

فرقة الفنون

2





second Semester final Examination 2022 / 2023

Subject: Course Bot 314

(Fermentation industry)

Students: (Industrial chemistry section)

General Instructions: -Answer the following questions.

Q1. Place (✓) or (X) on the following. (40 marks)

1. Primary screening is carried out to get rid of microorganisms from soil. ( )
2. Production of glycerol by yeast is an oxidative fermentation. ( )
3. Depends on the yeast strain, the usual time for ethanol fermentation is between 3 and 7 days. ( )
4. The aim of secondary screening is the selection of the most effective microbial isolate for certain fermentation process. ( )
5. Microbes which applied in the field of fermentation must be able to maintain their physiological and genetical characters under fermentation process. ( )
6. Itaconic acid is produced by *A. terreus* from simple sugars. ( )
7. Citric acid is widely used in beverage, food, detergents, cosmetics and pharmaceutical industries. ( )
8. Macrolides are composed of macrocyclic lactone of different ring sizes, to which one or more deoxy sugar or amino sugar residues are attached. ( )
9. Each of penicillin and cephalosporin C has the same thiazolidine ring. ( )
10. Aminoglycosides are bacteriostatic antibiotics that act on the outer membrane of the bacterial cell. ( )
11. Addition of phenylacetate stimulates the production of penicillin G by direct biosynthesis. ( )



12. Penicillins and cephalosporins are  $\beta$ -lactam ring containing antibiotics derived from amino acids. ( )
13. In penicillins antibiotics, those which contain five cyclic membered amide  $\beta$ -lactam ring are the most effective. ( )
14. Penicillin V is a natural one and is only produced when phenoxyacetate is added. ( )
15. During commercial production of penicillin by fermentation, slowly metabolizable sugars such as lactose is used or fed continuously with high dose of glucose. ( )
16. Optimum pH value for penicillin production by fermentation is 7-7.5. ( )
17. During product recovery, penicillin is extracted from aqueous filtrate into butyl or amyl acetate at very low pH. ( )
18. Crystals of penicillin K-salt are recovered by filter centrifuge. ( )
19. Penicillin biosynthesis is described into 2 main steps namely catalytic step, and exchange different chains. ( )
20. Ring expansion of isopenicillin N gives deacetoxycephalosporin C. ( )
21. Isopenicillin N is converted to penicillin G in the help of IPN epimerase. ( )
22. The tripeptide ACV forms a bicyclic ring by oxidative ring closure. ( )
23. Streptomycin molecule consists of 2-deoxy-2-methylamine-glucose, L-streptose, and streptidine. ( )
24. Tetracyclines inhibit bacterial cell wall synthesis. ( )
25. Lincomycins are sulfur-containing antibiotics. ( )
26. The polypeptide antibiotics are of 3 main groups: neutral, acidic, and basic compounds. ( )
27. Bolymyxin B sulfate isolated from *Bacillus polymyxa* has free carboxyl groups. ( )
28. Glycolysis is carried out in cytosol of all microbial cells. ( )
29. Molasses, wood, and agriculture wastes are row materials that used in microbial fermentation as a carbon source. ( )
30. Continous cultures maintain microorganisms at exponential phase of growth. ( )
31. Incubation under shaking conditions is a preferable method during preparation of industrial



microbes biomasses. ( )

32. The bioreactor should provide withdrawal of cells/medium. ( )
33. Industrial microbes must be slow growing ones. ( )
34. Soil surface is a suitable location for microbes isolation. ( )
35. During batch fermentation, the process is stopped once the product is formed. ( )
36. During continuous fermentation, nutrients are added only once at the beginning of the process. ( )
37. In the first step of glycolysis, glucose is transformed into glucose-6-phosphate which is catalyzed by the enzyme hexokinase. ( )
38. During ethanol fermentation, the pyruvate molecules break down to acetaldehyde ones, a step catalyzed by pyruvate decarboxylase. ( )
39. Ethanol fermentation is used for biofuel production. ( )
40. During glycerol production, dihydroxyacetone phosphate is reduced to glycerol-3-phosphate, a step catalyzed by glycerol-3-phosphates. ( )

**Q2. Choose the correct answer. (10 marks)**

41. When you add 1 gm of soil to 10 ml of distilled water in test tube and shake, what is the correct value of dilution solution?
- a.  $10^{-2}$                       b.  $10^{-3}$   
c.  $10^{-1}$                       d.  $10^{-4}$
42. Which one of the following represents an important cell factory in industry for the production of citric acid?
- a. *Penicillium cyclopium*                      b. *Aspergillus terreus*  
c. *Aspergillus niger*                      d. *Penicillium chrysogenum*
43. At the beginning of penicillin fermentation, pH is set at a certain value. Which one of the following is to be?
- a. 4.0 – 4.5                      b. 4.5 -5  
c. 3.0 – 3.5                      d. 5.5 -6







**Final Exam**  
**2022-2023**



**Assiut University**  
**Faculty of Science**  
**Botany and Microbiology Department**

**Advanced taxonomy 332B**  
**Time: 2 hours**  
**Total score: 50 marks**

**Q1: Choose the correct answer (15 marks):**

1. The other accepted name for the family Palmae is .....  
A) Clusiaceae      B) Apiaceae      C) Poaceae      D) None of the above
2. When more than one specimen are cited by the author without mentioning which is the holotype, each specimen is designated as.....  
A) Isotype      B) Syntype      C) Lectotype      D) All of the above
3. Pollen grains with a polar axis longer than the equatorial diameter are called.....  
A) Oblate      B) Spheroidal      C) Prolate      D) All of the above
4. Lathyrine is an example of .....  
A) Alkaloids      B) Flavonoids      C) Non-protein amino acids      D) None of the above
5. Piperine is an example of .....  
A) Alkaloids      B) Flavonoids      C) Non-protein amino acids      D) None of the above
6. .... group includes the common ancestor and all descendants of that ancestor.  
A) Monophyletic      B) Paraphyletic      C) Polyphyletic      D) None of the above
7. BioEdit program is used for.....  
A) Homology search      B) Multiple Sequence Alignment      C) Phylogenetic tree re-construction      D) All of the above
- 8- ..... is an extremely natural group, very distinct from any other known family and considered the most primitive living family of flowering plants.  
A) Nymphaeaceae      B) Casuarinaceae      C) Bombacaceae      D) None of the above
- 9- *Aerva Javanica* is an example of the family.....  
A) Amaranthaceae      B) Asclepiadaceae      C) Poaceae      D) None of the above
- 10- The helicoid cymes are characteristic to the family .....  
A) Amaranthaceae      B) Boraginaceae      C) Orobanchaceae      D) None of the above
- 11- The fruit is capsule in  
A) Amaranthaceae      B) Bombacaceae      C) Orobanchaceae      D) All of the above

7-The results obtained from protein taxonomy are largely divided into three main headings, including ....., and .....

