

Assiut University

Faculty of Science, Botany and Microbiology Department

First Term Examination: 2018– 2019

Fourth Level : Special Botany Subject : Stress Physiology

(451B) Time Allowed: 2 hours

EXAM. 3 PAGES

1 – How do 'plants respond to water stress? (10 marks) .

2- Write short note on : Salinity tolerance and salinity resistance.. (10 marks)

3- Choose and write the correct answer in your paper of at least 20 questions . (30 marks)

1. The halophytes which can resist a wide range of salt concentrations are called as,

- (a) glycophytes (b) stenohaline
(c) euryhaline (d) none of the above

2. External symptoms of salt injury to plants are,

- (a) leaf edge burns (b) necrotic spots on leaves
(c) chlorophyll bleach (d) all of above

3. Which of the following methods are adopted by plants to cope with salt stress?

- (a) Avoiding salinity (b) Evading salinity
(c) Tolerating salinity (d) All of above

4. External symptoms of chilling injury to plants are,

- (a) reduced growth
(b) chlorosis and lesions on leaves
(c) appearance of foliage as if soaked in water for long
(d) all of above

5. Which of the following are more susceptible to chilling injury?

- (a) Tropical plants (b) Subtropical plants
(c) Both tropical and subtropical plants (d) Temperate zone plants

6. Chilling injury in plants results due to,
(a) low temperature well above their freezing point
(b) low temperature at freezing point
(c) low temperature below the freezing point
(d) none of the above
7. Which of the following is a chill-tolerant plant?
(a) Coleus (b) Dieffenbachia (c) Croton (d) Arabidopsis
8. Lipid bilayers of cell membranes in chill-resistant species have,
(a) higher proportion of saturated fatty acids
(b) higher proportion of unsaturated fatty acids
(c) equal proportion of saturated & unsaturated fatty acids
(d) only saturated fatty acids
9. In freezing injury to plants, ice nucleation means,
(a) formation of ice under the influence of nucleus
(b) formation of ice in nucleus
(c) formation of ice crystals around large polysaccharides and proteins in cell
(d) none of the above
10. In freezing or frost injury to plants, ice formation begins,
(a) exactly at freezing point
(b) at several degrees below its freezing point
(c) at slightly above the freezing point
(d) all of above
11. Which of the following are most susceptible to frost injury?
(a) Tropical plants (b) Subtropical plants
(c) Temperate zone plants (d) All of above
12. Which of the following hormones is involved in drought and frost resistance of p
(a) ABA (b) IAA (c) Ethylene (d) None of the
13. Which of the following is lethal to plant tissues?
(a) Formation of ice in intercellular spaces
(b) Formation of ice in xylem vessels
(c) Formation of ice intracellularly
(d) None of the, above

14. Which of the following does not have cryoprotective function in plant tissues?
- (a) Antifreeze proteins (b) Sugars such as sucrose
(c) Saturated fatty acids. (d) None of the above
15. Which of the following is most susceptible to heat-stress ?
- (a) Rubisco (b) Photosystem 11
(c) Respiration (d) None of the above
16. Relatively higher proportion of saturated fatty acids in membrane lipids is, characteristic of
- (a) high temp. sensitive plants (b) high temp. tolerant plants
(c) C3 plants (d) All of above
17. Which of the following are heavy-metals ?
- (a) Lead and cadmium (b) Mercury and chromium
(c) Nickel, zinc and copper (d) all of above
18. Increased heavy-metal concentration in the environment is mainly,
- (a) natural (b) anthropogenic
(c) due to activities of microorganisms (d) none of above
19. Heavy-metal toxicity in plants causes,
- (a) increased lipid peroxidation in membrane
(b) DNA damage
(c) oxidation of sulphydryl groups of proteins
(d) all of above
20. Accumulation of phytochelatins in plant cell vacuoles is indicative of,
- (a) salt stress (b) heavy-metal stress
(c) heat stress (d) all of above
21. Elicitors originate usually from,
- (a) cell walls of pathogen (b) phytoalexins
(c) plasmamembrane of plant cell (d) none of these

GOOD LUCK

Prof.Dr.: M.A. Zidan

Assiut University Faculty of Science Botany and Microbiology Department	Final Exam for Soil microbiology* B491 2018-2019 Time: 2 hours	
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Answer the following questions:-

(50 Marks)

1- Put (✓) in front of the right sentence and (×) in front of the wrong one:-

(10 Marks)

- A. The breakdown of beta-1,4 glycosidic bonds of cellulose can be performed by group of enzymes endogluconase, exogluconase and glucosidase that attack glucosidic bonds, are effective in degrading it..... ()
- B. Celluloses are water-soluble polysaccharides and consist of hexoses, pentoses and uronic acids. ()
- C. Chitin is a complex carbohydrate of galacturonic acid. ()
- D. Proteins are complex organic substances containing nitrogen, sulphur, and sometimes phosphorus in addition to carbon, hydrogen and oxygen. ()
- E. Keratin wastes can be efficiently degraded by a myriad of bacteria, actinomycetes and fungi due to the elaboration of chitinases. ()
- F. Methanogenic bacteria are highly sensitive to oxygen concentration in the digestion system. ()
- G. Most keratinous wastes are land filled or burned, which involve expenses and cause environmental problems and human diseases accompanied their accumulation. ()
- H. Biogas can be produced from the decomposition of organic waste such as waste market, foliage leaves, and manure from cows, pigs, goats, horses, or others, even though human waste by different groups of facultative and obligatory aerobic microorganisms. ()
- I. Nitrogen fixation is the conversion of nitrogen (N_2) from the atmosphere into a form readily available to plants. ()
- J. Through the process of mineralization, organic carbon, nitrogen, phosphorus, sulphur and iron are made available for reuse by plants. ()

2- Choose the correct answer between the brackets:- (10 Marks)

A- are considered the main agents of cellulose degradation especially dead wood and branches that have accumulated on the floor of the forest.

(Fungi – Bacteria –Algae –Actinomycetes)

B- Sulphate is the anion of a strong mineral acid (H_2SO_4) and prevents excessive alkalinity due to formation by soil microorganisms.

(NH_4 – NO_3 – NO_2 – HNO_3)

C- The conversion of nitrogen (N_2) from the atmosphere into a form readily available to plants and hence to animals is called

(Nitrification – Assimilation – Denitrification – Ammonification)

D- The process of methane production in which simpler substances are converted to long chain fatty acids by acid formers is called

(Hydrolysis – Acidogenesis – Acetogenesis – Methanogenesis)

E- The organic residue (soft brown/dark coloured amorphous substance) in the soil resulting from decomposition of plant and animal residues in soil is called.....

