Faculty of Science Botany& Microbiology Department		كلية العلوم قسم النبات والميكروبيولوجي
Food Microbiology (498 B) Time: Two hours Total degree: 80 marks	Second semester exam - the academic year 2019/2020 Fourth Level Exam date: Monday, 20/07/2020	

Answer all the following questions:

part 1

Question 1: Choose the correct answer from the following (put your answer in table) **(35 marks)**

1. **Does reducing the pH of food lower the chances of food spoiling?**
   a. No b. Yes

2. **What is common food borne illness that is identified from coming from under cooked poultry?**
   a. *Nitrospira* b. *Salmonella* c. *Aquificae*

3. **A _____ is an illness transported to people by food.**
   a. Foodborne Illness b. Contamination c. Pathogen d. Microorgansim

4. **Where can food contamination occur?**
   a. Harvesting b. transporting c. cooking/serving d. All of the Above

5. **The deterioration in the color, flavor, odor, or consistency of a food product is**
   a. Food contamination b. Food poisoning c. Food spoilage

6. **There are two main causes of food spoilage are natural decay and action of microorganisms.**
   a. True b. False

7. **All microorganisms are bad. [ex. Parasites, viruses, yeasts, molds]**
   a. False b. True

8. **If you have a cut on your hand, you should wear a glove while cooking**
   a. True b. false

9. **You can usually tell from a food's taste, odor, or appearance if that food poses a risk for food-borne illness.**
   a. True b. False

10. **Bacteria grows with food and moisture over time and some need oxygen.**
   a. True b. False

11. **Freezing temperatures _____.**
   a. retard the action of bacteria and mold
   b. destroy microorganisms
   c. prevent microorganisms from growing
   d. destroy enzymes

12. **What must be removed to stop the spoiling action of microorganisms?**
   a. Moisture. B. Favorable temperatures. C. Food. D. All of the above.

13. **Anything that causes disease:**
   a. Bacteria b. pathogens c. mold d. microorganisms

14. **Most people will not experience a food-borne illness in their lifetime.**
   a. True b. False

15. **The most common symptom of food-borne illness is:**
   a. kidney failure b. diarrhea c. skin rash d. headache

16. **Sugar and salt act as preservatives by:**
   a. killing microorganisms directly
   b. increasing the water content of food
   c. increasing the acid content of the food
   d. binding water so it is not available for microorganisms

17. **Food irradiation to preserve foods is dangerous and outlawed by the government.**
   a. True b. False

18. ***Salmonella* infection usually results from undercooked meat.**
   a. True b. False

19. **Symptoms of *Salmonella* poisoning include respiratory failure.**
   a. True b. False

20. The best way to treat food-borne illness is with:

a. bedrest
b. plenty of fluids
c. exercise to "burn out" the microorganisms
d. first and second answers only

21. In the fermentation process, microorganisms produce_____ which inhibit the growth of harmful microorganisms.

a. alkali and acid b. acid and alcohol c. alcohol and alkali d. water

22. Hepatitis A can cause liver damage.

a. True b. False

23. Separate cooking boards should be used for cutting raw meat, poultry, fish vs raw vegetables and fruits.

a. True b. False

24. The process of heating milk to kill pathogenic microorganisms is called:

a. Sterilization b. pasteurization c. irradiation d. none of the above

25. Freezing kills microorganisms.

a. True b. False

26. HACCP is designed to detect food hazards in a food industry facility.

a. True b. False

27. The two parts of HACCP include:

a. hazard analysis and critical control points
b. health analysis and critical control points
c. hazard analysis and critical conformation production
d. health analysis and critical conformation production

28. What illness is caused by ingesting food containing preformed microbial toxins?

a. Food poisoning b. Food infection c. A vehicle d. Pathogen overload

29. What is food safety?

a. The handling, preparation, and storage of foods in ways which prevent foodborne illness
b. Being safe around food
c. Hiding from the food so it doesn't kill you
d. Being careful around food

30. Partially cooking food and finish cooking later is a safe way to destroy bacteria.

a. True b. False

31. Bacteria grow best in foods that have a pH range of

a. 1 – 14 b. 2.5 - 4.6 c. 4.6 - 7.5 d. 7 - 8.2

32. Which of the following bacteria does not need oxygen to survive and grow?

a. *Salmonella* spp.
b. *Bacillus cereus*
c. *Listeria monocytogenes*
d. *Clostridum botulinum*