8- The phenotypic characteristics of a chromosome which can be of taxonomic value include ....., and .....

9- In somatic tissue, chromosome counts are usually made on rapidly and synchronously dividing cells such as ..... and.....

10- One of the modern techniques for labeling chromosomes is FISH, which is the abbreviation of .....

11- The features of an ideal molecular marker include ..... and .....

12- In the Cronquist Classification system (1981), the Dicots were divided into .....subclasses and the Monocots were divided into .....subclasses.

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

1-The original name on which a new name is based.

2- These are names where the specific epithet exactly repeats the generic.

3- A type of tetrad in which two of the 4 cells form a line which is perpendicular to that formed by the other two.

4- When the sporoderm has no obvious apertures in the pollen grain.

5- Phenolic glycosides consisting of two benzene rings linked together through a heterocyclic pyrane ring.

6- A condition in which the cells of an organism have more than two paired sets of chromosomes.

7- They serve as practical signs or flags that mark the position of a particular gene locus or the inheritance of a particular character.

8- Regions of repetitive DNA that consist of tandem repeats of a core sequence of two to five base pairs.

9- A technique used for sequencing of an entire chloroplast or nuclear genome.

10- Standardized short sequences of DNA between 400 and 800 base pairs long that in theory can be easily isolated and characterized for all species of plant on the planet.



**Q4: True or False (15 marks):**

- 1- Common names tell nothing about ranking; they are applied to genera, species or varieties.
- 2- The rules of nomenclature are retroactive.
- 3- The ending of any TRIBE is -oideae.
- 4- Amino acids represent a low molecular weight compound.
- 5- Taxonomic interpretations of protein electrophoresis should be based on comparison of proteins from homologous organs of the same age.
- 6- The number of chromosomes in each cell of all the individuals of a single species is constant.
- 7- The highest recorded chromosome number in an angiosperm is  $2n = 1260$ .
- 8- SSR technique combines most of the benefits of AFLP and microsatellite analysis with the universality of RAPD.
- 9- Class Magnoliopsida contains 64 orders and 321 families, while class Liliopsida contains 19 orders and 65 families.
- 10- Cyathium is a special type of inflorescence characteristic to the family Asclepiadaceae.
- 11- *Victoria amazonica* is a plant of the family Nymphaeaceae.
- 12- Orobanchaceae has 4 stamens and if the fifth exists it will be staminoide.
- 13- Both Bombacaceae and Nymphaeaceae have numerous stamens.
- 14- The ovary is inferior in the family Iridaceae.
- 15- The inflorescence is spike or panicle in the family Palmae.

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*With my best wishes*

*Mostafa Aboulala*

12- Retinacula are hook-like lignified outgrowths in the fruit of the family.....

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



13 – The floral digram no. 1 represents the family .....

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

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

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

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

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

**Q2: Complete the followings (10 marks; 0.5 mark each):**

1. The specific epithet is an adjective and may have several origins including .....  
and .....
2. The stomata type in Acanthaceae is ....., whereas in the closely related Scrophulariaceae is.....
3. Polyads are characteristic to the family....., while pollinia occur in family.....
4. When the apertures are scattered all over the pollen wall at equal or unequal distances, it called.....
- 6- ..... and ..... are secondary metabolites with nitrogen atom.



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|---------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| <br>كلية العلوم<br>جامعة أسيوط<br>Faculty of Science | بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ<br>Botany and Microbiology Department                                                                                      | <br>Second term , June 2023 |
| Time Allowed: 2 hours                                                                                                                 | <b>Subject: Plant Biochemistry (352 N) For the Third Year (Botany) Students</b><br><b>Total mark = -----</b><br><div style="text-align: center;"><b>50</b></div> |                                                                                                                |

**Student name:-----**

**Student No:-----**

### Answer The Following Questions:

**Question I:** Choose the correct answer for the following statements: (20 M)

- 1-The inactive precursor of an enzyme is called a(n):  
 a- activator      b-apoenzyme      c-proenzyme
- 2-Conversion of PGA to DHAP catalyzed by:  
 a- Isomerases      b-Epimerases      c-Ketol isomerase
- 3-Fatty acids reduction uses:  
 a) FADH<sub>2</sub>      b)NADPH<sub>2</sub>      c) NADH<sub>2</sub>
- 4-The activated donor in the synthesis of fatty acids is:  
 a) Acetyle-COA    b) Malonyl –COA      c) Palmityle-COA
- 5-Enzymes which have different molecular weight and catalyse the same reactions called:  
 a- Isozymes      b- Isoforms      c-Both
- 6-In light reaction solar energy converted into  
 a- ATP      b-H<sub>2</sub>O      c- Glucose
- 7-The Oxygen produced in photosynthesis comes from  
 a-CO<sub>2</sub>      b- H<sub>2</sub>O      c- Glucose
- 8-Electron acceptor of photosystem II is  
 a-Ferredoxin      b-Plastoquinone      c-cytochrome C

9-Synthesis of lipids takes place in plant cells at:

- a) Cytosol                      b) Plastides                      c) Mitochondria

10-The oxidative phosphorylation occur at:

- a- Cytoplasm                      b- Stroma                      c- Cristae

**Question 2: Place a tick (  $\sqrt{\phantom{x}}$  ) or ( x ) on the following statements(10 M):**

1- Kinases Enzyme is catalysed phosphorylation by ATP-dependent protein (   )

2-Competitive inhibitor induce change enzyme structure (   )

3-A molecule bind to enzyme and increase its activity is called Alleviator (   )

4-The final electron acceptor in oxidative phosphorylation is  $H_2O$  (   )

5--Malic acid is the acceptor of Acetyle  $-COA$  in Kreb's Cycle (   )

6-Nitrate reductase reduce  $N_2$  to ammonia in plant roots (   )

7-Net ATP produced in glycolysis is 2ATP (   )

8- The dark reactions occurred in chloroplast during Day (   )

9- Nitrite assimilate by nitrate reductase enzyme (   )

10- Protein synthesis takes place in chloroplasts (   )

**Question 3: Explain three of the following:(20 M)**

a-Mechanism of Metabolic regulation (4 M).