(Pesticides- Fungicides – Humus –Sludge)

F- The main carbon containing product which is produced from organic matter decomposition through anaerobiosis processes in waterlogged soils is called.....

(Methane- Amino acids – Fatty acids – Sugars)

G- A free living nitrogen fixing bacteria which live in soil and considered as plant growth promoter is called.....

(*Rhizobium* – *Azotobacter* – *Nitrobacter* – *Spirillum*)

H- Hydrogen sulphide undergoes decomposition to produce by the action of certain photosynthetic sulphur bacteria.

(S – H_2SO_4 – SO_3 – SO_2)

I- is a good example for methane forming bacteria.

(*Methanosarcina* – *Bacillus* – *Fervidobacterium* – *Rhizobium*)

J- The process of conversion nitrogen (N_2) from the atmosphere into a form readily available to plants by automobile engines and thermal power plants is called.....

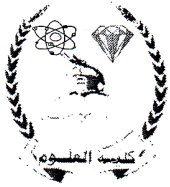
(Atmospheric N-fixation - Industrial N-fixation - Biological N-fixation -
Combustion of fossil fuels)

3- Complete the following statements: - (15 Marks)

- A- The degradation of cellulosic materials by chemical or enzymatic process has a great potential value to form which can be used by microbes in the manufacture of and
- B- The conversion of cellulose by *Trichoderma viride* into glucose consists of two steps in the enzyme system including and subsequently.....
- C- Fungi that degraded hemicelluloses in soil are exemplified by, and
- D- The decomposition of hemicelluloses resulted in production of soluble monosaccharide hexoses (C6) including,, and pentoses as; and
- E- The complete cycling of sulphur includes four steps, and
- F- The mechanism of sulphate reduction to hydrogen sulphide involves, and
- G- The availability of phosphorus in soil depends on the degree of solubilization by produced by microorganisms in soil.
- H- lignin $\xrightarrow{\text{..... and}}$
- I- $\text{Ca}_2\text{H}_2(\text{PO}_4) + 2\text{HNO}_3 \xrightarrow{\hspace{2cm}}$ +
- J- $2\text{S} + \text{H}_2\text{O} + 3\text{O}_2 \xrightarrow{\text{Thiobacillus}} \dots\dots\dots$
- K- $\text{CaSO}_4 + 4\text{H}_2 \xrightarrow{\text{Desulfotomaculum bacteria}} \dots\dots\dots + \dots\dots + \dots\dots$

- A- The conversion of atmospheric carbon dioxide to carbohydrates by photosynthesis in plants. []
- B- Conversion of organic phosphorus into insoluble inorganic phosphates by the action of phosphatase produced by soil microorganisms. []
- C- Sulphur compounds that can readily be taken by the plants and are beneficial to agriculture. []
- D- The process in which soil microorganisms converts organic nitrogen of died plants or animals within the remains back into ammonium (NH_4^+). []
- E- Conversion of long chain fatty acids by acid former bacteria during anaerobic digestion through fermentative process into acetic acid. []
- F- A sort of biofuel, comprises mainly methane (CH_4) and carbon dioxide (CO_2) and may has small amounts of hydrogen sulphide (H_2S), moisture and siloxanes. []
- G- Keratins that have low content of disulfide bonds and are more pliable like skin and callus. []
- H- The process of hydrolysis of proteins to amino acids which is brought about by certain microbial enzymes, collectively known as “proteases” or “proteolytic”. []
- I- A long-chain polymer of N- acetylglucose amine of β -1,4 linkage. []
- J- A complex carbohydrate rich in galacturonic acid, which is found in the cell walls of plants helping to keep them rigid. []
- K- The reduction of nitrates back into the largely inert nitrogen gas (N_2), completing the nitrogen cycle. []

Prof. Dr. Magdy M. Bagy

	First semester Final exam. (2018-2019) Seed Biology (Code : 411 B)		
Botany and Microbiology Department	For Under Graduate students (4th level) Date: 5/1/2019	Time allowed 2 hours	Assiut University

Answer the following questions 50 marks

I. Describe in details two only of the following..... (2×15 = 30 marks)

1. Types of seed dormancy.
2. Hemicellulose and proteins as reserved food materials of Endosperm.
3. Role of phytohormones in germination physiology.

II. Shortly explain Five only of the following (5×4 = 20 marks)

1. Germination physiology (diagrammatically).
2. Tests of seed viability.
3. Vivipary as special type of germination.
4. Myrmecochory, epizochory (define only).
5. The major cell types of the fully developed endosperm of the grasses.
6. Seed coat anatomy of Fabaceae.

Best wishes

Prof. Dr. Fawzy M. Salama

Professor of Plant Ecology

Botany and Microbiology Department

Dr. Ahmed Amro

Lecturer in Botany and Microbiology Department

Faculty of Science
Botany and Microbiology Dept.
Biotechnical Analysis (B453) Course:
Time: 2 hours
Marks: 50 marks



كلية العلوم
قسم النبات والميكروبيولوجي
2018/2019
Level: Fourth

Answer the following questions

First Question: : Write in details about **(only six)** of the following:-
(24 mark)

1. Components of high-performance liquid chromatography.
2. Limitations of buffers commonly used in extractions.
3. Factors affecting column efficiency (**seven factors**).
4. Different Types of chromatography (**four types**).
5. Five types of cell lysis technique.
6. Five types of immunoassay tests.
7. Types of centrifuge rotors.

Second Question :- Complete the following sentences (only 26).

1. Microtiter Plate is.....
2. The buffer are generally least sensitive to temperature.
3. The glass probe tip is must be kept wet at all times- to avoid
4. The relative centrifugal force =
5. Detection Antibody is.....
6. Gradient elution is.....
7.buffer suitable for gel permeation and cation-exchange chromatography.
8. Factors affecting buffer pH are..... and
9. Centrifuge Components are.....,.....and.....
10. Chromatogram is.....
11. The eluate is
12. Thechromatography used when different substances have very similar R_f values.
13. Classification of chromatography according to mobile phase to.....and.....

(Turn over the paper)

14. The analyte is
15. Color reaction is
16. Monochromatic light is
17. Stop solution is.....
18. The advantage of TLC in compared to PC, it
.....and.....
19. In centrifugation excessive run times have no adverse
effect on centrifugation.
20. A bonded phase is.....
21. Retention time is
22. In paper chromatography if solvent is polar, the non-polar analyte that you are
trying to separate will have..... R_f and the polar analyte have
..... R_f .
23. In GC is a type of chromatography used for separating and analyzing
compounds that can be
24. Preventing buffer contamination by.....,.....and.....
25. Flame absorbance photometry isin compared to flame
emission spectroscopy.
26. The advantages of single beam spectrophotometer.....and.....
27. Beer-Lambert law which expressed as:.....