33. What are the most common symptoms of food poisoning?

a. Nausea and vomiting b. Constipation c. Joint pain d. Headache

34. Foods that are commonly associated with food poisoning include...

a. Fruits and vegetables b. Raw meats c. Eggs d. All of the above

35. Possible treatments for food poisoning may include which of the following?

a. Antidiarrheal drugs b. Antibiotics c. Fluids d. All of the above

Part II

Question 1: Put true (√) or false (×) only without correction in front of each statement (put your answer in table) final and mid exam (35 marks, one for each)

1	Food microbiology studies all foods that harbor one or more types of microbes except a few sterile foods.	
2	Bacteria are important pathogens in food because they can grow in low pH, low water activity and high osmotic pressure.	
3	*Alternaria* sp. associated with rot disease in citrus fruits, potatoes, grains and produce mycotoxins.	
4	Butyric acid bacteria produce relatively large quantities of lactic acid from carbohydrates.	
5	*Zygosaccharomyces* sp. cause spoilage of high acid foods such as ketchups, pickles, mustards, and mayonnaise.	
6	Thermoduric bacteria are able to survive in pasteurization temperature.	
7	Enteric pathogens including *Salmonella* sp., *Shigella* sp., and *Vibrio* sp. can cause human gastrointestinal infection.	
8	Aciduric bacteria like *Lactobacillus* sp., *Enterococcus* sp. and *Streptococcus* sp. are that able to survive at pH lower than 4.	
9	Osmophilic bacteria produce slime as they synthesize polysaccharides.	
10	Various spices generally have low populations of molds and bacterial spores.	
11	*Geotrichum* sp. is common contaminant of dairy products.	
12	Plants produce natural antimicrobial metabolites that can decrease the presence of microbes.	
13	Each microbial species has an optimum, maximum, and minimum A_w level for their growth.	
14	Vegetables have microbial total counts 1000–100000 microorganisms/cm^2.	
15	Egg shellcan have 2 million bacteria, however pasteurization can reduce the numbers to 200/ml.	

16	Flours and starches products may have microbial aerobic plate count of 10^{2-3}/g, coliform of$<10^{1-2}$/g, and yeasts & molds of $<10^{1-2}$/g	
17	Bottled water should contain more than 10 to 100 bacteria and >10 coliforms/100 ml.	
18	Fruit juices have different types of alkaliphilic molds, yeasts and lactic acid bacteria.	
19	The A_w of food ranges from ca. 0.5 to 0.99.	
20	Normally, raw milk contains microbial total counts <1000 microorganisms/ml.	
21	Grade A pasteurized milk can have standard plate counts of 20,000/ml and ≤10 coliforms/ml.	
22	Ground meat can have microbial total counts 100-1000 microorganisms/gram.	
23	Psychrophiles grow at cold temperature, with optimum at 30°C and range –5 to 20°C.	
24	*Streptococcus thermophiles,* implicate in ripening and flavor production of some cheeses as secondary cultures.	
25	*Penicillium camembertii* is used in Camembert cheese and *P. caseicolum* is used in Brie cheese.	
26	Fin-fish and crustaceans can have 100–1000 million bacterial cells/g.	
27	Few foods like clams and egg albumen have pH lower than 7.	
28	*Aspergillus niger* is used to produce citric acid and gluconic acid from sucrose.	
29	*Saccharomyces cerevisiae* used to leaven bread and produce alcohol, inverses and enhanced the food flavor.	
30	Fresh foods of plant and animal origin are in oxidized state as the presence of reducing sugars, and –SH group of proteins.	
31	The pH range for molds growth is 1.5 to 9.0 and for yeasts, 2.0 to 8.5.	
32	*Bifidobacterium* sp. ferment glucose to lactic and acetic acids without producing CO_2	
33	Microbes have been grouped as aerobes, anaerobes, facultative anaerobes, or microaerophiles	

34	*Lactococcus lactic* capable of hydrolyzing lactose, casein, and ferment galactose, sucrose and maltose.	
35	Thermophiles microorganisms grow at 45 to 70°C, with optimum temperature 55°C.	