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b- B- oxidation of fatty acids (3 M):

c-Entner-Doudoroff pathway for glucose fermentation (3M):



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**Question4: complete the sentences with correct answers (10 M):**

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

**Good Luck**

**Prof. Dr. Abdel Wahab El-Enany**

|                                                                                                                               |                                                                                                                 |                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <p>Faculty of Science<br/>Botany and Microbiology<br/>Department</p> <p>Phytosociology<br/>Time allowed: Two Hours (342B)</p> | <p>بسم الله الرحمن الرحيم</p>  | <p>كلية العلوم<br/>قسم النبات والميكروبيولوجي</p> <p>Second Term Examination 2022 - 2023<br/>Third Year</p> |
|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|

### Answer the following questions

I- Write short notes on :.....( 20 marks)

- The minimal area and the sample stand requirements.
- Factors affecting the number of species in the plant groups.
- Life forms and the biological spectrum.
- Raunkiaer law of frequency.

II- Compare between THREE ONLY: ..... (15 marks)

- Abundance and Constancy.
- Association and Sociability.
- Presence and Fidelity.
- Denuded and Clip quadrates.

III- Give the ecological importance of THREE ONLY :( 15 marks)

- Fidelity and characteristic species.
- Ecological amplitude.
- Frequency diagram as a test for homogeneity in the plant community.
- Stratification.

**GOOD LUCK**

**Prof. Dr. F.M.Salama**



Assiut University

Faculty of Science

Department: Botany & Microbiology

Course Title: Industrial Microbiology

Total Degree: 50 marks

Academic Program: Microbiology + Chemistry & Microbiology

Final Term Exam

Studying Year : 2022/ 2023

Course Code B 369

Second semester

Third level,

June 2023

Allowable Time: Two hours

I- Choose the correct answer from the following answers:

(10 marks, one for each)

- 1) Microbial side chain degradation of progesterone followed by dehydrogenation leads to the formation of:  
a) Testosterone  
b)  $20\beta$  - hydroxy - 4 pregnene - 3 - one  
c) Prednisone  
d) Androsa 1,4 -diene 3, 17 -dione
- 2) Epoxidation of a steroid hormone lead to increase the:  
a) Activity  
b) Production level  
c) Productivity  
d) Solubility
- 3) Separation of penicillin from fermented mash can be achieved by:  
a) Ethyl acetate at pH 2 - 3  
b) Acetone at pH 6 - 7  
c) Distilled water at pH 2 - 3  
d) Chloroform at pH 6 - 7
- 4) The mode of action of tetracycline is the inhibition of:  
a) Bacterial protein synthesis  
b) Bacterial cell membrane  
c) Bacterial cell wall  
d) Bacterial DNA
- 5) The suitable carbon source for citric acid production is:  
a) Maltose  
b) Lactose  
c) Sucrose  
d) Fructose
- 6- Purification of product in any fermentation process is a step of:  
a) Up-stream process  
b) Med-stream process  
c) Down-stream process  
d) Folow-up process.
- 7- The suitable yeast inoculum volume for active dry Baker yeast production is:  
a) a) 1 - 2% of fermented mash  
b) 10 - 20% of fermented mash  
c) 20 - 25% of fermented mash  
d) 30 - 35% of fermented mash.
- 8- Theoretically ethanol yield from fermentable sugar by fermentation equal to:  
a) 31.1 %  
b) 41.1 %  
c) 51.1 %  
d) 21.1 %.
- 9- Glycerol formed during ethanol fermentation at pH of:  
a) 3.5 - 4.5  
b) 6.5 - 7  
c) 8 - 9  
d) 11 - 13.
- 10- Date vinegar produced by bacterial acidification of:  
a) Concentrated date juice  
b) Fermented date juice  
c) Clarified date juice  
d) Diluted date juice

من فضلك لاحظ باقي الأسئلة في ظهر الصفحة



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

**(10 marks, one for each)**

1. Dehydrogenation of a steroid hormone increases their activity.
2. Cortisone is 11 $\alpha$ , 17  $\alpha$ , 21 trihydroxyprogesterone.
3. Cephalosporin is produced by *Streptomyces lavandulae*.
4. Streptomycin is sulfur-containing antibiotics.
5. High yields of citric acid were obtained when the mats are thin and sporulation is absent.
6. One of important characters in industrial microbe is the economic volume.
7. The moisture content of prepared yeast cream is nearly 30 – 35 %.
8. The ideal drying method of fresh baker yeast is using the string-discharge filter operation.
9. In ethanol fermentation, aeration is very important during yeast propagation.
10. Batch fermentation is suitable strategy for ethanol production.

**III. Explain only five of the following**

**(25 marks, 5 for each)**

1. A general fermentation method that can be used for penicillin production.
2. The production of prednisone from progesterone using biotransformation technology.
3. The different renewable raw materials that can be used as feedstock for ethanol fermentation and give the ideal method for preparing one of them.
4. The selection and preparation of starter microbe for Baker yeast production.
5. The downstream processes in the vinegar production cycle.
6. The different methods that can be used for citric acid production.

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

**(5 marks, 2.5 for each)**

1. The use of  $\beta$ -Lactam antibiotics to treat microbial infections.
2. Using the repeated fed- batch fermentation to produce Baker yeast.

**Good Luck...**

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

**(A) Write on Four only of the following: (20 marks, 5 for each)**

- 1- Sporophyte of Bryophyta
- 2- External morphology of *Riccia*
- 3- Reproduction in *Marchantia*
- 4- General characters of Pteridophytes (10 points only)
- 5- Reproduction in Gymnosperm

**(B) Defined Five only of the following:(10 marks, 2 for each)**

- 1- Apogamy phenomena
- 2- Anemophily
- 3- Polyembryony
- 4- Protandrous
- 5- Juvenile stage of *Sphagnum*
- 6- Homosporous spores

**(C) Choose the correct answer: (10 marks, 2 for each)**

- 1- Which one of the following refers to common method of *Sphagnum* reproduction, it takes place by the formation of special vegetative branches?
  - a) Regeneration
  - b) Fertilization
  - c) Innovation
  - d) Fragmentation
- 2- Which one of the following contains Sporocarp?
  - a) *Azolla*
  - b) *Marsilea*
  - c) *Salvinia*
  - d) All of them

3- Which one of the following effective in the treatment of chest complaints?