Good luck

Dr/ Eman Aldaby

Assiut University, Faculty of Science		Biological Control (B-499) Date: 23-12-2018
Department of Botany and Microbiology		Time allowed: Two hours Total Marks: 50

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Answer FIVE questions only:

- 1- Describe with labeled drawings each of the following: (10 Marks)
 - a- The life cycle of *Entomophthora muscae* on house fly.
 - b- The mode of action of *Bacillus thuringiensis* attacking caterpillars.

- 2- Discuss the role of the following microbes in biocontrol of pests with special reference to their microscopic features and active metabolites they produce..... (10 Marks)
 - a- *Beauveria bassiana*
 - b- *Metarhizium anisopliae*

- 3- Give an account of the following microorganisms focusing on their structure and the target hosts..... (10 Marks)
 - a- *Coelomomyces stegomyiae*
 - b- *Coniothyrium minitans*

- 4- Describe each of the following fungi mentioning their role in the biocontrol of plant diseases: (10 Marks)
 - a- *Trichoderma harzianum*
 - b- *Bacillus subtilis*

- 5- Give labeled illustrations for each of the following: (10 Marks)
 - a- *Lecanicillium lecanii*
 - b- *Conidiobolus coronatus*
 - c- *Chaetomium globosum*
 - d- *Epicoccum nigrum*

- 6- Describe the different trapping structures by which certain fungal species capture and consume nematodes..... (10 Marks)

===== End of Questions =====

Best wishes,,,,,,,,,

Professor Ahmad M Moharram



ANSWER THE FOLLOWING QUESTIONS

Support your answers with drawing

Q1. Define 4 only of the following terms:

12 Marks

- 1- Actuopalynology.
- 2- Echininate pollen.
- 3- Nomotreme spores.
- 4- Melittophily pollination.
- 5- Heteropolar pollen grains.

Q2. Compare between 4 only of the following:

16 Marks

- 1- Anemophily and Hydrophily pollinations.
- 2- Canopy and Trunk space components of pollens transfer mechanism.
- 3- Massula and Pollinia.
- 4- Binucleate and Trinucleate pollen grains.
- 5- Pollen grains in Monocot and Dicot plants.

Q3. Write short notes on 2 only the following:

10 Marks

- 1- Development of pollen sacs.
- 2- Categories of pollen grains size according to Erdtman 1945.
- 3- Different types of pollen tetrads.

Q4. Discuss 3 only of the following sentences:

12 Marks

- 1- Pollen apertures has different shapes and positions.
- 2- The Exine of pollen grain is a heterogeneous layer.
- 3- Palynology has an important role on phylogeny of Angiosperms.
- 4- Cross pollination was usually encouraged in most plants by different mechanisms.

With My Best Wishes Dr. Ahmed Faried



Final Exam. For the 3rd level students (December, 2018)
(Honor Microbiology & Chem. and Microbiology)

Subject: Biology of Aquatic Fungi (361 B)

Maximum Allowed Time: 135 Min.

Answer The Following Questions:-

(Note: 2 pages should be considered)

Q.1: What is meant by Eight Only of the following:-

(8 Marks)

- a- Aquatic fungi.
- b- Branchiomycoses.
- c- The aero-aquatic hyphomycetes.
- d- Morphometric features of an Aquatic habitat.
- e- Terrestrial-aquatic hyphomycetes.
- f- Aquatic fungal guilds.
- g- Allelopathy.
- h- Secondary resource captures aquatic fungi.
- i- Intraspecific interactions in aquatic ecosystem.
- j- Mycobioremediation.

Q.2: Discuss Briefly Three Only of the following:

(12 marks)

- a- Potential counter-adaptations by fungi may involve hiding from invertebrates.
- b- Morphological and physiological acclimatization of both anamorphic and teleomorphic Ingoldian fungi to aquatic habitats.
- c- The ecological and biological roles played by aquatic fungi in food chain in aquatic ecosystem, with special reference to Chytridiomycetes and aquatic hyphomycetes.
- d- Ichthyophonosis and Saprolegniosis.

Q.3: Write Briefly on each of the following:-

(12 Marks)

- a- Impact of light, salinity, temperature and water flowing on abundance and occurrence of aquatic fungi. Interaction effect between water temperature and salinity.
- b- Vertical stratification of aquatic ecosystems.
- c- The main characteristic features and biological importance of aquatic fungi which are related to order Neocallimastigales.

Q. 4: Discuss Two Only of the following:-

(8 Marks)

- a- Comparison between the different heterotrophic microorganisms (eukaryotes or prokaryotes) inhabit or may arrive water habitats regarding to their priority to colonize various substrata?.
- b- Write the ecological and biological importance of *Coelomomyces*, *Batrachochytrium dendrobatidis*, *Catenaria* sp., *Leptomit*, *Olpidium vermicol*, aquatic fungi which related to Order Spizellomycetales.
- c- Capability of zoospore fungi to inhabit aquatic habitats and their interrelationship with algae.

Q.5: Give the scientific term which is related to Ten Only of the following

(Design a table for your answers):-

(10 Marks)

- 1- Interaction between different aquatic fungi where there is no any physiological effect between their populations.
- 2- Aquatic fungi that feed on a variety of food sources.

See the next page

- 3- Aquatic fungi that move between aquatic and extra-aquatic habitats in haphazard rather than regular.
- 4- The community which held together by complex interactions between the biotic and abiotic factors in a given water area.
- 5- The use of living organisms, primarily microorganisms, to degrade environmental contaminants into less toxic forms (degrading them to harmless compounds).
- 6- Two usually independent organisms cooperate to break down a nutrient neither one could have metabolized alone.
- 7- The simultaneous demand by two or more organisms for limited environmental resources, such as nutrients, living space, or light.
- 8- The community which held together by complex interactions between the biotic and abiotic factors in a given water area.
- 9- The interaction between two different aquatic fungi at which one member benefits while the other does not benefit nor is it harmed.
- 10- The inhibiting or nullifying action of one organism on another) via giving off antagonistic substances that inhibit or kill susceptible species sharing its habitat.
- 11- The chemically synthesized compounds that are not naturally occurring in aquatic habitats (man-made chemicals that are present in the environment at unnaturally high concentrations).