Question 2: Put true (√) or false (×) only without correction in front of each statement (<u>put your answer in table</u>) oral exam (10 marks, one for each)

1	*To stop bacteria from spreading, wash counters, cutting boards, and utensils before handling raw foods.*	
2	*Freezing food inhibit bacteria growth and kills them.*	
3	*Children, pregnant women, elderly, and chronically ill = most at risk from foodborne illness*	
4	*You can usually tell from a food's taste, odor, or appearance if that food poses a risk for food-borne illness*	
5	*Time are one of the aspects that can adjust the rate in which food spoils.*	
6	*Streptococcus thermophilus* could not ferment galactose and sucrose.	
7	*Rhodotorula* species are pigment forming yeasts cause discoloration of meat and fish products.	
8	*Kluyveromyces marxianus* has been used to produce SCPs, while *Candida utilis* can hydrolyze lactose and produce ethanol and β-galactosidase (lactase).	
9	Proteolytic bacteria are able to hydrolyze triglycerides because they produce extracellular lipases.	
10	*Acetobacter aceti,* is used to produce acetic acid from alcohol as obligate aerobes.	

With our best whishes

Dr. Amal Danial **Dr. Ghada Abd-Elmonsef Mahmoud**

Assiut University
Faculty of Science
Botany& Microbiology Department

Second Semester: July 2020
The time allowed: 2 hours
Total marks: 70 +10 Marks
Course Code: Symbiosis Microbiology (B496)

Q1: True (√)-False (X) Questions (45 marks)(30 questions)

1. Facultative mycorrhizal plants can derive their nutrients from the soil when soil phosphorus levels are high and are not solely dependent on mycorrhizae for phosphorus or other nutrients.	( )
2. Hartig net in ericoid mycorrhiza provides the intimate contact between the mycorrhizal partners.	( )
3. For Orchid mycorrhizae species identification, mantle colour and surface features such as whether the mantle is smooth, warty, cottony, or spiny are used.	( )
4. Monotropoideae plants are able to fix carbon by themselves.	( )
5. Non-mycorrhizal plants belonging to the families Amaranthaceae, Brassicaceae and Caryophyllaceae.	( )
6. Appressorium is fungal hyphal tip enlargement that attaches to the soil particles.	( )
7. Sources of fungal hyphae that attach to plant root surface are either germinating spores or hyphae that grow from colonized root pieces left in the soil.	( )
8. In *Arum-type* AM arbuscules, thick coiled hyphae spread intracellularly.	( )
9. Foliose lichen is characterized by flattened leafy thalli, and an upper and lower cortex.	( )
10. Vesicles are important storage structures and they may act as propagules for the fungus.	( )
11. Only the algal partner in lichens reproduces sexually and the most common reproduction structure is apothecia.	( )
12. The asymbiotic stage is referred to as the resting stage of the AM fungal cycle.	( )
13. Orchid mycorrhizas are mutualistic symbioses, and the fungus benefits from the association.	( )
14. Arbuscular mycorrhizas were formerly classified in the phylum Glomeromycota.	( )
15. The bulk of the lichen's body is formed from filaments of the fungal partner.	( )
16. Competition is an interaction between organisms or species in which both the organisms or species are harmed.	( )
17. Ectendomycorrhizae have a thin mantle and intracellular penetration into root cortical cells.	( )