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

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

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

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

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

**(D) Compare between 2 only of the following: (10 marks, 5 for each)**

- 1- Class Hepaticopsida and Class Bryopsida
- 2- Aquatic and Xerophytic Pteridophytes
- 3- Primitive and Advanced Characters of *Anthoceros*

**Good luck**

**DR/ MAYSA M. A. ALI**





Botany and Microbiology Department  
Final term exam. (2022-2023), Ecology of algae (374 B)  
Time allowed: 2 hours

**Question no (1):** Write (T) for true statements or (F) for False statements (1Mark each) for the following statements and recorrect the wrong one. (25 Marks )

|    |                                                                                                                              |     |
|----|------------------------------------------------------------------------------------------------------------------------------|-----|
| 1  | Bacteria sometimes be catastrophic to algal blooms and can be used for biological control.                                   | ( ) |
| 2  | Terrestrial algae are found upon or inside the animal body                                                                   | ( ) |
| 3  | Iodine extracted from the red alga <i>Chondrus crispus</i>                                                                   | ( ) |
| 4  | Phytoplankton are primary producers of organic matter in aquatic habitats.                                                   | ( ) |
| 5  | Diatoms need a low range of PFD for growth and photosynthetic process                                                        | ( ) |
| 6  | Edaphophytes improve the aeration of swamp soils and fix atmospheric nitrogen.                                               | ( ) |
| 7  | Diatomite extracted from diatoms is highly porous therefore is ideally suited as a filter for oils and for clearing solvents | ( ) |
| 8  | Silicon is a nutrient that limits all algal species' growth                                                                  | ( ) |
| 9  | Manure produced from algae helps in soil binding, promoting good crumb formation                                             | ( ) |
| 10 | <i>Trentepohliaceae</i> penetrates into the stomata of tropical plants as a semi-parasitic algae                             | ( ) |
| 11 | Phytoplankton are those algae grown on other plants and bigger algal members                                                 | ( ) |
| 12 | The rapid decline in phytoplankton biomass and occurrence in a lake was an indicator to increase temperature only            | ( ) |
| 13 | Elementary nitrogen can be used by some species of Chlorophyta as a source of nitrogen in their habitats                     | ( ) |
| 14 | Magnesium as a major component of the chlorophyll molecules is a limiting factor for algal growth and productivity           | ( ) |

|    |                                                                                                                                  |     |
|----|----------------------------------------------------------------------------------------------------------------------------------|-----|
| 15 | Endozoic algae are those algae grown on animal body                                                                              | ( ) |
| 16 | Algae can use various nitrogen sources such as atmospheric nitrogen as an important source of their productivity                 | ( ) |
| 17 | Productivity means the amounts of algal biomass produced in a special time per unit area                                         | ( ) |
| 18 | The availability of iron and phosphorus affects algal distribution and occurrence                                                | ( ) |
| 19 | Seaweeds ( <i>Laminaria</i> , <i>Fucus</i> , <i>Ascophyllum</i> ) can use as food for domestic animals                           |     |
| 20 | Agar-agar is a dried or gel-like nitrogenous extract of Rhodophyceae algae used as a medium for bacteria                         | ( ) |
| 21 | Blue greens like <i>Nostoc</i> , <i>Scytonema</i> , and <i>Anabaena</i> can be employed in the reclamation of alkaline userland. | ( ) |
| 22 | Different microalgal classes have significantly different light requirements for growth and photosynthesis in their environments | ( ) |
| 23 | Plastic materials of alginates extracted from Phaeophyta find many applications in medicine                                      | ( ) |
| 24 | Some of the soil-inhabiting green algae secrete calcium to increase soil fertility                                               | ( ) |
| 25 | Extracted product from algae can balance of soil nitrogen, sulfur, phosphorus, and carbon                                        | ( ) |

**Question no (2): Fill in the blanks with suitable words (7 marks)**

- Endophytic algae are those algae that live in .....while lithophytic algae live on .....
- The Importance of Carrageenin which extracted from algae are .....,  
.....
- The photic zone means.....

4. Agar- Agar is extracted from ..... while alginate is extracted from the cell wall of .....

**Question no (3) Discuss in detail three only from the following points**

**( 18 marks )**

- 1. The uses of algae in the medicinal and agricultural field**
- 2. Effect of grazing and phosphorus deficiency on the productivity of algae**
- 3. Compare parasitic and symbiotic algae relationships. Explain your answer with an example for each.**
- 4. From your point of view, how can the algal mass be used in the production of biofuels?**

Good luck

*Prof. Awatief F. Hifney*





Mycology 2 (362B)

3<sup>rd</sup> level Microbiology students

Final exam (6<sup>th</sup> June 2023)

In three pages

Time: 2 hours

**Answer the following questions (with a labeled diagram if possible) (50 marks)**

**QI: In table, Choose the correct answer (20 only):- (20 marks)**

1. The well-known animal pathogen belongs to Ophiostomatales

- a. *Candida albicans*                      b. *Pseudoallescheria boydii*  
c. *Geotrichum candidum*              d. *Sporothrix schenckii*

2. A human disease caused by *Candida albicans*

- a. Penicillosis      b. Endophthalmitis      c. Aspergillosis      d. Meningoencephalitis

3. Which of the following powdery mildews fungi producing ascoma with appendages pointed end?

- a. *Erysiphe*              b. *Phyllactenia*      c. *Uncinula*              d. *Microsphaera*

4. Which of the following fungi is characterized by unitunicate asci?

- a. *Aspergillus*              b. *Acremonium*      c. *Candida*              d. *Taphrina*

5. A fungus which is used for the production of Japanese sake

- a. *Aspergillus terreus*      b. *Penicillium chrysogenum*  
c. *Aspergillus oryzae*      d. *Aspergillus niger*

6. Which of the following spore is haploid uninucleate

- a. Basidiospore      b. Teleutospore      c. Aeciospore      d. Uredospore

7. Which of the following fungi causes onychomycosis

- a. *Taphrina deformans*      b. *Penicillium chrysogenum*  
c. *Aspergillus ochraceus*      d. *Aspergillus niger*

8. In Basidiomycota, dikaryon mycelium means that each cell has

- a. single haploid nucleus                      b. single diploid nucleus  
c. two haploid nuclei                              d. two diploid nuclei

9. Aflatoxins are a serious problem because:

- a. They are produced by the most common fungus, *Aspergillus niger*  
b. They are carcinogenic              c. They cause nephrotoxicosis      d. All of them

10. Which of the following fungi produces citric acid

- a. *A. niger*                      b. *A. ochraceus*                      c. *A. fumigatus*                      d. None of them

11. *Pseudoallescheria boydii* belongs to Order

- a. Eurotiales                      b. Microascales                      c. Hypocreales                      d. Dipodoascaceae

12. Which of the following fungi is used in the manufacture of cheese?

- a. *P. chrysogenum*                      b. *P. camemberti*                      c. *P. marneffi*                      d. *P. digitatum*

