Industrial Microbiology		Code: B 396	
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- General characteristics of raw materials that can be used in industrial fermentation.
 - 2- Fermentation conditions and strategy for baker's yeast production.
 - 3- Various raw materials can be used to produce ethanol, with particular reference to the preparation of molasses.
 - 4- Preparation of the filling tank and acetator at starting point for vinegar production.
 - 5- The important compounds formed by microbial side chain degradation and aromatization of steroidal compounds.
 - 6- Down-stream processes for penicillin production.
- Q II. What are the advantages of only three of the following?** (9 mark, 3 for each)
- 1- Using *Saccharomyces cerevisiae* for fresh baker's yeast production.
 - 2- Expanding the production of anhydrous bioethanol used as fuel.
 - 3- Using surface culture technology for citric acid production.
 - 4- Using cephalosporins than penicillins as antibiotics.
- Q III. Choose the correct answer from the following answers** (8 marks, 2 for each)
- 1- One of the important characters in the industrial fermentor is (Ease in handling, Ability to grow rapidly, or Corrosion resistant).
 - 2- Theoretically, each gram of glucose during ethanol fermentation cycle gives (0.15, 0.51, or 1.51 gram of ethanol).
 - 3- The better preservation of the dry yeast activity is achieved by replacement of air with (O₂, SO₂, or N₂).
 - 4- Baker's yeast is produced *via* (aerobic batch, aerobic fed-batch, anaerobic fed-batch) fermentation.
- Q IV. Put a cross (✓) in front of the correct sentence and a cross (x) in front of the incorrect sentence of the following** (8 marks, 2 for each)
- 1- Nutrient limitation in the presence of excess carbon source stimulates organic acid production.
 - 2- The mechanism of action of beta-lactam antibiotics is to disrupt the structure of the bacterial cell membrane.
 - 3- Glucose at 18-20 % is the only nutrient for the production of baker's yeast.
 - 4- In ethanol fermentation, aeration is very important during yeast propagation.
- Q V. Define each of the following** (5 mark, 1 for each)
- Fuel Grade Ethanol, Carbapenem, Environmental friendly, Androgens, Chinese great koji.
- Good Luck...
- Prof. Dr.: A. A. Zohri

	Assiut University- Faculty of Science First Semester- Final Exam 2025-2026 Botany & Microbiology Department	Program: Plant & Microbial Biotechnology Level : (3) Date: 3/1/2026 Time: 2 h	
Course Title: Bacterial Biotechnology		Code: B T 3 0 1	
Instructors: Prof. Dr. Naeima M. H. Yousef			
Important:	No. of pages 1	No. Of questions 4	Total Marks:50 degree

Answer the following:

Q1: Give the definitions for the following: (9 marks)

- a- Adjuvant b-Vaccine c- Probiotics d- Acquired immune
e- recombinant DNA f- CRISPR
g- Polycistronic transcription h- Bioplastic i- biotech enzymes

Q2: What meant the following abbreviations: (7 marks)

cDNA
PCR
dNTPs
ssRNA
HBV
CRISPR
LAB

Q3: Explain and draw Four only of the following: (24 marks)

- 1- Role of biotechnology in production of anti-HBV vaccine
- 2- Mode of action CRISPER-Cas9 in *Streptococcus pyogens*
- 3- Role of biotechnology in production of human insulin
- 4- Role of biotechnology in production of human growth hormone
- 5- Production of Polyhydroxy butyrate

Q4: Give the microorganism produce the following: (10 marks)

- 1-chemosin 2- subtilisin 3-lipase 4-vitamin B12 5-Indigo
6-bioplastic Polyhydroxy butyrate 7-pectinase 8- Lactic Acid
9- *Taq* DNA polymerase 10- Biotech antifreeze protein

Best Wishes

Prof. Naeima Yousef

	Assiut University- Faculty of Science First Semester- Final Exam 2025-2026 Botany & Microbiology Department	Program: Microbiology Level: (3) Date: 26/12/2025 Time: 2 h	 كلية العلوم جامعة أسيوط
Course Title: Pathogenic Microbiology		Code: 397B	
Instructor: <i>Prof. Nemmat A Hussein</i>			
Important:	No. of pages 7	No of questions 5	Total Mark: 50 degrees

Answer the following five questions

I. Give a short account on 5 only of the following: (10 Marks)

1. Neurotoxin- producing microorganisms
2. Gastrointestinal tract normal microbiota
3. Human defense against viral infections.
4. Virulence factors that promote fungal colonization of the host
5. How do pathogens leave the body of an infected person?
6. Five enzymes produced by pathogens

II. Give reason(s) for 5 of the following (10 Marks)

1. Penicillin is safe for human body.
2. Epidermophyton floccosum never causes infection for animals.
3. UTIs occur much more frequently in women than men.
4. Microbial diseases cause fever and inflammation.
5. Switching some dimorphic fungi from their avirulent mold form to their virulent yeast form.
6. The most important procedure in preventing the spread of infection is hand washing.

III. Which of the following cases are healthy and which are infected? Discuss your answer: (10 Marks)

1. Yeast cells in a bronchial washing specimen.
2. Overgrowth of *Helicobacter pylorae* in stomach.
3. Saliva specimen with budding cells of *Candida albicans*
4. Nasal cavity containing COVID-19
5. Blood vessel containing branched hyphae of *Aspergillus*.
6. Bronchi tissue section with neutrophils.

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

- | | | |
|------------------|--------------|---------------------|
| 1. Mycotoxicosis | 2. LD50 | 3. Fungicidal agent |
| 4. Fomite | 5. Gastritis | 6. Flucytosine |

V. Choose the correct answer for 10 only of the following: (10 Marks)

1. Which of the following is a geophilic fungus?

a. <i>Microsporium canis</i>	b. <i>Microsporium audouinii</i>
c. <i>Microsporium gypseum</i>	d. <i>Trichophyton mentagrophytes</i>
2. HCV can be inhibited by

a. Clotrimazole	b. Interferon	c. Penicillin	d. Zidovudine
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3. Which of the following pathogens is transmitted via stool?

a. HIV	b. <i>Neisseria gonorrhoeae</i>	c. <i>Salmonella typhi</i>	d. <i>Aspergillus fumigatus</i>
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4. The stage of non-specific signs and symptoms is called

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

- a. Prodromal stage b. Convalescence c. Decline phase d. Incubation period
5. Fever, watery vaginal discharge, pain in the lower abdomen, and while urinating, sore throat are the main symptoms and signs of disease.
- a. Liver cirrhosis b. AIDS c. Gonorrhea d. Meningitis
6. A proteinaceous substance produced by the host in the body fluids and can block the colonization of pathogens
- a. Antibody b. Antigen c. Vaccine d. Pyrogens
7. Which of the following foods worsens diarrhea?
- a. Dairy products b. Low-fat yogurt c. Mashed potatoes d. Banana
8. Ceftriaxone injection is useful in treatment
- a. AIDS b. HIV c. Dermatomycosis d. Gonorrhea
9. One of the following is the clinical infection of sole, sides, instep, or interdigital
- a. Tinea pedis b. Tinea capitis c. Tinea corporis d. Onychomycosis
10. Which of the following sites should NOT be free from normal microbiota?
- a. Liver b. Urine c. Heart d. Vagina
11. The main entry site (portal of entry) of the causal agent of AIDS disease is
- a. Gastrointestinal tract b. Unbroken skin c. Blood stream d. Nasal cavity
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End of Exam

Best Wishes *Prof. Nemmat A Hussein*

Faculty of Science Botany & Microbiology Department		كلية العلوم قسم النبات والميكروبيولوجي
Environmental Bioremediation (BT306) Time: Two hours Total degree: 50 marks	Second semester exam - the academic year 2025/2026 2 nd Level Exam date: Sunday, 24/5/2026	

Q1- Please choose the right answer. (10 marks)

- The use of microbes to transform toxic industrial wastes into less toxic or non-toxic compounds is a process of
 (a) Precipitation (b) Conservation
 (c) Bioconversion (d) Bioremediation
-is the contaminant is again taken up by microbes but this time is not used as food being metabolized alongside the organism's food into a less hazardous chemical.
 (a) Fermentation (b) Comatabolism
 (c) Mineralization (d) Bioaccumulation
- The process of bioremediation that utilizes plants to break down pollutants is
 (a) Composting (b) Biopile
 (c) Phytoremediation (d) Land farming
- is another bioremediation method which frequently involves the addition of microorganisms indigenous or exogenous to the contaminated sites.
 (a) Composting (b) Fermentation
 (c) Bioaugmentation (d) bioventing
- includes elimination of waste materials and their collection from the contaminated site or place to assist microbial degradation.
 (a) Bioaugmentation (b) in situ bioremediation
 (c) ex situ bioremediation (d) Phytoremediation

- 6) is a simple technique in which contaminated soil is excavated and spread over a prepared bed and periodically tilled to improve aeration until pollutants are degraded.
- (a) Autotrophic (b) Photoorganoheterotrophic
(c) Chemoheterotrophic (d) Photolithoautotrophic
- 7) Supplying air and nutrients through wells to contaminated soil to stimulate the indigenous bacteria for remediation is known as
- (a) Bioventing (b) Biosparging
(c) Biostimulation (d) Rhizostimulation
- 8) is an example of the solid phase treatment system.
- (a) Bioreactors (b) Composting
(c) Biopiles (d) Bioleaching
- 9) In phytoremediation, are involved in remediation
- (a) Plants (b) Yeast
(c) Animals (d) All of these
- 10) including treatment of solid-liquid suspensions in bioreactors is known as
- (a) Phytovolatilization (b) Rhizosphere bioremediation
(c) Solid-phase system (d) Slurry-phase systems

Q2- Define. (10 marks)