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18. Plants colonized by ericoid mycorrhiza are often perennial shrubs or small trees with sclerophyllous leaves.	( )
19. The algal partner in lichens protects the fungi by retaining water, serving as a larger capture area for mineral nutrients.	( )
20. Most fungal species involved in the ectendomycorrhiza symbiosis belong to families in the Ascomycotina and Basidiomycotina.	( )
21. Arbutoid mycorrhizas have a mantle, and intracellular hyphae forming Hartig net.	( )
22. The inability of non- mycorrhizal plants to support mycorrhizal colonization may be due to the accumulation of antifungal compounds in the roots which fail to elicit differential hyphal branching.	( )
23. Parasitism is a form of living association in which two organisms that are phylogenetically different (unrelated) and one of them benefits while the other is harmed.	( )
24. Symbiosis refers to the members of two different species having some sort of mutualistic ecological interaction that affects both populations.	( )
25. Rhizobia are a paraphyletic group that fall into one class of the proteobacteria —the alpha-proteobacteria.	( )
26. The root hair of legume plants becomes deformed and curls at the tip in response to nod factors.	( )
27. Biological nitrogen fixation is the reduction of atmospheric nitrogen gas (N_2) to ammonium ions (NH_4^+) by the oxygen-sensitive enzyme, asparaginase enzyme.	( )
28. Bacteriods fix nitrogen which is transferred to plant cells in exchange for fixed carbon in the form of glucose.	( )
29. *Rhizobium meliloti* colonizes alfalfa root plants.	( )
30. In *Gunnera* symbiosis with *Nostoc*, the cyanobiont is held intracellularly and the filaments are surrounded by host cytoplasm.	( )

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Q2: Multiple True Choice: (25 marks) (25 questions)

1. Lichens can grow on ..... and can disintegrate it to help in soil formation.
   a) Rocks
   b) Trees
   c) Soil
2. .....lichens growth form growing on substrate surfaces.
   a) Endolithic
   b) Epilithic
   c) Apothecia
3. The structure of fruticose lichens depends on their .....
   a) Fungal partner
   b) Thin algal layer
   c) Outer cortex
4. Foliose lichen is characterized by ..... thalli, and an upper and lower cortex.
   a) Rhizines
   b) Shrubby
   c) Leafy
5. ..... run towards and along root surfaces establishing new entry points.
   a) Infective hyphae
   b) Extraradical hyphae
   c) Reproductive hyphae
6. The genus ..... do not form intraradical vesicles.
   a) *Glomus*
   b) *Scutellospora*
   c) *Acaulospora*
7. The mass of cells that are produced when orchid seed germinates
   a) Protocorm
   b) Pelotons
   c) Hyphal coils
8. The monotropoid mycorrhizas have.....
   a) Mantel, Hartig net and limited intracellular penetration
   b) Mycelial sheath and Hartig net
   c) Fungal pegs
9. The fungi that form arbutoid mycorrhizae relationships are.....
   a) Ascomycetes
   b) Basidiomycetes
   c) Saprotrophic

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10. Commensalism is a relationship between two organisms where one organism……
    a) Benefits
    b) Harmed
    c) Mutually
11. The development of hyphae between root cells in ectendomycorrhizae to form a complex highly branched structure called……..
    a) Hartig net
    b) Arbuscules
    c) Mantel
12. ……..fungi can be characterized by presence of a thin mantle and intracellular penetration into root cortical cells.
    a) Orchids
    b) Ectomycorrhizal
    c) Ectendomycorrhizal
13. Plants colonized with ericoid mycorrhiza are often perennial shrubs or small trees with….
    a) Green leaves
    b) Terminal buds
    c) Sclerophylls' leaves
14. Monotropoid fungal peg forms from ……..that enters the plant root cell through the outer tangential wall.
    a) inner mantle hypha
    b) intercellular hypha
    c) hyphal coils
15. A myco-heterotroph is the …… ……partner in symbiotic relationship.
    a) Fungi
    b) kind of cheating
    c) Parasitic plant
16. The intraradical hyphae of AM fungi are surrounded by the ……
    a) Trehalose
    b) host plasma membrane
    c) Nutrients
17. The most important character in fruticose lichen is……
    a) The fungal layer
    b) The continuous algal layer
    c) Circumference of the branches
18. The hyphae of Hartig net are……
    a) Multinucleate & coenocytic
    b) Uninucleate & coenocytic
    c) Septate & multinucleate