13. Mycelia are septate in both

- a. Basidiomycetes and Oomycetes                      b. Zygomycetes and Ascomycetes  
c. Basidiomycetes and Ascomycetes                      d. Oomycetes and Zygomycetes

14. A fungus reproduced by arthrospores

- a. *Cordyceps*                      b. *Geotrichum*                      c. *Erysiphe*                      d. *Taphrina*

15. Fungal structures form pseudoparenchyma tissues which organized together into sterile fruiting bodies

- a. Sclerotia                      b. Cleistothecia                      c. Acervulus                      d. Pycnidium

16. Saprophytic fungi were grown on woody substrates

- a. Follicolous                      b. Lignicolous                      c. Corticolous                      d. Coprophilous

17. Ascomycetes are closely associated with insects and kill insects under appropriate environmental conditions

- a. Entomopathogenic fungi                      b. Nematophagous fungi                      c. Coprophilous fungi                      d. None of them

18. Arthropods Associated Pyrenomycetes fungus

- a. *Cordyceps*                      b. *Aspergillus*                      c. *Erysiphe*                      d. *Geotrichum*

19. Rounded ascocarp composed of a loosely organized network of hyphae with no natural opening or ostiole, enclosing randomly dispersed asci is called

- a. Cleistothecium                      b. Gymnothecium                      c. Perithecium                      d. None of them

20. Fungi that can live as both filamentous and yeast forms are named

- a. Dimorphic                      b. Heterotrophic                      c. Holocarpic                      d. Eucarpic

21. Common smut of corn is caused by

- a. *Puccinia graminis*                      b. *Ustilago maydis*                      c. *Tilletia caris*                      d. *Urocystis cepulae*

**QII. In table, put (✓) on the right sentence and (X) on the wrong one (10 only):-**

**(10 Marks)**

1. Not all endophytic fungi are symbioses.
2. Psychrophiles are fungi that can live in a wide range of temperatures.
3. All members of Ascomycotina produced eight-celled ascospores.
4. Rust and smut fungi are similar because both lack basidiomata.
5. Ergometrine is a therapeutic compound found in fungal hyphae and sclerotia.
6. *Leveillula taurica* containing one ascus ascomata with myceloidal-like appendages and conidia are solitary.
7. *Sphacelotheca sorghi* cause covered smut of sorghum and is characterized by single and free spores surrounding fungal tissues.
8. Autoecious fungi complete their life cycle on two plants.
9. *Phragmidium subcorticum* is characterized by one-celled stalked teleutospores.
10. Holobasidium is a single-celled basidium.
11. Basidiocarp originates from tertiary mycelia.

**QIII: Write on 5 only of the following:**

**(20 Marks)**

1. Economic importance of yeasts.
2. Life cycle of *Claviceps purpurea*.
3. How can genera of powdery mildews be differentiated?
4. Classification of the order Uredinales.
5. The teleomorph of the following fungi

*Candida guilliermondii*, *Aspergillus fumigatus*, *Alternaria*, *Curvularia lunata*.

6. The difference between the following

*Trichoderma* & *Hypocrea*, Mycorrhizae & Lichens, Perithecium & Pycnidium,  
*Ustilago maydis* & *Urocystis tritici*.

**Good Luck**

**Prof. Mohamed A. Abdel-Sater**

**Dr. Elhagag A. Hassan**



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

1. The relationship between the parasite and the host is known as:  
A) Parasitism B) Pathogenicity C) Survive D) Penetration
2. In foolish seedling disease of rice, the rice seedlings infected with *Fusarium moniliforme* grow rapidly and become much taller than the healthy plants due to fungal secretion of: A) Dormin B) Auxins C) Cytokinins D) Gibberellins.
3. Following are considered structural changes occur in diseased plants except A) Wilt B) Sterile flowers C) Hairy roots D) Crown galls
4. Fungal spores first germinate forming: A) Stomata B) Appresorium C) Haustoria D) Germ tube
5. In indirect penetration the germ tubes enter the host through:  
A) Wounds. B) Intact plant surfaces. C) Floral parts. D) Root hairs.
6. Entry through non- cutinized surfaces is represented by one only of the following: A) Flowers. B) Stomata C) Lenticels D) Wounds
7. The propagules that initiate the infection are called: A) Sufficient inoculum B) Primary inoculum C) Secondary inoculum D) Inoculum
8. Some pathogens are host specific because: A) Spores germinate only in presence of nutrients exuded by the pathogen B) Spores germinate only in presence of nutrients exuded by the host C) Many fungal pathogens must grow first before penetration D) Many fungal pathogens need fast multiplication before penetration.
9. Spores of *Tilletia* sp. only germinate A) as soon as they are fully formed B) until the following spring C) until the chains of spores are broken D) after exposure to temperature below 10°C

عشر (1) من (3)

ملحوظة: إجابة السؤالين Q 4 ، Q3 في الصفحات الخالية من ورقة الأسئلة

10. The germ tube of the pathogen attached itself on the host surface by special structure called: A) Infection threads B) Infection hypha C) Appressorium D) Penetration hypha

11. The propagules that cause the spreading of the disease are called: A) Sufficient inoculum B) Primary inoculum C) Secondary inoculum D) Direct inoculum

12. The following are the most common necrotic symptoms except: A) Leaf spots B) Blights C) Wilts D) Damping off

13. The time lapsing between inoculation and appearance of symptoms is called: A) Invasion period B) Incubation period C) Resistant period D) Survival period

14. In absence of their cultivated host, animate pathogens must find alternate source of: A) Infection B) Penetration C) Incubation D) Survival.

15. The propagules of the pathogen to be attached on their host surface have on their surface: A) Chlamydospores B) Appressorium C) Haustoria D) Mucilagenous sheath

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

1. ( ) Leaf curl is a symptom associated with overgrowths.
2. ( ) Unfavorable intensity of light is considered as one of the animate causes of plant disease.
3. ( ) Symptoms associated with hypogrowths include Dwarf.
4. ( ) In several plant diseases, the pathogen interfere directly with the reproduction of the host plant by killing the embryo of the seed.
5. ( ) Pathogens can cause balance in hormonal system of the diseased plants.
6. ( ) Indirect penetration can occur through injuries or wounds.
7. ( ) The germination process of spores is being stimulated by diffusion of secretions from the pathogen.
8. ( ) The infective propagules coming in contact with the living host are known as inoculum potential.