1- Environmental Biotechnology

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2- Mineralisation

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3- Restoration ecology

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4- Bioremediate

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5- Biostimulation:

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6- Biopiles

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7- Methanotrophs

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8- Bioleaching:

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9- Environmental pollutants

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10- Pesticides

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Q3- Please combines the two columns. (10 marks)

3	Immobilisation	1	is the use of extensive root system of plant as a filter to sorb , concentrate and precipitate metal contaminants from surface or groundwater.
5	Intrinsic bioremediation	2	 involves the injection of air under pressure below the water table to increase groundwater oxygen concentrations and enhance the rate of biological degradation of contaminants by naturally occurring bacteria.
7	Phytovolatilization	3	 is the removal of contaminants, typically metals, by means of adsorption or bioaccumulation by various microorganism or plant species.
9	Phytoextraction	4	 is the use of plants to remove ground water through uptake and consumption in order to contain or control the migration of contaminants.
1	Rhizofiltration	5	 uses microorganisms already present in the environment to biodegrade harmful contaminant.
8	Bioreactor	6	is the chemical compounds that found in an organism but it are not normally produced or expected to be present in it.
6	Xenobiotic compounds	7	is the contaminant is up taken by plants, metabolized, modified and released to the atmosphere via stomata.
10	Accelerated bioremediation	8	 is a containment vessel used in particular for fermentation or bioremediation under control.
2	Biosparging	9	is the use of plants for accumulating heavy metals in the harvestable parts and removing contaminants from the soil.
4	Phytohydraulics	10	is adding the substrate or nutrients to the environment to help break down the contaminants by making the microorganisms grow more rapidly.

Q4 - Write on. (20 marks)

1- Steps of in situ bioremediation?

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2- Why aerobic systems are usually preferred for bioremediation?

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3- Fate of contaminant?

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4- Factors affecting slurry-phase biodegradation?

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5- Advantages of phytoextraction?

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6- An ideal plant for trace element phytoextraction should possess the following characteristics?

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7- Disadvantages of Hydraulic control?

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8- Disadvantage of Phytovolatilization?

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With my best wishes

Prof. Dr. Hanaa Kamal Galal

	Assiut University – Faculty of Science Second Semester – Final Exam 2025-2026 Botany & Microbiology Department	Program: Botany Level: (3) Date: 9 /6/2026 Time: 2 h	 كلية العلوم جامعة أسيوط
Course Title: Flora of Egypt		Code: 334 B	
Instructors: Prof. Momen Zareh			
Important:	No. of pages 2	No. of Questions 4	Total Mark: 50 degree

Answer all the questions

The first question:- Write short notes on each of the followings:- (20 marks)

- The herbarium, with special references to its jobs (5 marks)
- The spices with aromatic oils (5 marks)
- The Mariut region and enumerate 5 plants growing in it (5 marks)
- The Oasis and enumerate 5 plants growing in it (5 marks)

The second question:- Give 1 botanical name and family of each of the following:- (5 marks)
(street tree, fruit tree, vegetable, medicinal & textile plant)

The third question:- (12 marks)

Put (✓) beside the correct answer and put (X) beside the wrong answer:-

The largest depression in the western desert is that of Qattara, 100 m BSL	
<i>Ammophila arenaria</i> is an excellent sand-binder growing in moving sand of Mma.	
<i>Achillea santolina</i> is among the growing barley fields plants of Mma.	
<i>Asphodelus microcarpus</i> is growing in barley fields and is belonging to Liliaceae	
Boisser joined Napoleon's expedition to Egypt	
The systems of Good & Firbas divided the globe into six botanical kingdoms	
The street trees of <i>Casuarina equisetifolia</i> is characterized by palmate leaves	
<i>Citrus</i> trees are evergreen with dot glanded Leaves and a berry, 8-15 celled	
The crops of <i>Lens</i> , <i>Vigna</i> and <i>Cicer</i> are called as cereals	
Ancient Egyptian place <i>Allium sativum</i> inside the body at embalming of the dead	
<i>Colocasia antiquorum</i> cultivated as a source of fibres and oils	
<i>Orobancha minor</i> is a cruciferous weed with long narrow cylindrical silique	

ملحوظة :- تكمل الاسئلة في الخلف

The furth question:-

(13 marks, 1.0 mark each)

Choose the correct answer, put your answer in a table: - (1.0 mark each)

- 1. French, joined Napoleon's expedition to Egypt.**
(a) Forsskal (b) Niebuhr (c) Boisser (d) Delile
- 2. According to Tackholm 1974, we recognize phytogeographical regions**
(a) four (b) five (c) six (d) seven
- 3. The aromatic oils plants of *Mentha*, *Ocimum* and *Daucus* are called as: -**
(a) legumes (b) spices (c) cereals (d) pickles
- 4. is below sea level, other oases are above except some parts of Kharga**
(a) Dakhla (b) Siwa (c) Farafra (d) Feiran
- 5. Among street trees belonging to Anacardiaceae and planted in Assiut is**
(a) *Schinus molle* (b) *Anacardium nanum* (c) *Anacardium humile* (d) all the preceding
- 6. The most primitive living seed palms (Sago palm) is called as: -**
(a) *Schinus molle* (b) *Khaya senegalensis* (c) *Cycas revoluta* (d) *Thuja orientalis*
- 7. The forked trunk palm with palmate leaves and large brown oval fruits is**
(a) *Phonix dactylifera* (b) *Hyphaene thebaica* (c) *Cocos nucifera* (d) *Annona squamosa*
- 8. Among cereals that cultivated in Egypt since prehistoric times and Pharaons**
(a) *Hordeum vulgare* (b) *Triticum pyramidale* (c) *Triticum durum* (d) all the preceding
- 9. Cultivated as a vegetable that eaten its roots fresh: -**
(a) *Raphanus sativus* (b) *Cynara cardunculus* (c) *Corchorus olitorius* (d) *Brassica oleracea*
- 10. Cultivated as a source of dyes: -**
(a) *Lawsonia inermis* (b) *Ricinus communis* (c) *Hibiscus esculentus* (d) all the preceding
- 11. Known as black mustard weed and characterized by cruciferous yellow petals**
(a) *Medicago hispida* (b) *Brassica nigra* (c) *Melilotus indica* (d) *Avena fatua*
- 12., deserts are areas devoid of vegetation or with less continuous cover**
(a) Botanically (b) Geographically (c) traditionally (d) all the preceding
- 13. On seashore of MMA., pilae marinae formed by the leaf-sheaths fibre of**
(a) *Hyoseris lucida* (b) *Orlaya maritime* (c) *Panocratium maritimum* (d) *Posidonia oenica*

Best Wishes
Prof. Momen Zareh

	Assiut University – Faculty of Science Second Semester – Final Exam 2025-2026 Botany & Microbiology Department	Program: Botany Level: (3) Date: 31 /5/2026 Time: 2 h	
Course Title: Advanced taxonomy		Code: 332 B	
Instructors: Prof. Momen Zareh			
Important:	No. of pages 2	No. of Questions 4	Total Mark: 50 degree

Answer the following questions

First question: Select the correct answer: -

(25 marks, 1.0 mark each)

- For cultivated plants, the volume of the rules for their designation is called:
 - NPCI
 - ICBN
 - ICNCP
 - non of the preceding
- The application of names of taxonomic groups is determined by nomenclature
 - synonym
 - model
 - types
 - puplication
- The dispersal unit of more than 4 pollen grains and fewer than locular content is called
 - pollinia
 - massula
 - tetrahedral
 - non of the precedings
- Pollen grains with outer fusiform aperture and inner circular aperture are referred as
 - colpate
 - porate
 - colporate
 - all of the precedings
- DNA is a primary semantide while RNA is:
 - 2ry semantide
 - 2ry nucleotide
 - tertiary semantide
 - all of the precedings
- It is consists of a benzene ring linked to an acid group
 - simple phenols
 - phenol carboxylic acid
 - phenylpropanes
 - all of the precedings
- In pod or legume, hypodermis is consists of
 - lignified fibres
 - few vessels
 - parenchyma
 - all of the precedings
- The site of attachment of siliqua wall to the side of MVB is referred to as
 - hilum
 - replum
 - follicle
 - suture
- In general, epidermal cells of seed coat are and remain filled with colouring matter
 - parenchyma
 - sclereides
 - collenchyma
 - chlorenchyma
- Gossypium*, the innermost layer composed of radially elongated cells called
 - hourglass layer
 - pigment layer
 - nutritive layer
 - Fringe layer
- The diagrammatic representation of karyotype is termed
 - karyotype
 - ideogram
 - biotype
 - dendrogram
- Chromosome Morphology is determined by the position of
 - centrosome
 - chromatide
 - chromosome
 - centromere
- Divided Dicotyledoneae initially into 2 main groups (Herbceae and Lignosae)
 - De Jussieu
 - Hutchinson
 - Engler
 - Bentham & Hooker
- It includes relatively primitive families of Angiosperms
 - Caryophyllales
 - Magnoliales
 - Myrtales
 - Solanales
- Aquatic herbs with typically floating or submerged leaves and large showy flowers
 - Magnolia grandiflora*
 - Nelumbo nucifera*
 - Nymphaea lotus*
 - Annona squamosa*
- Characterized by milky sap, numerous stamens and deciduous calyx is: -
 - Lamiaceae
 - Caesalpinaceae
 - Papaveraceae
 - Brassicaceae
- Humulus lupulus* is belonging to Cannabinaceae, the female inflorescence used for
 - Opium extract
 - flavouring beer
 - condiment
 - all of the preceding
- Flowers ofis naked, subtended with 2 bracts, ovule contains about 20 embryo sacs
 - Humulus*
 - Papaver*
 - Casuarina*
 - Morus*
- Rumex dentatus* and *Emex spinosa* are common weeds belonging to family
 - Chenopodiaceae
 - Apiaceae
 - Polygonaceae
 - Nyctaginaceae