Good Luck

Prof. Abdel-Raouf M. Khallil



Mineral Nutrition

Time: 2 hours

Exam papers: Two

First Term Examination 2018 – 2019

351 B

3rd Level: Botany

Answer the following questions:

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

- 1- The of the membrane plays a critical role in membrane functions.
a. fluidity b. tight packing c. all of the previous
- 2- Proteins that serve as aquaporins are always:
a. anchored b. peripheral c. integral d. all of the previous
- 3- are tubular extensions of the plasma membrane.
a. Hairs b. Plasmodesmata c. All of the previous
- 4- Its character makes water suitable for dissolving other polar substances.
a. polar b. non-polar c. all of the previous
- 5- Factors affecting permeability of cell membrane to a particular substance:
a. molecular size b. electrical charge c. solubility d. all of the previous
- 6- Diffusion works a concentration gradient.
a. down b. up c. all of the previous
- 7- is the diffusion of water across a membrane.
a. Imbibition b. Diffusion c. Osmosis
- 8- A solution has high solute than the cell.
a. hypertonic b. hypotonic c. isotonic
- 9- Stomata are open for the passage of during photosynthesis.
a. $\text{CO}_2 + \text{O}_2$ b. $\text{CO}_2 + \text{O}_2 + \text{H}_2\text{O}$ c. $\text{O}_2 + \text{H}_2\text{O}$ d. $\text{CO}_2 + \text{H}_2\text{O}$
- 10- Mineral nutrients are classified depending on:
a. amount b. metabolic need c. function(s) d. mobility e. all of the previous
- 11- Nutrients that are involved in redox reactions are group:
a. one b. two c. three d. four
- 12- When cyanide inhibits electrogenic ion transport, the pH of the cytosol becomes
a. acidic b. alkaline c. neutral

- 13- ATP-binding cassette (ABC) pump can be further characterized by
 a. electrogenic b. electroneutral c. all of the previous
- 14- serves as an electron donor to the Fe in nitrogenase enzyme
 a. NADPH+H c. FADH₂ d. NADH+H e. Ferredoxin
- 15- The reduction of APS occurs exclusively in the
 a. mitochondria b. plastids c. vacuole d. peroxisomes
- 16- The reaction that produces cysteine and acetate is catalyzed by
 a. ATP sulfurylase b. pyrophosphatase c. OAS thiol-lyase d. APS kinase
- 17- Phosphate is relatively unavailable to plant roots because
 a. low solubility b. sorption capacity in soil c. all of the previous
- 18- Mycorrhizae filaments provide plant roots with:
 a. surface area b. minerals c. water d. all of the previous
- 19- Sulphate in the soil solution is readily absorbed by
 a. H⁺-SO₄²⁻ symporter b. H⁺-SO₄²⁻ antiporter c. all of the previous
- 20- form because of the attraction of a positively charged cation for a negatively charged group on a carbon compound.
 a. Electrostatic bonds b. Coordination bonds c. All of the previous
- 21- Several compounds secreted by roots form stable chelates with iron except
 a. malic acid b. citric acid c. sugars d. phenolics e. piscidic acid
- 22- consists of a protein shell with a core of 5400 to 6200 iron atoms
 a. Porphyrin b. Phytoferritin c. All of the previous

Q2- Write on five of the following:..... (15 marks)

1. Supposed advantages of transpiration
2. What makes an element essential?
3. Establishing symbiosis requires an exchange of signals
4. Conversion of ammonium to amino acids
5. Assimilation of oxygen to organic compound
6. Assimilation of one of the cations

Q3- Compare between five of the following:..... (15 marks)

1. Channels and carriers.
2. Contact and carbonic acid exchange theories.
3. H⁺-Pyrophosphatase and Ca²⁺ pumps.
4. Symport and antiport transports.
5. H⁺-ATPase and vacuolar H⁺-ATPase pumps.
6. Nitrate reductase and nitrite reductase enzymes

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



Final Examination

Plant Water Relations

Course No.: 343B

Time allowed: 2 hours

Department of Botany & Microbiology

50 Marks

First semester 2018/2019

3rd Level (Special Botany)

Answer the following questions:

- | | Marks |
|--|--------------|
| 1) Write on the main biologically important properties of water – Discuss the role of polarity and hydrogen bonds. | 12 |
| 2) Define each of the following: <u>(Answer four only)</u>
1- Aquaporins.
2- Root pressure.
3- Exosmosis.
4- Matric potential.
5- Transpiration pull. | <u>4</u> x 3 |
| 3) a- An aqueous solution containing 10 g l ⁻¹ of a soluble polysaccharide has an osmotic potential of -12.96 kPa at 278 K. Assuming ideal behavior, calculate the molecular weight of the polysaccharide (write the equations).
b- How much the sap ascent by capillary action in a xylem vessel with a radius 10 μm? | 8
4 |
| 4) <u>Answer two only:</u>
a- Explain how the soil water moves toward a plant roots along the gradient in hydrostatic pressure.
b- How water moves within the roots; explain the different pathways and quantify the root hydraulic conductance.
c- With a diagram describe the types of resistances against transpiration pathway. | <u>2</u> x 7 |

Good Luck

Prof. Dr. T. Ramadan

Assiut University
Faculty of Science
Botany & Microbiology Dept.
Date: 26/12/2018
Course code: 323 B

Final exam of: Plant Cytology
Year: 2018/2019
Time: 2 hours
Total marks: 50 marks

Answer all the following questions

(A) Write on only four of the following (20 marks):

- 1- The structure of plasma membrane (David Robertson, 1950)
- 2- Origin of cell wall (Procedures)
- 3- Cells Theory (Schleiden and Schwann, 1882)
- 4- The ultrastructure of mitochondria inner membrane subunits
- 5- Cytotaxonomy & Cytoecology

(B) Compare between only four of the following (20 marks):

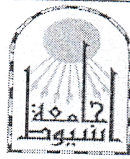
- 6- Metacentric & Acrocentric chromosome
- 7- peripheral proteins & Integral proteins of plasma membrane
- 8- Rough & smooth endoplasmic reticulum (Function)
- 9- Primary cell wall & secondary cell wall
- 10- Ribosomes of Prokaryotic and Eukaryotic cells

(C) Defined only five of the following (10 marks) :

- 1- Sat-chromosome
- 2- Chromomeres
- 3- Plasmodesmata
- 4- Etioplasts
- 5- Karyotype
- 6- Cytokinesis

Good luck

DR/ MAYSA M. A. ALI



Assiut University
Faculty of Science
Botany & Microbiology Department

Pathogenic microorganisms (397 B)
Final Examination for The Third Level
First Semester: 2018\ 2019

Time allowed: 2 hours

Answer the following questions-----(50 Marks)

1- Give account on Four Only of the following----- (12 Marks)

- 1- Fungi found as normal flora on the skin
 - 2- Gastrointestinal tract microbial normal flora
 - 3- Portals of microbial exit
 - 4- Hepatitis C
 - 5- Bacterial meningitis
-