(3) no (7) yes



9. ( ) Symptoms associated with overgrowths include Warts.
10. ( ) Fungi obtain pectinolytic enzymes are important in soft and dry rot diseases.
11. ( ) Chlorosis is the yellowing resulted from infection by viruses, fungi, and bacteria.
12. ( ) The word rust means sooty or charcoal-like powder.
13. ( ) Incubation period is necessary between penetration and to the appearance of symptoms.
14. ( ) In normal conditions, the abscission layers are formed in plants by the action of growth regulators.
15. ( ) Air is considered as a habitat for several plant pathogens.

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

- a) Several conditions must be satisfied for a successful infection to occur.
- b) In diseased plants usually structures and physiological changes are seen.
- c) Give the inoculum potential in each of the following cases:  
*Plasmopara viticola*, *Rhizoctonia solani*, *Pythium debaryanum*, *Armellaria mellea*.

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

- a) Some pathogens can cause disbalancing in growth<sup>regulators</sup> of their host.
- b) Direct penetration is more complicated than indirect penetration.
- c) Pathogens can invade host in different ways.

انتهت الاسئلة

WITH MY BEST WISHES

Prof. A. Y. Abdel-Malek

**ملحوظة: إجابة السؤالين Q 4 ، Q3 في الصفحات الخالية من ورقة الأسئلة**

صفحة (٣) من (٣)





**Final Exam "50 Marks"**

**Q1: Put (T) for True statements or (F) for False statements: (1 mark each)**

|                                                                                                                                                            |     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 1-Adsorption of enzyme to nano-particle surface reduces protein unfolding                                                                                  | ( ) |
| 2- The enzyme attached nano-particles avoiding aggregation of the free enzyme                                                                              | ( ) |
| 3-Enzymes have more allosteric sites in their structure that have great specificity.                                                                       | ( ) |
| 4-An enzyme speeds up a reaction by raising the activation energy.                                                                                         | ( ) |
| 5-Pectinase belongs hydrolases class                                                                                                                       | ( ) |
| 6-Lineweaver-Burk reported a mathematical relationship between inverse substrate concentration and inverse rate of product formed (or substrate consumed). | ( ) |
| 7- $K_m$ is the substrate concentration required for an enzyme to reach one-third its maximum velocity.                                                    | ( ) |
| 8-Exoenzymes needed for biochemical pathways and function in outside the cell.                                                                             | ( ) |
| 9-Inducible enzymes inducible, produced only in presence of specific substrates.                                                                           | ( ) |
| 10-Noncompetitive inhibitors bind to allosteric site causing active site shape change.                                                                     | ( ) |
| 11-Apoenzymes are smaller than their substrate and have globular shape.                                                                                    | ( ) |
| 12-In reversible inhibition, an inhibitor attaches to the enzyme by weak bond                                                                              | ( ) |
| 13-In feedback inhibition, a metabolic reaction is blocked by Products                                                                                     | ( ) |
| 14-In detergent industry used xylanase enzyme                                                                                                              | ( ) |
| 15-EC 6 <i>ligases</i> enzymes join two molecules with covalent bonds.                                                                                     | ( ) |
| 16-Fe and Zn are cofactors tightly bound to proteins                                                                                                       | ( ) |
| 17-The main model that explain the formation of the enzyme-substrate complex: the induced fit model.                                                       | ( ) |
| 18-Few enzymes act in pH 2 or 8                                                                                                                            | ( ) |
| 19-Coenzymes can be mineral ions, or organic molecules.                                                                                                    | ( ) |
| 20- Many vitamins are enzyme cofactors that must be obtained from the diet.                                                                                | ( ) |
| 21-The active site is formed by groups of Fatty acids                                                                                                      | ( ) |
| 22-Enzymes of cellular respiration being located in Mitochondria                                                                                           | ( ) |
| 23- Prosthetic groups loosely bound to proteins.                                                                                                           | ( ) |
| 24-Cosubstrate groups tightly bound to proteins.                                                                                                           | ( ) |
| 25- $V_{max}$ is the substrate concentration required for an enzyme to reach its maximum velocity.                                                         | ( ) |



|                                                                                                                                  |     |
|----------------------------------------------------------------------------------------------------------------------------------|-----|
| 26-K and Ca are cofactors loosely bound to proteins                                                                              | ( ) |
| 27-Wounds treated with lipase enzyme                                                                                             | ( ) |
| 28-Cancer treated with L-asparagenase enzymes                                                                                    | ( ) |
| 29-In diagnoses, high amylase in the blood serum indicate Acute pencreatites                                                     | ( ) |
| 30- Enzymes facilitate the formation of the transition state by decreasing EC number                                             | ( ) |
| 31- <i>Thermus aquaticus</i> produces DNA polymerase                                                                             | ( ) |
| 32-In EC numbers the digit 2 represents the reaction position                                                                    | ( ) |
| 33-Q10 is the doubles or triples increase with every 10C rise in temperature.                                                    | ( ) |
| 34- <i>Aspergillus niger</i> used in production of the digestive enzymes                                                         | ( ) |
| 35- Isomerase enzyme plays a role in bleaching of wheat and soybean flours                                                       | ( ) |
| 36-From enzymes properties, the specificity of binding depends on the precisely defined arrangement of Atoms at the active site. | ( ) |
| 37- <i>Trichoderma konigi</i> used in industries of feeds                                                                        | ( ) |
| 38-In fuel production used cellulase enzyme                                                                                      | ( ) |
| 39-In lock and key hypothesis, a change in the configuration of an enzyme's active site induced by Substrate                     | ( ) |
| 40-Bioengineering of enzymes take place on bacterial plasmid                                                                     | ( ) |

**Q2: Choose the correct answer; A,B,C or D: (1 marks each)**

|                                                                                                    | A             | B            | C               | D              |
|----------------------------------------------------------------------------------------------------|---------------|--------------|-----------------|----------------|
| 41-The formation of nano-enzyme complex is observed for adsorption onto                            | 5-nm          | 10-nm        | 20-nm           | 100-nm         |
| 42-In paper industry used ----- enzymes for the bleaching                                          | Hemicellulase | Protease     | Amylase         | All of them    |
| 43-In corn syrup used -----                                                                        | Cellulose     | Protease     | Amylase         | All of them    |
| 44- <i>Pyrococcus furiosus</i> produces                                                            | Amylase       | Protease     | Xylanase        | DNA polymerase |
| 45-When ATP levels are high, Phosphofructokinase reduced by----                                    | AMP           | ADP          | ATP             | Any of them    |
| 46-Precipitation of enzyme by                                                                      | Acetone       | Amm sulfate  | TCA             | Any of them    |
| 47-Enzymes of glycolysis located in                                                                | Mitochondria  | Cytoplasm    | Nucleus         | All of them    |
| 48- Lipxygenase belong-----class                                                                   | Isomerase     | Hydrolase    | Oxido-reductase | Lyase          |
| 49-When ATP levels are low, Phosphofructokinase stimulate by----                                   | AMP           | ADP          | ATP             | Any of them    |
| 50-In cloning the enzyme gene, the recombinant plasmid and bacterial cells are mixed up. It called | Recomination  | Transfection | Multiplication  | Modification   |