ملحوظة :- تكملة الاسئلة في الخلف

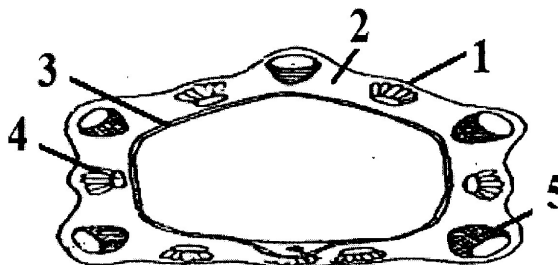
20. Bombacaceae is differ than Malvaceae in
 a. smooth pollen grains b. Trees, not herbs c. Capsule fruits d. all of the preceding
21. Family that much resembles to Fabaceae, but its posterior petal differs in color or size is:
 a. Oleaceae b. Caesalpiniaceae c. Mimosaceae d. Brassicaceae
22. Among flowering plants belonging to family Euphorbiaceae
 a. *Euphorbia peplus* b. *Ricinus communis* c. *Hevea brasiliensis* d. all of the preceding
23. *Vitexagnus casyus* and *Avicennia officinalis* are belonging to family
 a. Verbenaceae b. Apocynaceae c. Solanaceae d. Convolvulaceae
24. More or less totally parasitic herbs without chlorophyll and usually with fleshy stems
 a. *Plantago* b. *Orobanche* c. *Plumbago* d. all of the preceding
25. Family that sometimes characterized by fleshy-stemmed Inflorescence "spadix" is: -
 a. Lamiaceae b. Arecaceae c. Brassicaceae d. Malvaceae

Second question:- Complete the following comparison: (5 marks)

	Cannabinaceae	Moraceae	Urticaceae
Habit			
Odors			
Hairiness			

Third question:- Bellow a T.s. of, complete the followings (5 marks)

- 1-
- 2-
- 3-
- 4-
- 5-
- 6- The fruit is



Fourth question:- Write short notes with illustrations on each of the followings:- (15 marks)

- a. Pollen aperture (5 marks)
- b. Cactaceae and Verbenaceae and enumerate 2 plants to each family (10 marks)

Best Wishes ...
Prof. Dr. Momen Zareh

	Assiut University- Faculty of Science Second Semester- Final Exam 2025-2026 Botany & Microbiology Department	Programs: Industrial Chemistry Level: (3) Date: 31/5/2026; Time: 2 h	 كلية العلوم جامعة أسيوط
Course Title: Fermentation Industries		Code: Bot 314	
Instructors: Prof. Dr. Abdel-Naser A. Zohri			
Important:	No. of pages 1	No. of questions 5	Total Mark: 50 degree

Q I. Explain only six of the following:

(24 marks, 4 for each)

- 1- General characteristics of the fermentor.
- 2- Down-stream processes for ethanol production.
- 3- The different strategies that can be used to produce glycerol through fermentation.
- 4- Selection, preparation and propagation of a reliable inoculum of yeast and bacterial strains used in the production of vinegar from apple juice.
- 5- Different fermentation technologies that can be used for citric acid production.
- 6- The general production method of β -lactam antibiotics.
- 7- The important compounds formed by microbial hydroxylation of progesterone

Q II. What are the advantages of each of the following?

(10 mark, 2.5 for each)

- 1- Using osmotolerant yeasts in glycerol production.
- 2- Using fed-batch fermentation for penicillin production.
- 3- Adding vinegar to the soup while cooking.
- 4- Epoxidation action on a steroidal compound.

Q III. Choose the correct answer from the following answers

(5 marks, one for each)

- 1- Microbial Poly-hydroxylation of progesterone followed by dehydrogenation leads to the formation of (Cortisone, Andrenolone, 17 dione, Cortisol).
- 2- Gramicidin is one of (Tetracycline's, Polypeptide antibiotics, B-lactam antibiotics).
- 3- The suitable carbon source for citric acid production is (Sucrose, lactose, fructose).
- 4- Theoretically ethanol yield from fermentable sugar by fermentation nearly (41, 51, or 61) %.
- 5- Cider vinegar produced by bacterial acidification of (Diluted apple juice, clarified apple juice, fermented apple juice).

Q IV. Put a cross (✓) in front of the correct sentence and a cross (x) in front of the incorrect sentence of the following

(5 marks, one for each)

- 1- High yields of citric acid were obtained when the mats are thin and sporulation is absent.
- 2- Tetracycline has a 4-member cyclic amide.
- 3- Dehydrogenation of a steroid hormone decreases their activity.
- 4- In ethanol fermentation, aeration is very important during yeast propagation.
- 5- Vinegar production is non-aerobic and exothermic fermentation.

Q V. Define each of the following

(6 mark, one for each)

Fermentation, Fuel grade anhydrous bioethanol, Submerged fermentation, Environmental friendly, Estrogens, and Vinegar Pei.

Good Luck...

Prof. Dr.: A. A. Zohri

	Assiut University- Faculty of Science Second Semester- Final Exam 2025-2026 Botany & Microbiology Department	Programs: Industrial Chemistry Level: (3) Date: 31/5/2026; Time: 2 h	 كلية العلوم جامعة أسيوط
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Good Luck...

Prof. Dr.: A. A. Zohri

Assiut University

Faculty of Science

Department of Botany & Microbiology

Biotechnology Students

Molecular Genetics (A308)



جامعة أسيوط

كلية العلوم

قسم النبات والميكروبيولوجي

Final exam: 31st May 2026

Time allowed: 2 h

I. Answer 6 of the following: (18 Marks)

1. Compare blunt ends and sticky ends generated by restriction enzymes and explain their significance in gene cloning.
2. Explain the steps involved in gel reading and binary matrix construction during molecular marker analysis, describe how binary matrices are used to construct phylogenetic trees.
3. Classify the major types of point mutations, explain how each mutation modifies the codon on the mRNA.
4. Explain post-transcriptional control of eukaryotic gene expression.
5. Discuss Lac-operon expression in the presence of both lactose and glucose in the environment.
6. Define a restriction map, describe the step-by-step procedure for constructing a restriction map of a DNA molecule and explain its importance in biotechnology.
7. Differentiate between exonucleases and endonucleases with biological functions.

II. Write the meaning of 6 of the following scientific terms, give the role in molecular genetics: (12 Marks)

- | | | |
|------------------------|--------------|--------------------------|
| 1. <i>Tryp</i> -Operon | 2. Ubiquitin | 3. Sense DNA strand |
| 4. Methyl transferases | | 5. Klenow fragment |
| 6. cAMP-CAP complex | | 7. Peptidyl binding site |

III. Choose the correct answer for the following: (20 Marks)

1. PCR is mainly used for:

- a. Protein synthesis
- b. DNA amplification
- c. Transcription
- d. RNA translation

2. Why can two DNA fragments of the same length show different bands in SSCP?

- a. Different primer sequences
- b. Different GC content
- c. Different charges
- d. Different folding structures

----- "يقدر" الأستاذة في الصفحة القادمة -----

3. In a dominant marker system, which genotypes produce the same result on a gel?
- AA and Aa
 - Aa and aa
 - AA and aa
 - AA, Aa and aa
2. A plasmid cut with enzyme A produces 3 fragments, how many cut sites are present for this enzyme?
- 1
 - 2
 - 3
 - 4
3. Control of gene expression in prokaryotes takes place in which process?
- Translation
 - Transcription
 - Processing
 - All of these
4. CRISPR-Cas9 is used for:
- DNA staining
 - Gene editing
 - Gel preparation
 - Protein purification
5. If Lane A and Lane B both show one band at 500 bp, this means that the DNA sequences are exactly identical.
- True
 - False
6. What is the role of primase in transcription?
- To remove RNA primers
 - To form transcription bubble
 - To synthesis RNA primers
 - Has no role
7. A polycistronic structural gene is regulated by a common promoter and regulator gene in bacteria and is commonly termed as
- Promoter
 - Operon
 - Codon
 - Anticodon
8. Double digestion involves:
- Two restriction sites
 - Double helix DNA
 - Two restriction enzymes
 - Two DNA molecules

..... "بقية الأسئلة في الصفحة القادمة"

9. Which of the following are the bind sites of activators?

- a. Operator
- b. Repressors
- c. DNA bending enzymes
- d. Enhancers

10. What is the main limitation of dominant markers?

- a. Cannot detect DNA
- b. Expensive
- c. Produce too many bands
- d. Cannot distinguish heterozygotes

11. If a fragment from enzyme A remains unchanged in A+B digest, it means:

- a. B cuts inside the fragment of A
- b. B does not cut that fragment
- c. A and B cut the same site
- d. None of the above

12. Which type of mutation alters mRNA codon from 5'-AAG-3' (Lysine) to 5'-AAA-3' (Lysine)?

- a. Silent
- b. Frameshift
- c. Nonsense
- d. No mutation

13. The lactose repressor is encoded by which of the following genes?

- a. Lac-Y
- b. Lac-Z
- c. Lac-I
- d. Lac-A

14. Which enzyme cuts DNA within the DNA strand?

- a. Endonuclease
- b. DNA polymerase
- c. Ligase
- d. Exonuclease

15. What is the nature of DNA synthesis on the lagging strand?

- a. Discontinuous
- b. Parallel
- c. Continuous
- d. Bidirectional

----- "بقية" الأسئلة الأسئلة في الصفحة القادمة" -----

16. Which technique uses random primers?

- a. RAPD
- b. SSCP
- c. ISSR
- d. SCoT

17. A linear DNA of 20 kb is cut by enzyme X into 12 kb + 8 kb, how many cut sites?

- a. 1
- b. 2
- c. 8
- d. 12

18. Which of the following is required as inducer(s) for the expression of Lac operon?

- a. Tryptophan
- b. Glucose
- c. Lactose
- d. Lac-Z

19. In SSCP, DNA fragments are separated based on:

- a. Size only
- b. Charge only
- c. Conformation
- d. Length

20. The total size of DNA fragments after digestion should equal:

- a. Primer size
- b. Vector size only
- c. Total DNA length
- d. RNA length

21. After DNA replication, each chromosome consists of:

- a. Two identical DNA molecules joined at centromere
- b. One DNA molecule
- c. Four chromatids
- d. A double-stranded DNA molecule

