
	Assiut University - Faculty of Science First Semester - Final Exam 2025-2026	Program: Special Botany 4 <sup>th</sup> Level Date: 9/1/2026 Time: 2 h.	
	Botany and Microbiology Department		
Course Title: Seed biology		Code: 411B	
Instructors: Prof. Dr. Taha Ramadan & Prof. Dr. Suzan A. Sayed			
Important:	No. of pages 2	No. of questions 4	Total Marks: 50 degree

**Answer the following questions:**

**Q1) Write the scientific term for each of the following: -** 10 Marks

- 1) The transfer of pollen grains from the anther to the stigma of the same plant.
- 2) The major storage protein in grasses, and it is absent from dicots and gymnosperms.
- 3) The plant part or unit to be spread, irrespective of its morphological origin.
- 4) The enzyme that increases resistance to fungal attack in many monocot and dicot seeds.
- 5) The major storage proteins in grasses which are absent from dicots and gymnosperms.
- 6) The fleshy and brightly coloured seed coat, which attracts animals and birds.
- 7) The plant spreading units lack morphological characters facilitating long-distance dispersal.
- 8) Seed dispersal by fish.
- 9) The embryos which are small, less than 25% of the seed volume, and restricted to the lower half of the seed.
- 10) Dispersal by ants.

**Q2) Answer three only:** (3 x 5= 15 Marks)

- 1) Account the benefits of seed dispersal for different plant species.
- 2) Write about the perisperm.
- 3) Explain with a drawing sketch the potential benefits of diplochory – account the variables which influence the quantity of seeds falling on a unit area.
- 4) With a diagram, explain the common structure of seed coat in Brassicaceae.

**Q3) Write briefly in THREE points only:** (3 x 5= 15 Marks)

- 1) Blocks to germination within the embryo.
- 2) Stages of germination indicating their major events.
- 3) Influence of light on seed dormancy and germination.
- 4) The role of abscisic acid and gibberellin in seed dormancy.

**Q4) Choose the appropriate scientific word to fill in the blank.**

**10 Marks**



{Stratification – Soaking – Trigger agent – Scarification – advantage – ultrasound – Natural – Artificial – Impaction – Positive – Location of dormancy – Negative – magnetic – Gibberellins – hypogeal - ultrasound – UV rays – Fruits – twigs – germination agent – Viviparous – Epigeal – Phase IV – Lag phase – Orthodox – Phase III – Recalcitrant – disadvantage – leaves – ABA}

1. .... photoblastic: Seeds germination is inhibited by light.
2. .... seeds: This group maintains viability for longer period, when stored at higher moisture level. e.g. lemon.
3. ....: Any process of penetrating the protective seed coat of dormant seeds.
4. ....: is a factor that must be present throughout the germination process.
5. Abrasion by the digestive tract of birds and animals that feed on this seeds is an example of ..... breaking of seed dormancy.
6. .... of dormancy: plays an important role in the survival of plant species as it distributes germination in time.
7. ....: is perceived by the blue light photoreceptors- cryptochromes and leading to higher germination percentage.
8. Extracts from tomato's ....., have been found to inhibit its seed germination.
9. ....: known as the precocious germination of seeds while still attached to the mother plant.
10. ....: is characterized by a marked fall in respiration that coincides with the disintegration of the cotyledons.
11. .... can facilitate seed germination due to their influence on production of hydrolyzing enzymes.

Prof. Dr. T. Ramadan

Prof. Dr. Suzan A. Sayed

Good Luck

	Assiut University- Faculty of Science First Semester- Final Exam 2025-2026 Botany and Microbiology Department	Program: Special Microbiology Level: (4) Date: 15/1/2026 Time: 2 h	
Instructors: Prof. Dr. Nivien Allam Nafady			
Important:	No. of pages 2	No. Of questions 3	Total Mark:50 degree

**Q1: Write on the following: (choose only 5) (25 marks) (5 questions)**

1. The importance of biogas and stages of production.
2. Sources of Nitrogen in nature.
3. Decomposition of hemicellulose.
4. The microbiology and chemistry of phosphate solubilization.
5. Decomposition of proteins.
6. Potential value of cellulose conversion.
7. Types of nitrogen-fixing microorganisms.
8. Decomposition of organic compounds to elemental Sulphur.

**Q2: Complete the following statement: (10 marks) (8 questions)**

1. *Bacillus acidopullulyticus* converted starch by ..... enzyme into .....
2. Ligninolytic enzymes include ..... and .....
3. Pectin known as pectic polysaccharides, are rich in .....
4. Chitinases from mycoparasitic fungi have been reported in .....,  
....., .....
5. Cleavage of acetic acid molecules to produce carbon dioxide and methane known as .....
6. In the ocean, where many creatures contain chitin, ..... called .....  
have evolved a ..... that detects discarded chitin.
7. During the ammonification, various ....., ..... and ..... are  
produced which are finally decomposed to carbon dioxide and water.
8. The intensive cross-linkage in keratins hinders their degradation by .....  
Like ....., ..... and .....