**Good luck**

**Prof Dr. Hassan Hasaan**

|                                  |                                                                                   |                                                |
|----------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------|
| Assiut University                |  | Second Semester: May 2023                      |
| Faculty of Science               |                                                                                   | The time allowed: 2 hours.                     |
| Botany & Microbiology Department |                                                                                   | Total marks: 50 Marks                          |
|                                  |                                                                                   | Course Code: 364 B<br>(PLANT PATHOGENIC FUNGI) |

Answer the following question (Q1 & Q2)

**Q1: True (✓)-False (X) Questions: (30 marks)(30 questions)**

1. Infections on peach leaves by *Taphrina deformans* occur at temperatures of 10-21°C. ( )
2. *Aspergillus* rots at first appear as soft, watery, slightly discolored spots of varying size and on any part of the fruit. ( )
3. Ascospores of *Claviceps purpurea* germinate to produce tiny mushroom-like bodies. ( )
4. Orange rust of wheat caused by *Puccinia recondite*. ( )
5. Hypersensitivity means development of necrotic spots resulting from rapid growth of cells. ( )
6. Numerous resistant spores of *Plasmodiophora brassicae* are produced in the "clubbed" root tissues. ( )
7. The term aggressiveness is used to describe the capacity of a pathogen to invade and grow in its host plant and to reproduce on or in it. ( )
8. Ovulariopsis type conidiophores are branched and arise from stomata. ( )
9. *Pythium* antheridium nuclei move through the fertilization tube towards the nuclei of the oogonium, fuse with them, and form oospore. ( )
10. The somatic hyphae of *Taphrina deformans* is dikaryotic. ( )
11. Infected young tubers infected by *Spongospora subterranean* show distortion and swollen outgrowths. ( )
12. Seedlings infected by *Pythium* are pulled up and show browning and rotting of the smaller roots or stems and stem lesions at soil level. ( )
13. *Pseudoperonospora cubensis* causes downy mildews on Cucurbits ( )



14. *Phytophthora nicotianae* causes black shank of tobacco. ( )
15. Loose smut of wheat and barley by *Ustilago nuda* is embryonic infection. ( )
16. The septum of basidiomycetes is dolipore. ( )
17. Individual species of powdery mildew fungi have a wide host range. ( )
18. Two haploid nuclei in the basidium fuse, and this is followed by mitosis to form four haploid daughter nuclei. ( )
19. *Ustilago scitaminea* cause sugarcane smut. ( )
20. Uredial stage of *Puccinia graminis* occurs late on wheat leaves. ( )
21. Sexual reproduction in Zygomycetes occurs by fusion of cells from different "sexes" (mating types) called gametangia. ( )
22. Haustoria of powdery mildew fungi extend into the plant cortical cells to obtain nutrition. ( )
23. The infected plant cells by *Synchytrium endobioticum* swell, divide, and surround the dividing zoospores resulting in the wart. ( )
24. Premature defoliation of vines infected by *Plasmopara viticola* is a serious problem because it predisposes the vine to winter injury. ( )
25. The "honey dew" consists of sticky, yellowish, sugary excretions of the plant exudates. ( )
26. The infection by *Albugo* is spread by either oospore-infected seed or by mechanical movement of sporangia. ( )
27. *Venturia inaequalis* mycelium forms between the cuticle and underlying epidermal tissue. ( )
28. *Synchytrium endobioticum* is mycelial, holocarpic biotrophic chytrid fungus. ( )
29. Dutch elm disease results in the blockage of the water-conducting tissue within the tree. ( )
30. Fungus of powdery mildew produce germ tubes, appressoria and haustoria and the fungus grows out radially from the point of inoculums. ( )

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

31. *Rhizopus* cause ..... of sunflower.  
(A) Head rot (B) Hull rot (C) Soft rot
32. *Plasmopara viticola* grows out through the stomata of infected tissue and produces sporangiophores during periods of high humidity and temperatures above.....  
(A) 5 °C (B) 13 °C (C) 26 °C
33. Non-infectious plant disease due to abiotic causes such as adverse soil conditions.  
(A) Disorders (B) Colonization (C) Harmful changes
34. A parasite that will attack living tissues but will continue to grow and reproduce after the tissue is dead.  
(A) Hemibiotroph (B) Facultative saprophyte (C) Both a & b
35. ....causing a root diseases of cereals and grasses.  
(A) *Polymyxa* (B) *Pythium* (C) Both a & b
36. Host epidermis ruptures exposing a white powdery mass of spores.  
(A) Powdery mildews (B) Downy mildews (C) White rust
37. The fungus can transmit destructive plant viruses.  
(A) *Synchytrium* (B) *Spongospora* (C) *Uromyces*
38. Naked asci containing ascospores of the pathogen are produced on the surface giving them.....  
(A) Curled (B) Proliferate quickly (C) Dusty appearance
39. Resting sporangia of *Synchytrium endobioticum* divide meiotically and germinate producing.....  
(A) Zygote (B) Prosporangia (C) Spherical zoospores
40. When loss of moisture is rapid, infected organs by *Rhizopus* finally .....  
(A) Mummify (B) Dry up (C) Both a & b
41. *Albugo candida* grows .....the plant stimulating various types of deformities.  
(A) Inside (B) Outside (C) Both a & b
42. Most of the deterioration of grains and legumes after harvest, during storage or transit, is caused by several species of the fungus.....  
(A) *Aspergillus* (B) *Penicillium* (C) Both a & b