..... " انتهى "
ت الأستاذة

Best Wishes

Prof. Nemmat A. Hussein



Assiut University - Faculty of Science
Botany & Microbiology Department

Stress Physiology

Time: 2 Hours

313 BT



جامعة أسيوط - كلية العلوم
قسم النبات والميكروبيولوجي

First Term Examination 2025 – 2026

3rd Level: Biotechnology

Exam Papers: Three

Answer the following questions:

Q1- Read carefully and choose the correct answer of twenty only: .. (20 marks)

- 1- Stress is not commonly a physical force affecting the organism in biological systems.
a) many (b) single (c) two (d) three
- 2- can be perceived by protein receptors or through changes in membrane potential.
a) Signals (b) Receptors (c) Second messenger (d) Channels
- 3- is the ability of the host plant to maintain its growth despite the infection or pest attack.
a) Stress (b) Tolerance (c) Resistance (d) None of the previous
- 4- The term is often used to describe a readily diffusible molecule involved in conveying information from an extracellular source to the principal target enzymes within the cell.
a) receptor (b) second messenger (c) stress (d) tolerance
- 5- light interact in regulating plant development.
a) Blue & green (b) Blue & red (c) Green & red (d) Green & yellow
- 6- In submerged soils at very low redox potential, large amounts of may be formed.
a) CO₂ (b) CH₄ (c) CO (d) O₂
- 7- Two of the major signal transduction pathways found in plant cells involve:
a) Ca + Proteins (b) Ca + Protein kinases (c) K + Protein kinases (d) Mg + Protein
- 8- is often a major constraint in waterlogged environments.
a) Element deficiency (b) Element toxicity (c) O₂ toxicity (d) CO₂ toxicity
- 9- acts as a root signal, inducing epinastic responses to flooding in the leaves of herbaceous plants.
a) Auxin (b) Ethylene (c) Strigolactone (d) Gibberellin



Assiut University - Faculty of Science
Botany & Microbiology Department

Stress Physiology

Time: 2 Hours

313 BT



جامعة أسيوط - كلية العلوم
قسم النبات والميكروبيولوجي

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- 10- Growth in a wetland environment promotes formation of a thickened hypodermis to reduce loss to the anaerobic soil.
 a) CO₂ (b) O₂ (c) NO (d) CH₄
- 11- Nitrate may inhibit as well as promote growth, depending on the
 a) speed of light (b) light intensity (c) visible wavelengths (d) All of the previous
- 12- Plastic strain can change to elastic strain.
 a) Stress (b) Repair (c) tolerance (d) All of the previous
- 13- Reactive oxygen species such as:
 a) free radicals (b) ¹O₂ (c) H₂O₂ (d) all of the previous
- 14- Compatible solutes include, except for.
 a) proteins (b) proline (c) glycine betaine (d) oligosaccharides
- 15- soils are abundant in semiarid and arid regions.
 a) Saline (b) Flooded (c) Wet (d) all of the previous
- 16- In plants exposed to high salinity levels for short periods,, and long periods are the principal constraint.
 a) water deficit, ion toxicity (b) water excess, ion toxicity
 (c) water excess, ion deficit (d) water deficit, ion deficit
- 17- Under salinity, higher respiration rate requirement presumably results from:
 a) The compartmentation of ions (b) Ion secretion
 (c) The repair of cellular damage (d) All of the previous
- 18- in which the plant cells are killed.
 a) Necrotrophy (b) Biotrophy (c) Hemibiotrophy (d) None of the previous
- 19- Phytopathogenic specialize in colonizing the apoplast to cause rots, spots, vascular wilts, cankers, and blights.
 a) bacteria (b) fungi (c) viruses (d) nematodes
- 20- Plant never cross the plasma membrane of infected cell.
 a) viruses (b) bacteria (c) fungi (d) nematodes
- 21- All parasitic species are obligate biotrophs, and all possess a hollow feeding style capable of penetrating plant cell walls.
 a) nematode (b) viruses (c) bacteria (d) arthropods
- 22- Feeding not only damage plants directly but also facilitate colonization by viral, bacterial, and fungal pathogens
 a) arthropods (b) viruses (c) bacteria (d) fungi

Put (✓) in front of the correct sentence and (X) in front of the wrong sentence and correct it (Answer ten only): (10 marks)

- 1- Many signals interact antagonistically with each other to produce the final response.
- 2- Stress is usually defined as an external factor that exerts an advantageous influence on the plant.
- 3- To initiate transduction, a signal must first be non-sensed by a receptor.
- 4- Auxin triggers epinasty in some flood-sensitive species.
- 5- When free CO₂ is depleted, nitrate is used by some soil microorganisms as an alternative electron acceptor in respiration.
- 6- The signal from flooded roots for enhanced shoot elongation is the gaseous phytohormone gibberellin.
- 7- Stress tolerance mechanisms begin with stress perception, followed by the formation of gene products involved in cell protection and repair.

Q3- Compare between ten of the following: (20 marks)

- 1- External and internal signals.
- 2- Ethanol and lactate pathways in waterlogged soil.
- 3- Phytohormones and oxidative stress under effect of salinity.
- 4- Biotrophy and hemibiotrophy fungi.
- 5- Constitutive and induced defenses - Structures.
- 6- Jasmonic acid and ethylene, which are required for plant defense.
- 7- Salt excretion and leaf drop.
- 8- Salt exclusion and salt inclusion.
- 9- Glycosidase and hydroxynitrilelyase roles in hydrogen cyanide release.
- 10- Positive-strand RNA and negative-strand ssRNA viruses.
- 11- Chewing and suck sap insects.
- 12- Protein synthesis and phytohormones under physiological and biochemical effects of salinity.

والله ولي التوفيق، أ.د. / عفاف محمد حماده

	Assiut University- Faculty of Science First Semester- Final Exam 2025-2026 Botany and Microbiology Department	Program: Microbiology Levels : (3, 4) Date: 7/1/2026 Time: 2 h	
Course Title: Biological Control		Code: 499	
Instructors: Prof. Dr. Ahmed M. Moharram			
Important:	No. of pages 1	No. Of questions 7	Total Mark: 50 degree

ANSWER FIVE QUESTIONS ONLY:

- 1- Give an account of ribosomally and non-ribosomally synthesized metabolites produced by *Bacillus* species..... (10)
- 2- With the help of diagrams describe each of the following fungal species referring to their role in biological control:..... (10)
 - a- *Ampelomyces quesqualis*
 - b- *Chaetomium globosum*
 - c- *Trichoderma harzianum*
 - d- *Smittium culisetae*
 - e- *Beauveria bassiana*
- 3- Mark right (<) or wrong (X): (10)
 - a- Plant roots treated with *Agrobacterium radiobacter* are kept in dark for one day ()
 - b- *Pseudomonas flourescens* can be applied as a biofertilizers..... ()
 - c- *Arthrobotrys oligospora* produces network structures to capture nematodes.....()
 - d- *Coniothyrium minitans* is effective bioagent against Powdery mildew fungi..... ()
 - e- *Entomophthora muscae* is a common pathogen of house fly ()
 - f- *Metarhizium anisopliae* can be used for biocontrol of red palm weevils..... ()
 - g- *Lecanicillium lecanii* is effective bioagent against crown gall disease.....()
 - h- *Nematocytus leiosporus* produces adhesive knobs to attack nematodes..... ()
 - i- *Paecilomyces lilacinus* can be formulated for controlling nematode eggs.....()
 - j- Siderophores are iron chelating compounds produced by *Pseudomonas* species....()
- 4- Discuss in detail the mechanism of insect infection by fungi..... (10)
- 5- Describe with labelled illustrations the life cycle of *Coelomomyces stegomyiae*.....(10)
- 6- Describe how *Bacillus thuringiensis* can destroy the larval stage of insects.....(10)
- 7- Give full illustration of nematodes infected by *Catenaria anguilulae*.....(10)

===== END OF QUESTIONS =====

Best Wishes,

Professor / Ahmed M. Moharram

	Assiut University- Faculty of Science Botany & Microbiology Department Second Semester- Final Exam 2026	Program: Third level, Microbiology Date: 16 /5/2026 Time: 2 h	
Course title: Microbial Enzymes		Code: 394 B	
Instructor: Prof. Dr. Ahmed Lotfy El-Sayed			
Important:	No. of Pages: 8	No. of questions: 4	Total Mark: 50 degrees

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

Q1. Choose the correct answers (Put your answers in the table provided). (15 Marks, 1 Mark for each)

- Which structural feature primarily determines stereochemical specificity of enzymes?
A) Prosthetic group B) Active site geometry C) Enzyme size D) Substrate concentration
- Which interaction is most critical for tertiary protein structure stability?
A) Peptide bonds B) Hydrogen bonds only C) Disulfide bonds D) Ionic bonds exclusively
- Which enzyme class uses ATP to join two substrates?
A) Ligases B) Transferases C) Hydrolases D) Oxidoreductases
- Which enzyme classification does lactate dehydrogenase belong to?
A) EC 1 B) EC 2 C) EC 3 D) EC 4
- What is the primary role of an enzyme?
A) Increases activation energy B) Reduces activation energy C) Acts as a reactant D) Slows down reactions
- Which concept is fundamental for enzyme function?
A) Shape is irrelevant B) Structure determines function C) Function determines structure D) Enzymes are rigid
- What forms the active site of an enzyme?
A) Entire protein chain B) 3-4 amino acids in a pocket C) Prosthetic group only D) Substrate molecules