2- Compare between Five Only of each of the following----- (20 Marks)

- 1- Prion and Virus
 - 2- Typical pneumonia and Atypical pneumonia
 - 3- Primary pathogens and opportunistic pathogens
 - 4- Exotoxins and endotoxins
 - 5- Active and passive immunity
 - 6- Antibiotics and antibodies
-

3- Identify each of the following----- (10 Marks)

Antigen - Jaundice - A vector - Endogenous infections - A fomite

4- Write the name of the microbe that causes the following diseases----- (8 Marks)

Diphtheria- Syphilis- Trachoma – Typhoid - Typhus - Pneumonia – Mouth thrush - Malaria

Good Luck

prof/ Khayia Mohammed Abdel-Gawad

University of Assiut Faculty of Science Department of Botany and Microbiology		Final written Exam Advanced Virology (B381) Two hrs allowed Dec 2018
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Please Answer the Following Questions

(50 Mark)

1- Define

(12 Mark)

a- Subunit vaccines (3)

b- Immunogenicity (2)

c- Titre (2)

d- Incomplete Adjuvant (2)

e- Orthomyxoviridae (3)

2- Functions of

(10 Mark)

a- Interferons (3)

b- Cellular immunity (2)

c- Lipids in enveloped viruses (5)

3- a- " Bird flu- virus could spread between people" explain how ?

(6 mark)

b- State 6 morphological changes on host cells induced by animal virus (6 mark)

4- Why

(16 mark)

a- It is better to use a purified virus for antiserum production. (3)

b- Animals are no longer use for propagation of animal viruses. (3)

c- Not any substance can act as antigen. (4)

d- Number of the infectible sites decrease or increase during inoculation of a plant with a virus. (6)

Good luck

Prof.Dr. Sameh K. Hemida



First Semester final Examination

Subject: Course 393B

(Microbial toxins)

Students: (Microbiology; Chemistry and Microbiology sections)

General Instructions: -Answer the following questions.

Q1. Place a tick $\checkmark$ in the correct answer. (15 marks)

1. Which one of the following is derived from pentaketides?
a. sterigmatocystin b. patulin c. tenuazonic acid d. citrinin
2. What does the A subunit in AB toxin stand for?
a. accumulation b. binding c. enzymatic activity d. adhesion
3. Which one of the following can produce NSP toxins?
a. *Oscillatoria* sp. b. *Gymnodinium breve* c. *Chlamydomonas* sp. d. *Nostoc* sp.
4. Which one of the following is a property of lipopolysaccharides?
a. heat resistant b. highly potent c. secreted by living bacteria d. heat sensitive
5. Which one of the following is related to difurocoumarocyclopentenone series?
a. afl. B1 b. afl. G2a c. afl. G2 d. afl. G1
6. Which one of the following is the main producer of fumonisins in corn?
a. *P. citrinum* b. *F. oxysporum* c. *P. expansum* d. *F. verticilloides*
7. Which one of the following is nephrotoxin and increases prenatal mortality of embryo?
a. zearalenone b. ochratoxin A c. penicillic acid d. alternariol
8. Which one of the following is esterogenic toxin?
a. afl. B₁ b. citrinin c. zearalenone d. kojic acid
9. Which one of the following causes oesophageal cancer?
a. fumonisin B₁ b. Patulin c. afl. B₁ d. ergometrine
10. What is the range of LD₅₀ (ug/Kg) of microcystins?
a. 10-20 b. 20-50 c. 50-100 d. 100-200
11. Which one of the following is a cyanobacterial hepatotoxin?
a. anatoxin b. nodularin c. hemolysin d. phantoxins

12. Which one of the following is required by small dose for inducing bacterial disease symptoms?

- a. endotoxins b. exotoxins c. polyamines d. H₂S

13. Which one of the following is involved in toxoids formation?

- a. protein toxins b. lipopolysaccharides c. proline d. glucose

14. Which one of the following causes hallucination and agitation?

- a. Penicillic acid b. Citrinin c. Patulin d. Lyseric acid

15. Which one of the following is a group of closely related tetrahydropurine toxic compounds?

- a. ASP b. DSP c. PSP d. NSP

Q2A. Give the scientific term for each of the following: (5 marks)

	Definition	Scientific term
1	Toxic compounds that are associated with the cell wall of Gram -ve bacteria and are referred to as endotoxins.	
2	Microbial toxins that obviously bring about the death of an animal.	
3	Microbial isolates that can produce toxins.	
4	Diseases caused by mycotoxins.	

Q2B. Give reasons for each of the following: (10 marks)

1. Aflatoxins occupy the first rank among all mycotoxins.

2. Ozonation and filtration are efficient in the removal of cyanobacterial toxins.

3. Okadaic acid is involved in intestinal tract inflammation and diarrhea in humans.

Q3. Explain the mode of action of the following: (10 marks)

1- Cholera toxin.

2-Saxitoxin (STX).

3- Fumonisin B1

Q4. Complete the missing data in the following Table. (10 marks).

Microbial Toxin	Producing microorganisms	Chemical structure
Zearalenone		
Afl. M₁		
Hemolysin		
Domoic acid		

Good luck
Prof. Dr. Ahmed Lotfy El-Sayed



Assiut University
Faculty of Science
Botany Department
Dec. 2018

Course code: 321B
Course: Advanced anatomy
1st Semester – Final Exam
Time: 2 Hours
Marks: 50



No. of questions: 3

No. of Pages: 3

Answer all the questions

Question No. 1

(14 marks)

(0.5 mark each)

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

1	Protoderm divides into cortex, pericycle, medullary ray and pith	()
2	Plate meristem divides in three planes	()
3	Cruciferous type of stomata with three subsidiary cells	()
4	Trichomes are outgrowths that are connected to the vascular system	()
5	Walls of flax fibers composed largely of cellulose	()
6	The shape of metaxylem lignifications may be reticulate or scalariform	()
7	In ferns, tracheid have elongated pits, with narrow border & little or no torus	()
8	The more primitive vessels have the shape of fibres with small lumen	()
9	scalariform perforation present in the vessels of angiosperms	()
10	Bast fibres are Intermediate between the typical tracheids and fibres	()
11	The wall of gelatinous fibres is may composed of cellulose	()
12	1ry phloem not contains fibres	()
13	If sieve plates are lacking on side walls, lattices sieve areas are often present	()
14	The insectivorous plants (<i>Drosera</i>) secrete digestive enzymes	()
15	In centrifugal growth, mature vascular cells progress from outside towards axis	()
16	Haplostele is not a type of the protostele	()
17	Leaf gaps are prolongations of the stelar tissues that supply the leaves	()
18	The number of leaf traces in Angiosperms is mostly not more than three	()
19	The endodermis not present in herbaceous stems	()
20	Interfascicular cambium arises between the 1ry xylem and 1ry phloem	()
21	The knots found in wood are sections of embedded branch bases	()
22	Leaves and roots do not produce periderm	()
23	Phellen prevents water loss from inner tissues due to their suberization	()
24	In dicots, complementary tissue cells may be not suberized	()
25	Tyloses is an enlargement of pit membranes between wood parenchyma & vessels	()
26	In <i>Helianthus</i> and <i>Salix</i> , the cambium is normal in position and activity	()
27	In <i>Nerium</i> stems, the cambium gives different amounts of 2ry xylem & 2ry phloem	()
28	Lateral roots originate from pelliferous layer or pericycle	()