43. A cleistothecium of .....showing several asci and dichotomously branched appendages.  
 (A) *Sphaerotheca* (B) *Podosphaera* (C) *Microsphaera*
44. A measure of the biological energy available for the colonization of a host.  
 (A) Inoculum potential (B) Inoculum density (C) Susceptibility
45. Formation of brown streaks in infected sapwood, symptoms of.....  
 (A) Apple scab (B) Dutch elm disease (C) Nectria canker
46. Indirect losses of vines caused by *Plasmopara viticola* can result from premature defoliation due to.....  
 (A) Water-soaked (B) Foliar infections (C) Rotting inflorescences
47. .... occur at very irregular intervals and locations and in relatively fewer instances.  
 (A) Sporadic disease (B) Epiphytotic disease (C) Systemic infection
48. Appearance of black soot like mass of the fungal pathogen spores on host infected parts caused by.....  
 (A) Ustilaginales (B) Uredinomycetes (C) Hymenomycetes
49. Root rot of ginger caused by .....  
 (A) *Pythium myriotylum* (B) *Pythium debaryanum* (C) *Rhizoctonia*
50. The disease manifests as dull black or grey-brown lesions on the surface of tree leaves, buds or fruits.  
 (A) Downy mildew (B) Peach leaf curl (C) Apple scab
51. Apple fruits infected by *Venturia inaequalis* are less marketable due to .....  
 (A) Reduce fruit quality (B) Black fungal lesions (C) Both a & b
52. Sclerotia of *Claviceps purpurea* produced in small grains fall on the surface of .....  
 (A) Wheat plants (B) Soil (C) Heads of cereals
53. Cool damp nights and warm sunny days favor the development of Powdery Mildew and temperature .....is favorable for infection.  
 (A) 11-28 °C (B) 12-20 °C (C) 15-30 °C
54. *Plasmodiophora brassicae* stimulates abnormal growth of affected parts, resulting in .....  
 (A) Swollen clubs' roots (B) Malformed leaves (C) Powdery scab
55. The anamorph of *Taphrina* is a single- celled budding yeast named.....  
 (A) Yeast (B) *Lalaria* (C) *Sclerotinia*
56. *Phytophthora infestans* produce .....on the surface of potato stems and leaves.  
 (A) Sporangia (B) Zoospores (C) Both a & b



57. *Rhizopus* hyphae grows on host surface, it produces stolons and at the next point of contact with the surface produce.....
- (A) Gametangia (B) Rhizoids (C) Sporangium
58. Rust bean plants caused by.....
- (A) *Uromyces appendiculatus* (B) *Uromyces fabae* (C) Both a & b
59. Biological control of *Rhizopus* on stored fruits has been achieved treating them with.....
- (A) *Candida* and *Pichia* (B) Useful bacteria (C) Both a & b
60. The growth of pathogen from the point of entry to varying extents without showing adverse effect on tissues through which it passes.
- (A) Endemic (B) Systemic infection (C) Sporadic disease
61. Hooked outgrowths called clamp connections are formed in members of.....
- (A) Ascomycetes (B) Basidiomycetes (C) Both a & b
62. Fresh fruits and vegetables should be harvested and handled carefully to avoid.....
- (A) Moisture (B) Wounds (C) Ventilation
63. Pathogen that lives as saprophytes but under favorable conditions attack living plants become parasites.
- (A) Facultative parasites (B) Facultative saprophyte (C) Biotrophs
64. In loose smut of wheat, the inflorescence is replaced by .....
- (A) Vegetative fungal hyphae (B) Black fungal spores (C) Sclerotia
65. A fungus in which the entire thallus is differentiated into a reproductive sporangium when mature.
- (A) Holocarpic (B) Holocarpism (C) Both a & b
66. Fungal spores are disseminated by wind and infect the shoot of plant.
- (A) Soil-borne disease (B) Air-borne disease (C) Seed-borne disease
67. When the asci of *Taphrina* open to release their spores, they tend to split across.....
- (A) The tip (B) The bottom (C) Epidermis
68. Asexual reproduction is ..... in the basidiomycetes.
- (A) Uncommon (B) Fail to open (C) Arched
69. Veins shoots infected by *Plasmopara viticola* usually are.....
- (A) Stunted (B) Distorted (C) Both a & b
70. Applications of ..... reduced incidence of potato late blight.
- (A) Bordeaux mixture (B) Mn-MO (C) Both a & b

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

**(A) Choose the correct answer: (10 marks)**

- 1- Which one of the following that causes Immunosuppression and Immunotoxicity in animals?
  - a) Alternaria toxin
  - b) Ochratoxin A
  - c) Citrinin
  - d) Sterigmatocystin
  
- 2- What is the toxin which induces pallor and panting, and the cause of acute death is blood loss into the liver?
  - a) Nodularin
  - b) Microcystin
  - c) domoic acid
  - d) gonyautoxin
  
- 3- What is the algal toxin which has the tumour-promoting activity?
  - a) Neosaxitoxins
  - b) Brevetoxins
  - c) Nodularin
  - d) Ciguatoxin
  
- 4- What is the main producer of toxin which caused Diarrheic Shellfish Poisoning?
  - a) Nitzschia sp
  - b) *Alexandrium* sp
  - c) *Gymnodium* sp
  - d) *Dinophysis* sp
  
- 5- What are the algal toxins which their mode of action is enhancing sodium entry into the cell?
  - a) Anatoxins
  - b) Microcystins
  - c) Brevetoxins
  - d) Ciguatoxins
  
- 6- Which fluorescence of the following that produced by Ochratoxin A under UV light?
  - a) Red fluorescence
  - b) Yellow fluorescence
  - c) Blue fluorescence
  - d) Green fluorescence

- 7- Which one of the following caused by endo-bacterial toxins?
- Cancer
  - Pyrogenicity
  - Diarrhea
  - Hemolysis
- 8- Which one of the following consists of a xanthone nucleus attached to a bifuran structure?
- Aflatoxin
  - Ochratoxin
  - Citrinin
  - Sterigmatocystin
- 9- Which one of the following bacteria its toxin could cause immunosuppression and nonspecific T cell proliferation?
- Staphylococcus aureus*
  - Bacillus cereus*
  - Clostridium botulinum*
  - Corynebacterium diphtheria*
- 10- Which one of the following bacteria could produce cereulide toxin?
- Vibrio cholera*
  - Staphylococcus aureus*
  - Bacillus cereus*
  - Bacillus anthracis*

**(B) Define all the following (10 marks):**

- Amnesic shellfish poison (ASP)
- Aflatoxicosis
- Bacterial endotoxins
- Estrogenic toxin
- Nephrotoxin

**(E) Write on all of the following (16 marks):**

- Preparation of toxoids
- Paralytic Shellfish Poisoning and how to control it
- Biological effects of Ochratoxin A
- Detoxification of aflatoxins

**(F) Give reasons for all of the following (14 marks):**

- Clinical uses of ergot alkaloids
- Biological activity of **Patulin** mycotoxins
- Biological activity of Kojic acid
- Occurance of Alternaria toxins

**Dr: Maysa M. Ali**

**Good luck**