8. Which property gives the active site its catalytic ability?

- A) Size of enzyme B) Arrangement of amino acids C) Presence of water molecules D) pH of solution

9. What is the role of a prosthetic group in enzymes?

- A) Acts as substrate B) Modifies enzyme activity C) Denatures enzyme D) Inhibits enzyme permanently

10. Which enzyme hydrolyzes α -1,4-glycosidic bonds?

- A) Lipase B) Urease C) α -amylase D) Hexokinase

11. What happens to enzymes at high temperatures?

- A) Activity increases indefinitely B) They denature C) They become more flexible D) They form more active sites

12. EC number 1 refers to which class of enzymes?

- A) Transferases B) Oxidoreductases C) Hydrolases D) Ligases

13. Which microorganism produces DNA polymerase?

- A) *Bacillus subtilis* B) *Thermus aquaticus* C) *Streptomyces sp.* D) *Kluyveromyces sp.*

14. Which statement about uncompetitive inhibition is correct?

- A) It binds only to free enzyme B) It increases V_{max} C) It binds to ES complex D) It can be reversed by adding substrate

15. Which inhibitor type cannot be overcome by increasing substrate concentration?

- A) Competitive B) Noncompetitive C) Reversible D) Mixed

A table for your answer

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	

Metalloenzymes

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This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

This image shows a full page of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page, typical of notebook paper. There is no handwriting or other markings on the page.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

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Q4. Show diagrammatically the reciprocal plot of lineweaver & Burk and write the resulting equation.
(5 Marks)

Lined area for drawing the reciprocal plot of Lineweaver & Burk and writing the resulting equation.

Good Luck
Prof. Dr. Ahmed Lotfy El-Sayed

	Assiut University- Faculty of Science Botany & Microbiology Department Second Semester- Final Exam 2026	Program: Third level, Microbiology Date: 16 /5/2026 Time: 2 h	
Course title: Microbial Enzymes		Code: 394 B	
Instructor: Prof. Dr. Ahmed Lotfy El-Sayed			
Important:	No. of Pages: 8	No. of questions: 4	Total Mark: 50 degrees

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5. What is the primary role of an enzyme?

- A) Increases activation energy B) Reduces activation energy C) Acts as a reactant D) Slows down reactions

6. Which concept is fundamental for enzyme function?

- A) Shape is irrelevant B) Structure determines function C) Function determines structure D) Enzymes are rigid

7. What forms the active site of an enzyme?

- A) Entire protein chain B) 3-4 amino acids in a pocket C) Prosthetic group only D) Substrate molecules

	Assiut University- Faculty of Science Botany & Microbiology Department Second Semester- Final Exam 2026	Program: Third level, Microbiology Date: 16 /5/2026 Time: 2 h	 كلية العلوم جامعة أسيوط
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7. What forms the active site of an enzyme?

- A) Entire protein chain B) 3-4 amino acids in a pocket C) Prosthetic group only D) Substrate molecules

8. Which property gives the active site its catalytic ability?

- A) Size of enzyme B) Arrangement of amino acids C) Presence of water molecules D) pH of solution

9. What is the role of a prosthetic group in enzymes?

- A) Acts as substrate B) Modifies enzyme activity C) Denatures enzyme D) Inhibits enzyme permanently

10. Which enzyme hydrolyzes α -1,4-glycosidic bonds?

- A) Lipase B) Urease C) α -amylase D) Hexokinase

11. What happens to enzymes at high temperatures?

- A) Activity increases indefinitely B) They denature C) They become more flexible D) They form more active sites

12. EC number 1 refers to which class of enzymes?

- A) Transferases B) Oxidoreductases C) Hydrolases D) Ligases

13. Which microorganism produces DNA polymerase?

- A) *Bacillus subtilis* B) *Thermus aquaticus* C) *Streptomyces sp.* D) *Kluyveromyces sp.*

14. Which statement about uncompetitive inhibition is correct?

- A) It binds only to free enzyme B) It increases V_{max} C) It binds to ES complex D) It can be reversed by adding substrate

15. Which inhibitor type cannot be overcome by increasing substrate concentration?

- A) Competitive B) Noncompetitive C) Reversible D) Mixed

A table for your answer

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	

a. Metalloenzymes

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25. Discuss five only of the following: (15 Marks, 3 for each)

a. Absolute and relative specificity of enzymes.

b. Michaelis constant (K_m) and its value significance.

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Assiut University
Faculty of Science
Botany and Microbiology
Department



جامعة أسيوط
كلية العلوم
قسم النبات والميكروبيولوجي

Final Exam. Plant Biochemistry (352 B)
Chemistry and Botany Students

Plant Biochemistry, June 2026

(50 Marks)

Section I: Answer all the following questions (25 Marks)

1. Put (✓) in front of the right sentence and (X) in front of the wrong one (10 points, one point free)

(Transfer your answers with their numbers in a table into your answer sheet)

1	Porphyrin ring is composed of four pyrrole rings.	
2	Electrons move freely in solutions.	
3	Electrons reduce reducible compounds.	
4	Protons from water oxidation accumulate in thylakoid lumens to drive ATP synthase	
5	Plastoquinones do not donate electrons directly to PSI.	
6	PSII reaction center absorbs longer wave lengths than that of PSI.	
7	Specificity of enzymes is always absolute.	
8	Feedback inhibition is determined by the last step in a reaction.	
9	Enzyme-substrate complex is not a reversible reaction.	
10	Enzymes always end with the suffix "ase".	
11	Enzymes are classified by the Enzyme Commission number (EC).	
12	The mode of enzyme action is explained by the Key and lock theory.	
13	There is an optimum temperature for all enzymes.	
14	Enzymes are denatured by high temperatures.	
15	Coenzymes are tightly bound to the enzyme molecules.	
16	Prosthetic groups are divided to cofactors and coenzymes.	
17	Photophosphorylation is cyclic and non-cyclic.	
18	Carotenoids play a dual function in photosynthesis, absorption of light spectra as accessory pigments and protective action against oxidative stress (e.g. solarization).	
19	Before fitting into active sites enzymes and their substrate molecules must collide	
20	Photosynthesis is driven by visible light only.	
21	The oxygen released in photosynthesis comes from CO ₂ .	

2. Write down the scientific term best expressing the following information (5 points, one point free):

(Transfer your answers with their numbers in a table into your answer sheet)

1.	The stage of Calvin cycle that consumes most of the assimilatory power	
2.	The inhibition of enzyme activity by compounds similar to the substrates	
3.	The specific position at which a substrate molecule fits into the enzyme molecule	
4.	The organelle at which photosynthesis completely occurs	
5.	The part of a photosystem that undergoes charge separation	
6.	Synthesis of ATP	

3. Describe **TWO ONLY** of the following (5 points each):

- Calvin cycle (*only diagrammatically*)
- Light reactions (*only diagrammatically*)
- Mode of enzyme action (*only diagrammatically*)

Best wishes,



Refat Abdel-Basset

Section III: Answer all the following questions (25 Marks):

Q1-Fill in with the correct word for the following definitions/phrases:

1-The Chemical signals produced by legume roots to initiate soil Rhizobium called-----

2-The Chemical substance which attract Rhizobium to walls of root cells called-----

3-The bacteria cells present in the root nodules called-----

4-The type of symbiotic relation between legumes and bacteria is-----

5-The substance which protect the nitrogenase enzyme from O₂ inhibition called-----

6-The enzyme which converts N_2 to ammonia is-----

7-Conversion of N_2 gas to (NO_3) called.-----

8-Conversion of N_2 gas to (NO_2) called-----

9-Conversion amino acids to (NH_4) called-----

10-Conversion of keto acid to amino acids called -----

Q3-Put (×) or (/) for each statements:

1 -Epimers are compounds that have the same chemical formula.

2-RNA polymerase enzyme activate reactions of amino acids

3-Isomerism is mirror images of each other.

4-Chain of glucose residues, which are linked by $\beta(1\rightarrow4)$ glycosidic linkage cellulose.

5 -a-glucose units linked by a-1,4, a-1,3- and a-1,6-glucosidic linkages Dextran.

6 -Hill reaction means that during photosynthesis water is the source of electrons in the light reaction and not carbon dioxide

7 -Photolysis of water occurs in the Photosystem II

8- Photolysis of water resulting in the generation of free oxygen (O_2). This is the process which returns oxygen to earth's atmosphere

9 -Light-Harvesting Complexes (LHCI) called Photosystem I.

10 -Light-Harvesting Complexes (LHCII) called Thylakoids.

Q3: Write Short Nots on two of the following:

a- β - Oxidation of fatty acids

b- The pentose phosphate pathway

c- Conversion of glucose into Ethanol.

Good Luck

Prof. Dr. A.E. El-Enany

	Assiut University- Faculty of Science Second Semester- Final Exam 2025-2026 Botany and Microbiology Department	Program: Microbiology Level: 3 Date: 15/5/2026 Time: 2 h	 كلية العلوم جامعة أسيوط
Course Title: Plant Pathogenic Fungi		Code: B364	
Instructors: Prof. Dr. Mohamed Hashem			
Important:	No. of pages 2	No. Of the questions 5	Total Mark: 50

Question I: Give the term for each corresponding sentence. 2 marks for each (Δ, ■).