Choose the correct answer, put your answer in a table:-

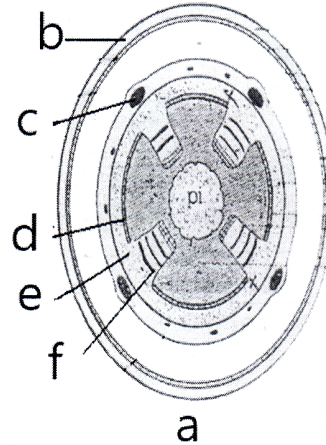
- (1) Meristem that divide in three planes called as:-
a. planeless b. plate c. rib d. mass
- (2) Vascular cambium and cork cambium can be called:-
a. intercalary b. lateral c. rib d. all the precedings
- (3) The Dumb-bell shape stomata are present in:-
a. Cyperaceae b. Brassicaceae c. Apocynaceae d. non of the precedings
- (4) Diacytic type of stomata can be also called:-
a. cruciferous b. rubiaceous c. ranunculaceous d. caryophyllaceous
- (5) The types of parenchyma that play a function in photosynthesis are called:-
a. aerenchyma b. chlorenchyma c. collenchyma d. sclerenchyma
- (6) The type of sclerenchyma that develops from parenchyma tissue is:-
a. vessels b. fibres c. sclereides d. sieve tubes
- (7) The bordered pits are chiefly rounded with borders and the torus is best developing in:-
a. gymnosperms b. most monocots c. most dicots d. all the precedings
- (8) When a fiber cell neighboring a vessel, pits are
a. few b. numerous c. simple d. branched
- (9) Its pits have a funnel pit canal leading from the pit cavity into the cell lumen
a. tracheids b. bast fibres c. fibre tracheids d. vessels
- (10) Fibre cell retains protoplast and divided by cross wall into row of cells
a. fibre tracheids b. bast fibres c. septate fibres d. libriform fibres
- (11) Which of the following is not a function of xylem tissue:-
a. food storage b. water conduction c. supporting d. food conduction
- (12) Sieve areas with the larger pores and strands usually occur on the
a. end-walls b. lateral-walls c. radial-walls d. all the precedings
- (13) The vascular bundle with the xylem surrounded by outer and inner phloem is called:-
a. collateral b. bicollateral c. concentric d. radial
- (14) The phenomenon of water secretion as liquid water is called:-
a. transpiration b. guttation c. respiration d. evaporation
- (15) Long cell extending for long distances through the plant and contains many nuclei is:-
a. epidermal cell b. long cell c. sieve cell d. latex cell
- (16) The first protophloem are mostly long, live for
a. few days b. one year c. two years d. persist
- (17) When the dictyostele is amphiphloic called as:-
a. monostelic b. polystelic c. mixed protostele d. multiple protostele
- (18) The openings formed in the main stele due to formation of traces is:-
a. leaf gaps b. branch gaps c. leaf trace d. leaf & branch gaps
- (19) Leaf gaps not occur in :-
a. mosses b. gymnosperms c. monocots d. dicots
- (20) Formed of one layer of cells without intercellular spaces around the stele
a. ectodermis b. protoderm c. endodermis d. pericyclic fibres
- (21) Cambium that arises between the 1ry xylem and 1ry phloem is called:-
a. interfascicular b. intrafascicular c. intervacular d. primary
- (22) The trace that passes up vertically through the cortex breaks
a. after a year b. after 3 years c. quickly d. slowly
- (23) If the knots was formed and the branch was live, the knots are
a. loosely held b. tightly held c. divided d. all the precedings
- (24) Heartwood is more valuable than sapwood for the presence of
a. resins, tannins & oils b. tyloses & gums c. colouring materials d. all the precedings
- (25) In roots, phellogen usually originates from the
a. pellifrous layer b. cortex c. endodermis d. pericycle

- (26) In woody dicotyledons, cambium becomes inactive during autumn, the wood is called:-
a. winter wood b. summer wood c. sap wood d. heart wood
- (27) Protoxylem is directed inarch (metaxylem directed inwards) in:-
a. monocot stems b. dicot stems c. dicot leaves d. all the preceding
- (28) The stele of Luffa and Cucurbita stems is best called:-
a. amphiphloic dictyostele b. ectophloic siphonostele c. polystele d. monostelic plectostele
- (29) The outer layer of roots is called:-
a. endodermis b. epidermis c. hypodermis d. piliferous
- (30) The xylem alternate with phloem in:-
a. monocot stems b. dicot roots c. dicot leaves d. dicot stems

ونؤكد :- لضمان تصحيح اجابتك دون أخطاء يجب وضع الاجابة في جدول

Question no. 3 (21 marks)

- a. Write short notes on:- (12 marks, 3 marks each)
- Histogen theory and objections against it.
 - Types of sieve plates.
 - Solenostele and invasion theory.
 - Healing of Wounds.
- b. How is the collenchyma structure adapted to its function? (3 marks)
- c. Compare between 1ry phloem and 2ry phloem (in a table). (3 marks)
- d. Beside the T.s. of ...(a), identify each layer (3 marks)



Best Wishes
Prof. Momen Zareh



Final Examination



Phytogeography
Course No.: 341B
Time allowed: 2 hours

Department of Botany & Microbiology
50 Marks
First semester 2018/2019
3rd Level (Special Botany)

Answer the following questions:

Question 1:

8 x 1 = 8 Marks

A) Write the scientific term for each of the following:-

- 1- The migration and adjustment of a species are not adequate to meet the changing conditions.
- 2- An organism which is tolerant of a wide range of conditions.
- 3- Distribution of an organism or a species over a particular area of the biosphere.
- 4- Adhesion of diaspores to the surface of the moving animal body.
- 5- The species is distributed all over the globe.
- 6- The range between the minimum and maximum levels of an ecological factor.
- 7- The percentage of the number of endemic species in a flora of an area or region.
- 8- The definite number of organisms which a habitat can potentially support it.