**Q3: True (✓)-False (X) Questions:****(15 marks) (15 questions)**

1. The two important differences between silt and sand are their relative capacity to hold water that is available for uptake by plants and their effects on soil drainage.	( )
2. The action of acids to convert insoluble phosphates into soluble ones is generally called mineralization.	( )
3. Erythromycin is a very important antibiotic that is used to treat certain infections caused by fungi.	( )
4. <i>Thiobacillus thiooxidans</i> oxidize Sulphur to sulphates.	( )
5. Organic matter added to the soil is converted by oxidative decomposition to simpler nutrients / substances for plant growth and the residue is transformed into humus.	( )
6. Aminization is a process of protein hydrolysis to amino acids by proteases enzymes.	( )
7. Nitrobacter can only derive its energy by turning nitrate into nitrite, which results in a gain of oxygen and is known also as oxidation.	( )
8. The degradation of starch has been extensively characterized in plant-pathogenic microbes such as <i>Erwinia chrysanthemi</i> .	( )
9. Chitinases in bacteria are shown to play a role in the digestion of chitin for utilization as a carbon and energy source and recycling chitin in nature.	( )
10. Enzymatic activity of many heterotrophic bacteria results in the release of H <sub>2</sub> S from further degradation of sulphur containing amino acids.	( )
11. Microorganisms responsible for cellulase can easily be isolated from a piece of rotting wood, or from a termite's gut if bacterial species are desired.	( )
12. The first step of cellulose conversion into glucose is breaks beta-1,4 glucanase the glucosidic bond to cellobiose.	( )
13. All types of complex organic materials can be processed to produce biogas.	( )
14. Conversion of poultry wastes into value products including serine, cysteine and proline is the application of chitinolytic enzymes.	( )
15. $C_6H_{12}O_6 \longrightarrow CH_3(CH_2)_2 COOH + 2CO_2 + 2H_2$ (Acetogenic oxidation)	( )

*With My Best Wishes.....Prof. Dr. Nivien Allam Nafady*



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

Program: Plant and  
Microbial Biotechnology  
Level: (4)  
Date: 9/1/2026  
Time: 2 h



Code: 409 BT

Course Title: Bioenergy

Instructor: Dr. Mohamed Gomaa

No. Of questions 3

Total Mark: 50 Marks

Important: No. of pages 1

**QI: Answer 3 ONLY of the following questions:.....(30 Marks)**

- Differentiate between different biodiesel feedstocks in terms of feedstock type with example, main challenge and sustainability and limitations.
- Differentiate between dark and photo fermentation for biohydrogen production in terms of energy source, key enzyme, microorganisms used, and limitations?
- Differentiate between different types of biodiesel transesterification methods in terms of catalyst, advantages and limitations?
- Describe in detail the different stages to produce methane from starch as a substrate?

**QII: Identify 5 Only of the following scientific terms:.....(10 Marks)**

- Acidogenesis
- Pyrolysis
- Bligh and Dyer method
- Anaerobic digestion
- Syngas
- Iodine value

**QIII: Choose the correct answer.....(10 Marks)**

- The only carbon-free biofuel is .....  
a) Biodiesel    b) Bioethanol    c) Biohydrogen    d) Biogas
- Which condition favors algal hydrogen production?  
a) High oxygen    b) Anaerobic conditions    c) High nitrogen    d) Darkness
- The *Geobacter* sp. is a common .....bacterium  
a) acidogenic    b) methanogenic    c) exoelectrogenic    d) acetogenic
- Methanogenesis represents which stage of anaerobic digestion?  
a) First    b) Second    c) Third    d) Fourth
- Oxygen in biogas production should be.....  
a) Supplied continuously    b) Present at low levels  
c) Completely excluded    d) Increased gradually
- Stable biogas production requires balance between.....  
a) Oxygen and nitrogen    b) Acid producers and methanogens    c) Algae and fungi    d) Heat and light
- Which of the following parameters measures ignition quality of biodiesel?  
a) Iodine value    b) Cetane number    c) Acid value    d) Saponification value
- Which fatty acid type is most likely to result in biodiesel with poor oxidative stability?  
a) Saturated Fatty Acids    b) Monounsaturated Fatty Acids    c) Polyunsaturated Fatty Acids
- Gasification produces mainly.....  
a) Bio-oil    b) Syngas    c) Biochar    d) Hydrochar
- Biohydrogen has .....compared to other types of biofuel.  
a) high energy density    b) multiple combustion byproducts    c) CO<sub>2</sub> emissions    d) All of them

With all best wishes,.....Dr. M. Gomaa