1. Non infectious plant disease due to abiotic causes such as adverse soil conditions. "....."
2. The pathogen advances through the tissues of the host to varying extents.
"....."
3. Visible external alterations on the host by which a disease can be recognized.
"....."
4. Species have sexes that reside in different individuals. "....."
5. A measure of the biological energy available for the colonization of a host.
"....."

Question II: Give a short note on each of the following. (2 marks for each) (Δ, ■).

1. Early Blight of Potato and Tomato by *Alternaria solani*.
2. Modes of infection by smut fungi.
3. Control of *Rhizopus* soft rot of fruits.
4. Sources of survival of pathogens.
5. Postharvest diseases caused by *Aspergillus*

Question III: Analyze the following pathological issues. 5 marks for each (●,◊).

1. Classification of Plant Diseases according to the symptoms.
 2. Factors influencing disease development of powdery diseases.
-

Question IV: Compare between each pair of the following. 10 marks (◊, *)

1. Club root of crucifers and powdery scab of potato. (4 marks)
 2. Downey mildews fungi. (3 marks)
 3. Basidium of rust and smut fungi. (3 marks)
-

Question V: 5 marks for each (○).

1. Construct the life cycle of early blight of potato causal pathogen.
 2. Identify the role of AI in diagnosis of plant disease.
-

End of Exam

With my best wishes
Prof. Dr. Mohamed Hashem

	Assiut University- Faculty of Science First Semester- Final Exam 2025-2026 Botany and Microbiology Department	Program: Botany & chemistry Level: (4) Date: 17/5/2026 Time: 2 h	 كلية العلوم جامعة أسيوط
Course Title: Plant geography		Code: B 341	
Instructors: Assistant Prof. Dr. Suzan Ahmed Tammam			
Important:	No. of pages: 6	No. of questions:4	Total Mark:50 degree

Answer the following questions

Q1: Choose the correct answer:

(10 Marks)

- Seeds or fruits that carriage by endozoic transportation should be:-----
a-bright color& palatable flash b- sweet & juicy c- embryo protected from digestion d- all answers are correct
- All these examples of animals are used in plant dispersal **except**: -----
a-birds b- mammals c- lower animals d- man
- Soil development is influenced by: -----
a- climate b- vegetation c- topography d- all answers are correct
- All these lower animals are used in plant dispersal **except**: -----
a- fresh water fishes b- mammals c- insects d- bats
- is the most active agent of vegetation change.
a- birds b- bats c- insects d- man
- All these are main types of particular agents of dispersal **except**-----:
a- physiographic b- climatic c- edaphic d- a biotic
- All these are from methods of plant geography **except**: -----
a- listing all the species b- examination of the physical features
c - ignore studying soil and geological history d- study of human history
- All these are climatic **except**: -----
a- temperature b- humidity c- light d- soil composition
- Changes by human action include: -----
a - clearance of forests b- draining of swamps c- over grazing d- all answers are correct
- Angiosperms became recognizable in the lower -----
a- cretaceous b- Jurassic c- quaternary era d- all answers are false
- The disseminules of reproductive structure that can dispersal may be: -----
a-fruits b- seeds c -spores d- all answers are correct

12. Principal factors seem to control temperatures: -----
 a -oceanic currents b- land and sea breezes,
 c- latitude & altitude d- all answers are correct
13. ----- is the main disseminules of most of the groups of plants and are often produced in great numbers. a- plumed fruits b- dust seeds c -plumed seeds d- spores
14. Koppen classification based on the duration of these critical temperatures -----
 a- tropical & subtropical bel b- cold & polar belts
 c- temperate belts d- all answers are correct
15. In which region are Hemicryptophytes present: -----
 a -desert regions b- tropical regions c- high alpine region& arctic regions d- no correct answers
16. General principles of plant geography include: -----
 a- the environment & plant responses b- migration of floras and climaxes
 c- perpetuation and evolution of floras and climaxes d – all answers are correct
17. Geophytes are common in -----
 a - temperate regions b- high alpine regions c- arctic regions d- desert regions
18. The main categories of life forms
 a – Chamaephytes & Geophytes b- Hemicryptophytes c- Phanerophytes d- all answers are correct
19. Circumpolar type of continuous intercontinental ranges is distributed in: -----
 a - the tropics and subtropics b- around the north or South Pole
 c- distributed all over the globed d- tropical region of Asia, Africa and America
20. Restriction of local endemic is usually due to:-----
 a – their recent origin b- their antiquity c- (a &b) are correct together d- no correct answer

Q 2:- Put (✓) for true statement and put (x) for false statement and correct it: (16 Marks)

1	Pseudo-endemics that have been found (encountered) only in one place and appear to be mutants, and unlikely to persist.	
2	Evolution of floras did not depend upon migration, evolution, environmental selection.	
3	Species present in one restricted area are called endemics	
4	Isolated islands, or island groups, are often poor in endemics	
5	The majority of endemic families are small, monotypic or containing a few genera	
6	Mammals tend to be the most important group of animals from the point of view of plant dispersal.	
7	Any condition which proves lethal to disseminules may constitute a major barrier against migration	

8	Climatic changes act upon varying tolerances of component species.	
9	In continuous ranges the plants are separated by wider gaps than the dispersal capacity of their propagules would normally bridge.	
10	Any heavy disseminules may be effectively dispersed by water up to the limits of its ability to float and retain the power of germination.	
11	The range of tolerance is the direct result of the genetic diversity of the species	
12	Fossil records of geological times present a story of changing floras.	
13	For reasons of isolation and of migration endemic genera are more numerous in some regions than in others.	
14	Tropical distributed in Europe and Asia	
15	A wide ocean or even lake may constitute a barrier to disseminules which cannot float and live long enough to cross it.	
16	The growth and functioning of an organism are dependent on the amount of the essential environmental factor presented to it in minimal quantity.	
17	Certain species have wide adaptability whereas others seem highly specialized.	
18	Different kind of plant has its own particular distribution or range, which, is dependent on its history	
19	Plant ecology deals with the distribution of plants and seeks to know why the plant is here.	
20	Various biotypes are subject to environmental selection and thus become ecotypes.	
21	Climatic zones are broad geographic divisions.	
22	Plant geography deals with vegetation	
23	Historical element may be due to changes by human action	
24	Similar climates pertain to different parts of the world, vegetation is different.	
25	Precipitation has profound effects on vegetation.	
26	Thermal preferences are the only factor in determining distribution by latitude.	
27	Angiosperms became recognizable in the world flora in the Jurassic	
28	Climatic changes of the quaternary comprised in the northern hemisphere- glaciations only.	
29	Soil development is influenced by climate and vegetation and to a lesser extent by topography.	
30	Factors of environment act collectively and simultaneously, action of any one factor is qualified by the other factors.	
31	Different ontogenetic phases have different tolerances	
32	The spores are often extremely resistant to low temperatures and desiccation	

Q3: Give definition of the following: -

(9 Marks)

- 1- areas are occupied by relic species (often called relicts) which in phytogeographical sense are remnants of an earlier flora that have been left behind when surrounding areas have been vacated.
- 2- areas are belonging to closely related taxa (vicarioids) derived from the same common ancestor and tending to be mutually exclusive of one another naturally without human interference.

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- 2- areas are belonging to closely related taxa (vicarioids) derived from the same common ancestor and tending to be mutually exclusive of one another naturally without human interference.

- 3-is effect of organisms on environment.
- 4- is the most critical phase of ordinary life.
- 5- are the main disseminules of most of the groups of plants and are often produced in great numbers.
- 6- these are usually bear a light tuft of silky hairs at one end and are liberated from a capsular fruit which on splitting only releases them gradually, often one by one.
- 7- is biologically very large population consisting of numerous biotypes.
- 8- their appendages cause them to be detached by the wind and floated away often for very considerable distances.
- 9- such plants, or detached portions bearing the seeds, tend to roll before the wind, usually scattering their seeds or fruits as they go.
- 10- this is the slinging of seeds out of fruits such as the capsules of *Papaver sp.*
- 11- this system is useful in giving a fair analysis of the components of a community or flora in terms of the representation of each life form.
- 12- plants growing on other plants which get blown to new situations on the trees on which they grow.
- 13- the study and description of the differentiation and distribution of earthly phenomena, embracing all that composes or affects the earth's surface including its physical features, climates, and products whether living or inert.
- 14- is the form which its vegetative body produces as a result of all the life processes
- 15- Effect of environmental factors on organisms is called
- 16- in these it is usually a thin portion of the seed-coat which forms a wing that catches in the wind when they are liberated often in considerable numbers.
- 17- these usually bear a light tuft of silky hairs at one end and are liberated from a capsular fruit which on splitting only releases them gradually
- 18- the seeds of many plants are minute and extremely light as well as sometimes winged and so tend to be blown away and about in much as spores
- 19- The are often extremely resistant to low temperatures and desiccation which in fact appear to prolong their life able to germinate when given suitable conditions.