B) What are the different filters the species have to pass through them to be observed in a defined vegetation?

6 Marks

Question 2:

- Describe three only of the following:

3 x 4 = 12 Marks

- a) Endemic areas.
- b) Warm deserts vegetation.
- c) Chaparral vegetation.
- d) Law of limiting factor.

Question 3:

- Compare between: (Answer three only)

3 x 4 = 12 Marks

- a) Center of abundance and center of variation.
- b) Dispersal and migration.
- c) Absolute relic and local relic.
- d) Savanna and Prairie grasslands.

Question 4:

Answer two only

2 x 6 = 12 Marks

- a) Why the population size of a species is low in a particular region.
- b) Discuss the principles of phytogeography concerning the plant responses.
- c) Account the barriers that hamper migration and dispersal.

Good Luck

Prof. Dr. Taha Ramadan

Answer All The Following Questions

(A) Define the following (5 marks):

- 1] LD₅₀ 2] Poison 3] Ergotism 4] non protein bacterial toxin
5] Estrogenic toxin

(B) Compare between each of the following (16 marks):

- 1) Botulinus toxins and Anthrax toxin (producer, occurrence, symptoms)
- 2) Neurotoxic Shellfish Poisoning and Paralytic Shellfish Poisoning (producer and toxicity)
- 3) Acute effects and chronic effects of mycotoxins
- 4) Detoxification of the aflatoxin B₁ by alkalis and acids treatment.

(C) Choose the correct answer (4 marks):

- 1- include saxitoxins and neosaxitoxins
(Anatoxins - Aphantoxins – Cytotoxins – Hepatotoxins)
- 2- *Escherichia coli* produces..... where plasma membrane is its target place
(perfringolysin O toxin - enterotoxins- hemolysin toxin - edema factor)
- 3- Roasting may cause reduction of aflatoxins in foods
(30-40% , 50-70% , 40-60% , 20-60%)
- 4- in cows decrease the milk production and milk fat.
(Trichothecenes – Aflatoxins – Citrinin - Fumonisin B₁)

(D) Write on each of the following (20 marks):

- 1) Metabolism of aflatoxin B₁ in liver cells
- 2) Summarize different mycotoxins control strategies.
- 3) Patulin (producers, occurrence, chemical and physical properties)
- 4) Control of cyanotoxins
- 5) Preparation of toxoids

(E) Answer each of the following with (X) or (√) (5 marks):

- 1- Altetoxin I and Altetoxin II give fluorescence bright green under UV light ()
- 2- The toxigenic strains that produce aflatoxins can produce kojic acid ()
- 3- Presence of propionic acid destroyed sterigmatocystin toxin in food ()
- 4- Ochratoxin A caused immunosuppression in animals ()
- 5- Zearalenone is hepatotoxic and nephrotoxic in all animal species tested ()



ANSWER THE FOLLOWING QUESTIONS

Q1. Choose the correct answer:

9 marks

1. Buscopan capsules are pharmaceutical preparation for
2. Volatiles oils that containing alcohol founds as in
3. When the drugs arranged according to their morphology, they will be divided into,,
4. Umbelliferous fruits yield a high percentage of volatile oils when growing in than in altitude.
5. Dioscorides in his book, gave the names of many drug plants from Egypt.
6. The main chemical constituents present in *Cyperus rotundus* are,
7. is replace starch as a reserved carbohydrate in the subterranean organs of the members of Compositae species.
8. The single crystals of calcium oxalate present in different forms such as:,
9. Starch can be used as a starting material for some industrial products such as
10. The book which contains a list of the official drugs is known as

Q2. Write briefly on 2 only of the following medicinal plants, mention the part used, chemical composition, pharmaceutical preparations and folkloric uses for each plant:

10 marks

- 1- *Ammi majus*
- 2- *Acacia nilotica*
- 3- *Silybum marianum*

Q3. Write the *source* and *use* of 3 only of the following substances:

15 marks

- 1- Morphine.
- 2- Physostigmine.
- 3- Pelletierine.
- 4- Thymol.

Q4. Write short notes on 4 only of the following:

16 marks

- 1- Pectin.
- 2- Diosmin and Hesperidin.
- 3- Cellulose.
- 4- Tannins.
- 5- Disadvantages of cultivation of medicinal plants.
- 6- Allelopathy, temperature, water, minerals and oxygen as factors affecting the variability of drug activity.

With My Best Wishes Dr. Ahmed Faried



Faculty of Science
Microbiology and Chemistry & Microbiology
Level Three



14-1-2019
Time: Two hour's
Code No.: 363B



Botany & Microbiology Department
Fungal physiology
Final examination (First Term)

Answer the following questions [Total 50 marks]

I. Discusses the following [5 marks].

1. Fungal metabiosis and its using on industrial scale.
2. Functions of the fungal cell walls and cytoplasm.

II. Complete the following statements [15 marks]

- 1 For vegetative growth of fungi numerous 1ry metabolites are building such as and
- 2 Some fungi growing at 30 °C as optimum point of temperature namedbut fungi growing in refrigerators namedand also fungi growing in high temperature and warm places named.....
3. The light intensity on fungal growth have many effect and classify intoand
4. Chitin is an.....monomers found infungi, cellulose is a monomers found infungi but the glucose amine consists thepolymers
5. When the light affect on fungi from one direction the response of zoospores namedbut the mycelial response named.....
6. Yeast growing at low pH ranged between namedbut the most fungal genera are growing at pH ranged between and named.....
7. Fungi growing on jams namedbut the fungi growing on salted fish named.....
8.growing in static incubator giveof growth but the cultures growing in agitated incubator give of growth.
9. Fungi digestive the complex and large molecules for another groups of organisms namedbut the fungi build many metabolites responsible about the complete other organism named.....for example and
10. The growth Co-factors is aand includes

Good luck,
Prof. Eman M. Mostafa

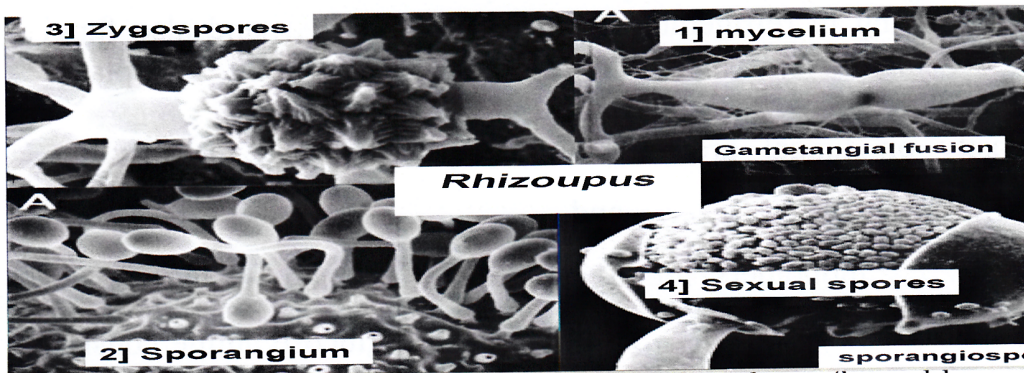
III. Count only TWO ONLY from the following [15 marks]

1. Factors affecting on the fungal growth [10 marks].
2. The phases of *Saccharomyces cerevisiae* growth curve (count and draw), and discusses the adaptation phase only [5 marks]..
3. Differences between fungal cell walls depend up on many factors [5 marks].