Q 4: - Complete the following:-

(answer 15 only)

(15 Marks)

1. The main three classes of isolated relics according to type of natural habitat change:
a) _____, b) _____
c) _____
2. Perpetuation of plants is dependent on:
a) _____,
b) _____
3. The main types of endemic
a) _____, b) _____
4. Classes of relics according to the age and origin
a) _____, b) _____
c) _____, d) _____
e) _____
5. Main types of continuous intercontinental ranges
a) _____, b) _____
c) _____, d) _____
6. The general types of discontinuity regardless of cause:
a) _____, b) _____, c) _____
d) _____, d) _____, f) _____
7. The most familiar and important specific types of discontinuous ranges:
a) _____, b) _____, c) _____
d) _____, d) _____, f) _____
g) _____, h) _____, i) _____
8. The main modes of water dispersal
a) _____, b) _____
c) _____, d) _____
9. Types and areas of natural distributions
a) _____, b) _____

10. The distribution area has -----, -----, -----, and -----

11. Types of particular agents of dispersal

a) -----, b) -----

c) -----, d) -----

12. The main categories of the method of carriage of the disseminules by animals

a) -----, b) -----

13. Types of dispersal of seeds

a) -----, b) -----

c) -----, d) -----

14. Types of disseminules carried through wind

a) -----, b) -----

c) -----, d) -----

e) -----, f) -----

g) -----, h) -----

15. Elements of plant geography:

a) -----, b) -----, c) -----

16. Types of Ecotypes:

a) -----, b) -----

17. Speciation of genotype involve:

a) -----

b) -----

18. Types of isolation are: a) -----, b) -----, and c) -----

19. Climatic classification on basis of vegetation:

a) -----, b) -----, c) -----,

d) -----, e) -----, f) -----,

g) -----, h) -----, i) -----

20. Development of the area of a species is accomplished by:

a) -----, b) -----

End of Exam

Best Wishes

Assistant Prof. Dr. Suzan Tammam

Δ Remember

■ Understand

● Apply

◇ Analysis

*Evaluate

○ Create

10. The distribution area has -----, -----, -----, and -----

11. Types of particular agents of dispersal

a) -----, b) -----

c) -----, d) -----

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a) -----

b) -----

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End of Exam

Best Wishes

Assistant Prof. Dr. Suzan Tammam

Δ Remember

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• Apply

◇ Analysis

*Evaluate

○ Create

	Assiut University- Faculty of Science Second Semester- Final Exam 2025 – 2026 Botany and Microbiology Department	Program: Biotechnology Level: (3) Time: 2 h Date: 14-5-2026	
Course Title: Enzymology		Code: 302B.T	
Instructors: Prof. Dr. Hassan Ahmed H. Hasaan			
Important:	No. of pages 2	No. of questions 5	Total Mark: 50 degree

Answer the following questions

Q1: Put (✓) for True statements or (X) for False statements: (12 marks)

1-Enzymes of cell as adenylate kinase and glucose isomerase are located in mitochondria.	()
2-In Competitive inhibitors: Enzyme can only bind to either substrate or inhibitor at one time and Vmax not changed.	()
3-In non-competitive inhibitors: Cyanide combines with the SH groups in the enzymes cytochrome oxidase. These can be removed by washing with ethanol	()
4- Hyaluronidase belongs to isomerases and plays role in medicine diagnoses.	()
5-In Holoenzyme, the apoenzyme bound to cofactors and the active site is formed by groups of Amino acids.	()
6- Enzyme cofactors can be mineral salts, or organic molecules.	()
7-Most enzymes act in pH between 6 - 8, but can be denatured under extreme pH	()
8- A change in the configuration of an enzyme's active site induced by all inhibitors	()
9-From enzymes properties, the specificity of binding depends on the precisely defined arrangement of Atoms at the active site which in turn change its configuration by specific Substrate.	()
10- EC numbers are 4 digits and in Oxidoreductases the digits 2 and 3 represent the reaction position and acceptor, respectively.	()
11- Enzymes can be denatured under extreme Low temperature.	()
12-In paper industry used xylanase and Lipoxxygenase enzymes for the bleaching.	()

← باقى الاسئلة فى الخلف

Q2: Choose the correct answer from the following: : (8 marks)

	A	B	C	D
1-In fuel production used -----	Cellulase	Hemicellulase	Amylase	All of them
2-Cancer leukemia treated with	Asparagenase	Arginase	Glutaminase	All of them
3-In diagnoses, high creatine kinase, aminotransferases, amylase in the blood serum indicate	Acute pencreatites	Hepatites	Myocardial infarction	All of them
4-Increase sweetness of glucose by	Isomerase	Hydrolase	Lyase	Transferase
5- <i>Thermus aquaticus</i> produces	Amylase	Protease	Xylanase	DNA polymerase
6-Nanoparticles increased activity of enzymes at size-----	5 nm	20 nm	100 nm	All of them
7-Lipase produced in industry by	<i>Rhizomucor miehi</i>	<i>Thermomyces lanuginosus</i>	<i>Humicola lanuginosa</i>	All of them
8-Gluten Intolerance/Sensitivity treated with	DNA polymerase	Protease	Asparagenase	Lipase

Q3-Describe each of the following: 10 marks

a-The classification of enzymes according to formal systemic catalog (International Enzymes Commission (EC) with giving a reaction example for class 6.

b-Production, precipitation and purification of enzymes.

Q4-Explain each of the following: with drawing: 10 marks

a-Application of Bioengineering in improving enzymes activity.

b-How can the cell enzymes regulate energy and metabolic pathways?

Q5-Write on each of the following 10 marks

a-Properties of nano-enzymes and their enhancement of enzyme activity (give examples).

b-Application of enzymes in our lives.

Good luck

Prof. Dr. Hassan A. H. Hasaan

	Assiut University- Faculty of Science Second Semester- Final Exam 2025-2026 Botany and Microbiology Department	Program: Microbiology Level : (3) Date: 18/5/2026 Time: 2 h	
Course Title: Host-Parasite Relationship		Code: B 366	
Instructors: Prof. Dr.			
Important:	No. of pages 2	No. Of the questions 5	Total Mark: 50 degree

Question I: The following statements are wrong, correct them accordingly. 2 marks for each (Δ, ■)

1. A parasite is an organism that derives the material they need for growth from non-living cells.
2. The parasite is called a necrotroph when it kills host tissues in advance of penetration and completes its life cycle in the host.
3. Pathogenicity is the chain of events that leads to the development of disease in the host.
4. Yellowing due to low temperature, lack of iron, and infection by viruses, bacteria or fungi is called chromosis.
5. In non-specialized pathogens like *Pythium* or *Phytophthora*, a low density of inoculum on the susceptible surface is needed for successful infection.

Question II: Give an ideal identification for each of the following: 1 mark for each (Δ, ○)

- 1) Inoculum potential
- 2) Infection thread
- 3) Breakdown of structural barriers
- 4) Host Range
- 5) Pectic enzymes
- 6) Auxins
- 7) Disease escape
- 8) Chemical injuries
- 9) Biotrophs
- 10) Recognition system

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

Question III: Give a short analysis for each of the following: 2.5 marks for each (◊)

- 1) Plant Disease Development
 - 2) Factors affecting the success of infection
 - 3) Attachment of the pathogen to the host
 - 4) Effect of the pathogen on the permeability of the cell membrane
-

Question IV: Discuss in detail the following topics: 5 marks for each (■,*)

- 1) Penetration of host cells by the pathogen
 - 2) Physiological changes of the host due to infection with a pathogen
-

Question V: Evaluate the following topics regarding the host-pathogen relationship:

5 marks for each (●,*)

- 1) How could the pathogen survive in the absence of an appropriate host?
 - 2) Molecular basis of a plant's resistance against pathogens.
-

End of exam

With my best wishes

Prof. Dr. Mohamed Hashem



Assiut University - Faculty of Science-Botany
& Microbiology Department

Second-Term Exam 2026 – 2027 Time: 2 Hours

جامعة أسيوط - كلية العلوم - قسم النبات
والميكروبيولوجي



Course code :Algal biotechnology (BT304)

Answer the following questions

Q1) : 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. Explain how verify your decision? (10 marks)

Q 2): Write short notes on two only from the following (15 marks)

1. What is the construction of microbial fuel cells and the advantage of using algae as the microbial source?
2. How do light, temperature, and pH influence the primary productivity of algal biomass?
3. Explain the concept of nanocellulose, including its main properties and potential applications.

Q 3): Put true (✓) or false (×) in front of each statement: (15 mark)

1	Biotechnology research is conducted only in universities.	
2	Supercritical fluid extraction can recover almost all algae oils.	
3	Carrageenan shows antiviral activity against influenza virus.	
4	Algae lamp can remove 150-200 times more of unit of carbon dioxide compared to a tree	
5	We can get oil from algae by press it out or using hexane solvent method only	
6	Carrageenan is classified as a hydrocolloid additive in food technology.	
7	Biotechnology involves the manipulation of living organisms to serve human needs.	
8	Cellulose is used in processed meats to improve water retention.	
9	Carrageenan hydrogels are useful in wound healing applications.	
10	Exchange membrane component allows protons to pass through in a fuel cell	
11	Algae are used for bioelectricity production because they are considered a renewable and cost-effective fuel source.	

12	Fuel cells convert chemical energy directly into electricity	
13	Microbial cellulose contains large amounts of lignin	
14	Algal biomass requires harsh chemical treatment before cellulose extraction	
15	Plant cellulose and brown algae cellulose have completely different chemical structures	

Q4: Choose the correct answer from the options given below, then underline your answer. (10marks)

1- Carrageenan in processed meat mainly improves.....

- a) Water retention b) Dryness c) Bitterness d) Fermentation

2-Carrageenan is classified in the EU as.....

- a) E100 b) E200 c) E407 d) E500

3- Cellulose is found in

- a) fungi b) bacteria c) algae d) fungi, bacteria and algae

4- Carrageenan wound dressings help by.....

- a) Preventing oxygen exchange b) Retaining moisture
c) Increasing infection d) Reducing collagen synthesis

5-Which extraction method can recover nearly 100% of algae oil?

- a) Cold pressing b) Open pond extraction c) Supercritical fluid extraction d) Filtration

6- Why are microalgae considered more efficient than terrestrial crops for biodiesel production?

- a) They require less sunlight b) They contain high lipid content and grow rapidly
c) They do not require water d) They produce no waste

7-What is the main challenge associated with open-pond algae cultivation systems for oil production system?

- a) Low oil extraction efficiency b) Difficulty controlling environmental conditions and contamination
c) Inability to use CO₂ d) Excessive electricity consumption only

8-Biotechnology is mainly concerned with

- a) Studying rocks b) Manipulating living organisms for human needs
c) Weather forecasting d) Space exploration

9-Which of the following is a biotechnology research area?

- a) Health and medicine b) Food science c) Environmental science d) All of a,b,c

10-What is the main function of the anode in a fuel cell?

- a) Store oxygen b) Split hydrogen into protons and electrons
c) Produce water only d) Block proton movement

Best wishes Prof Dr / Atwatief Fahmey Hifney



Assiut University
Botany & Microbiology Dept.

Code: 312 B
Total marks: 50 marks



Faculty of Science
Final exam of: Bryophyta,
Pteridophyta & Gymnosperm
Time: 2 hours
Semester: 2025 -2026

(A) Write on all of the following: (30 marks, 5 for each)

- 1- External morphology of *Marchantia* gametophyte
- 2- Sporophyte of Bryophyta
- 3- Vegetative reproduction in *Riccia*
- 4- Internal features of *Pellia*
- 5- Special Features of Sphagnum
- 6- Classification of Pteridophytes According to ICBN

(B) Defined all of the following:(10 marks, 2 for each)

- 1- Heterosporous thallus
- 2- Protandrous plant
- 3- Dioecious plant
- 4- Amphibians plant
- 5- Apogamy phenomena

(C) Compare all of the following: (10 marks, 2.5 for each)

- 1- Class Anthocerotopsida and Class Bryopsida
- 2- Primitive and Advanced Characters of *Anthoceros*
- 3- Class Psilopsida and class Lycopsidea
- 4- Reproduction by Adventitious branches and Fragmentation in *Pellia*

Good luck

DR/ MAYSA M. A. ALI

Faculty of Science Botany & Microbiology Department		كلية العلوم قسم النبات والميكروبيولوجي
Recycling and waste management (310BT) Time: Two hours Total degree: 50 marks No. of pages: 2 No. of questions: 3	Second semester exam - the academic year 2025/2026 Third Level Exam date: Sunday, 07/06/2026	

Q1: Write in detail about Five only of the following: (25 marks)

1. Halophytes as suitable crops for saline agriculture
2. Vermicomposting
3. Agricultural waste in Egypt
4. Advantages and disadvantages of silage.
5. Processes involved in Solid Waste Management
6. Open dumps and Ocean dumping as methods of solid waste disposal.

Q2: Answer the following questions: (10 marks)

1. Define waste and classify different types of waste
2. Differentiate between biodegradable and non-biodegradable waste?
3. What is the Importance of waste management?
4. What is the difference between Hazardous and non-hazardous waste?
5. Define recycling.
7. What are limitations of recycling?
9. What is anaerobic digestion?
10. How can we reduce plastic waste?

Q3: Choose the correct answer for each of the following: (15 Marks)

1. Waste is defined as:

- A. Useful materials B. Unwanted or discarded materials C. Only liquid materials D. Only solid material

2. Which of the following is biodegradable?

- A. Plastic B. Glass C. Food waste D. Metal

3. Municipal solid waste mainly comes from:

- A. Oceans B. Households and commercial areas C. Space D. Volcanoes

4. Waste management is important because it:

- A. Increases pollution B. Reduces environmental damage C. Wastes resources D. Has no effect

5. Hazardous waste is:

- A. Safe for humans B. Toxic and dangerous C. Only biodegradable D. Only liquid

6. Biomedical waste includes:

- A. Food scraps B. Plastic bottles C. Used syringes D. Paper

7. Segregation means:

- A. Mixing waste B. Burning waste C. Separating waste types D. Transporting waste

8. A major challenge in developing countries is:

- A. Excess technology B. Lack of infrastructure C. Too much recycling D. No waste generation

9. Composting is:

- A. Burning waste B. Biological decomposition C. Chemical reaction D. Physical process

10. Poor waste disposal can cause:

- A. Clean air B. Diseases C. Healthy soil D. Fresh water

11. Plastic waste harms:

- A. Only plants B. Marine life C. Only humans D. Only soil

12. Methane is produced from:

- A. Recycling B. Landfills C. Transport D. Collection

13. Sustainable waste management aims to:

- A. Increase waste B. Reduce environmental impact C. Ignore recycling D. Burn everything

14. Microorganisms help in:

- A. Burning waste B. Decomposition C. Transport D. Sorting

15. Waste can be converted into:

- A. Nothing B. Valuable products C. Only gas D. Only liquid

Good luck

Prof. Dr. Amal Danial

	Assiut University- Faculty of Science Second Semester- Final Exam 2025-2026 Botany & Microbiology Department	Programs: Microbiology Level: (3) Date: 5/6/2026 Time: 2 h	
Course Title: Ecology of Algae		Code: (374)	
Instructor: Dr. Ahmed Issa			
Important:	No. of pages 4	No. Of questions 4	Total Mark: 50 Marks

Q 1: Choose the correct answer:

Q1		10
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- (1) Free floating aquatic algae are known as

(a) Epiphytic algae
(b) Epilithic algae
(c) Phytoplankton
(d) Symbiotic algae
- (2) infections on tea and coffee plants called red rust disease

(a) *Nostoc*
(b) *Chlorella*
(c) *Euglena*
(d) *Cephaleuros*
- (3) Fungal piece in the relationship with algae called ".....

(a) photobiont
(b) Aphotobiont
(c) Parasitism
(d) mycobiont
- (4) Terrestrial algae can fix atmospheric

(a) Phosphorus
(b) Sulphur
(c) Nitrogen
(d) Magnesium
- (5) The Probable function of is the active groups in enzymes and co-enzymes.

(a) Phosphorus
(b) Sulphur
(c) Nitrogen
(d) Magnesium
- (6)..... effect algal growth and its amount of productivity .

(a) Phosphorus
(b) Sulphur
(c) Nitrogen
(d) Magnesium
- (7)are those algae live inside the plant

(a) Endophytic
(b) Endozoic
(c) Epizoid
(d) Epiphytic
- (8)are those algae live inside the *paramecium*

(a) Endophytic
(b) Endozoic
(c) Epizoid
(d) Epiphytic
- (9)occur in saline waters are known as 'halophytes'.

(a) *Chlorella*
(b) *Dunaliella*
(c) *Nostoc*
(d) *Zygnema*
- (10) The algae live in hot springs (55C) such as

(a) *Chlorella*
(b) *Dunaliella*
(c) *Oscillatoria*
(d) *Zygnema*

OII: Differentiate between each two of the following.

Q2		16
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1-Euplanktophytes and tychoplanktophytes.

.....

.....

.....

2.Absolute and minimum requirements of Algae.

.....

.....

.....

3.Selenium and Vanadium as a trace element for algae.

.....

.....

.....

4.Saphophytes and cryptophytes Algae.

.....

.....

.....

Q4		10
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QIII: Complete the following sentences:

1. The *paramecium* protects the algae and provides CO₂, while the algae
.....
2. Many marine invertebrates, especially reef-building corals, host single-celled algae called
.....
3. Adelphoparasite that means.....
4. Parasites Infecting Algae include.....and.....
5.plays particularly an important role in the maintenance of plasma
membrane and salt formation.
6. The direct effect of Si starvation on the diatom division cycle
is.....
7. Mutualism means the partner provide.....
8. The most obvious symptom of iron deficiency is.....
9. *Ambystoma maculatum* has a unique relationship with the alga
10. is a key element in metabolism, being a constituent of numerous enzymes?

QIV: Write short notes on the following

Q5		14
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1. Light as factors affecting primary productivity.

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.....
.....

2. Economic Important of soil Algae.

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.....
.....

- 3.The role of cyanobacteria in ecosystem.

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- 4.Determination of Algal growth.

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With all best wishes

prof.Dr. Ahmed. Issa

QIV: Write short notes on the following

Q5		14
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1. Light as factors affecting primary productivity.

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

2. Economic Important of soil Algae.

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.....
.....

3. The role of cyanobacteria in ecosystem.

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4. Determination of Algal growth.

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With all best wishes

prof.Dr. Ahmed. Issa



Assiut University
Faculty of Medicine
Department of Medical Microbiology and Immunology

Date: 9/6/2026
Time: 2 hours
No Pages: 4

كلية معتمدة
بتاريخ ١٢/٧/١٢

Immunology Exam for third year Science Students

I) Choose correct answer (1mark x 25)

1-In hyposensitization, injection of very small dose of allergen for long period leads to formation of blocking antibodies type

- a) IgA
- b) IgE
- c) IgG
- d) IgD

2-Naturally acquired active immunity would be acquired through which processes?

- a) Vaccination
- b) Drinking colostrum
- c) Natural birth
- d) Infection with disease causing organism followed by recovery

2- Which of the following is not true regarding effective immunogen?

- a) Foreign to the host
- b) Fairly large (molecular weight > 6000)
- c) Chemically complex
- d) Requires a carrier conjugate to stimulate antibody production

3- During type I hypersensitivity reaction, the mast cell are

- a) destroyed
- b) activated
- c) degranulated
- d) lysed

4- Opsonization is mediated by

- a) C3b
- b) C3b and IgG
- c) C5b
- d) C5b and IgG

5- A complement component which is strongly chemotactic for neutrophils is:

- a) C3
- b) C3b
- c) C5a
- d) C5b

6- Antibody-dependent cellular cytotoxicity (ADCC) is the process by which natural killer cells destroy infected cells, identified by what immunoglobulin on the surface?

- a) IgA
- b) IgE
- c) IgG
- d) IgM

7- Serum sickness is a clinical type of which hypersensitivity reaction

- a) Type I
- b) Type II
- c) Type III