IV. Clearing the environmental stress responsible about the synthesis of THREE ONLY from the following metabolites [8 marks]:-

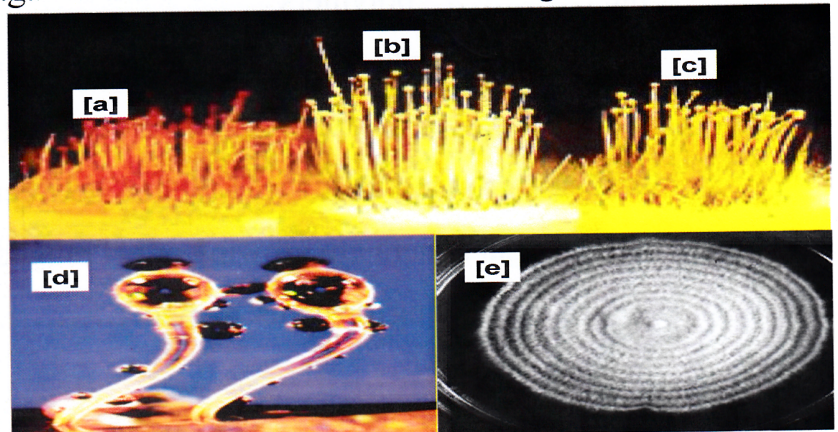
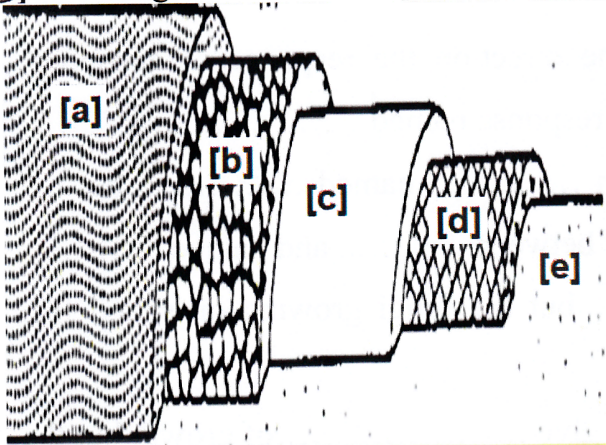
- [1] Antibiotics [2] Pigment [3] Sugar alcohols [4] Plant hormones

V. Identify the following figures [7 marks]:-



- 1]
2].....
3].....
4].....

1] Rearrangement the most parts defense against the unfavorable conditions & give the rezones



- 2]
a).....
b).....
c).....
d).....

- 3] Effect of
a).....
b).....
c).....
d).....
e).....

Faculty of Science Botany & Microbiology Department	  كلية العلوم قسم النبات والميكروبيولوجي
Food Microbiology (498 B) Time: Two hours Total degree: 50 marks	Summer semester exam - the academic year 2017/2018 Fourth Level Exam date: Monday, 03/09/2018

Part I

The first question: Write briefly about four only of the following: (20 marks)

- Clostridium botulinum* and Foodborne Illness
- The principles of Hazard Analysis Critical Control Points
- Important factors in microbial food spoilage
- Inhibition principle of food preservation
- Control of food spoilage by antimicrobial preservatives

The second question: give the scientific term for each of the following: (4 marks)

- the levels of gases in a storage facility are continually monitored and adjusted as required
- Radiation of foods to destroy vegetative food-borne pathogens. The dose level used is ca. 2.5 kGy to 5.0 kGy
- damage or injury to food rendering it unsuitable for human consumption.
- Many species have a wide host range. some are restricted to a single host species and causing abortion in ewes,

Good luck
 Dr/ Amal Danial

Part (2)

(A) Write on only four of the following questions. (20 Marks)

- 1- The effect of growth factors and inhibitors in food
- 2- The probability of food contamination by human and how to control that
- 3- The importance of filamentous fungi in food industry
- 4- Internal and external sources of microorganisms in foods of plant origin
- 5- Normal Microbiological quality of raw and ready-to-eat meat products

(B) Complete each of the following: (5 marks)

- 1- *Rhodotorula* sp is forming yeasts and cause of food such as Meat and fish
- 2- Coliforms are species from,, *Citrobacter* and *Klebsiella*. They are used as an index of sanitation.
- 3- Predominate microorganisms in birds are and
- 4- Dextran is an EPS produced by while growing in and used as a stabilizer in ice cream and confectioneries.
- 5- The suitable pH range of growth for molds is (.....to.....) and for yeasts (.....to.....)

Good luck

Dr/ Maysa M. A. Ali

Faculty of Science Botany and Microbiology Dept.		كلية العلوم قسم النبات والميكروبيولوجي
Biotechnical Analysis (B453) Course: Time: 2 hours Marks: 50 marks		Summer (2018/2019) Level: Fourth

Answer the following questions

First Question: Complete the following sentences (10 marks)

1. Gradient elution is.....
2.buffer suitable for gel permeation and cation-exchange chromatography.
3. Factors affecting buffer pH are..... and
4. Centrifuge Components are.....and
5. Chromatogram is.....
6. The eluate is.....
7. Thechromatography used when different substances have very similar R_f values.
8. The advantage of TLC in compared to PC, itand.....
9. A bonded phase is.....
10. Retention time is

Second Question: Write in details about (only ten) of the following:- (40 mark)

1. Flame Photometer .
2. Components of HPLC.
3. Henderson-Hasselbalch equation.
4. Five types of cell lysis techniques.
5. Spectrophotometer and uses.
6. Types of centrifuge rotors.
7. Five types of immunoassay tests.
8. Different Types of chromatography (four types).
9. Paper chromatography using a non-polar and polar solvent.
10. Factors affecting column efficiency (six factors).
11. Single and double beam spectrophotometer.

Good luck

Dr/ Eman Aldaby