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19. Genus …….. can form ectomycorrhizae.
    a) *Glomus*
    b) *Endogone*
    c) *Wilcoxina*
20. Ericoid mycorrhizal fungi can protect their hosts from ……
    a) Heavy metals
    b) Nutrients
    c) Plant diseases
21. Nitrogen fixation can occur by free-living……
    a) Frankia spores
    b) Rhizobia
    c) Frankia vesicles
    d) None of these
22. Bacteriods fix nitrogen which is transferred to plant cells in exchange for carbon from plant in the form of ……
    a) Glucose
    b) Galactose
    c) Malate
    d) Citrate
23. Stem nodules was observed primarily with tropical legumes in association with ……
    a) *Rhizobium meliloti*
    b) *Rhizobium phaseoli*
    c) *Azorhizobium caulinodans*
24. The substrate produced by rhizobial bacteria and responsible for attachment process
    a) Nod factor
    b) rhicadhesin
    c) Leghemoglobin
25. **An oxygen-binding heme protein that help transport only enough oxygen to the respiring symbiotic bacterial cells**
    a) Nod factor
    b) Rhicadhesin
    c) Leghemoglobin

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أسئلة الأمتحان الشفوي (10 درجات):

Oral Exam Questions (10 marks) (10 questions)

True (√)-False (X) Questions

1. Obligate mycorrhizal plants are solely dependent on mycorrhizal fungi for their phosphorus nutrition.	( )
2. Hartig net hyphae are multinucleate, coenocytic, and contain numerous mitochondria as well as extensive rough endoplasmic reticulum.	( )
3. All orchids are mycoheterotrophic at some point in their life cycle.	( )
4. The symbiotic stage in mycorrhiza life cycle refers to the penetration and development of arbuscules in the cortex of roots.	( )
5. Vesicles can develop from the tip of fungal hyphae or from lateral branches	( )
6. Extraradical reproductive hyphae are developed spores after colonization of roots.	( )
7. Asexual reproduction in lichen as a small outgrowth of the thallus is called Isidia.	( )
8. When bacterial cells fail to form the peribacteroid membrane in plant cells results in the formation of ineffective nodules.	( )
9. Infection of legume roots by nitrogen-fixing bacteria leads to increasing of soil fertility.	( )
10. Bacteria are chemotactically attracted toward plant root through flavonoids exuding from plant root tissue, especially in response to nitrogen limitation.	( )

With My Best Wishes

Dr. Nivien Allam Nafady

Dr Elhagag Ahmed Hassan

Assiut University
Faculty of Science, Botany and Microbiology Department
Second Term Examination: 2019 – 2020

Fourth Level : Special Botany
Subject : Secondary Plant Metabolism (452b)
Time Allowed: 2 hours

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First question : Write on :20 marks

a- Secondary carobon metabolism .
b- Mevalonic acid pathway of the synthesis of 5-C units of terpencs from acetyl-CoA.

Second question : - Read carefully and choose the write answer and write in your paper for at least 20 question : 50 marks

1- Organic compounds produced by some plants of certain genera and families which are not in manistream of metabolism and appear to have no direct function in growth and development of plants and appear to have no

direct function in growth and developmentof plants are called as,

(a) secondary metabolites (b) secondary plant products

(c) natural products (d) all of above

2. Which of the following are not examples of secondary plant products?

(a) Fats and hemes . (b) Alkaloids

(c) Lignins and tannins (d) Essen ial oils, steroids and rubber

3. Secondary plant products are of great importance in commence in making,

(a) medicinal drugs (b) poisons (insecticides)

(c) flavours and perfumes (d) all of above

4- Which of the following organic compounds are not plant phenolics?

(a) Lignins (b) Tannins (c) Essential oils (d) Flavonoids

5- Which of the following pathway is not involved in secondary carbon metabolism in plants?

(a) Mevalonic acid pathway (b) Pentose phosphate pathway

(c) Malonic acid pathway (d) Shikimic acid pathway

6- The fundamental 5-C unit of terpenoids (i.e., isoprene) has,

(a) branched carbon skeleton (b) unbranched carbon skeleton

(c) ringed carbon skeleton (d) none of the above

7- Sesquiterpene contains,

(a) 10 carbons (b) 15 carbons (c) 20 carbons (d) none of the above

8--,. Isoprene units are synthesized ill plants from acetyl-CoA through,

(a) malonic acid pathway (b) shikimic acid pathway

(c) mevalonic acid pathway (d) all above

9 -Which of the following statements is not correct?

(a) All organic compounds containing nitrogen and heterocyclic ring are alkaloids

(b) Alkaloids are bitter in taste and soluble in most of organic solvents

(c) Most alkaloids are colourless, crystalline non-volatile solids and are optically active

(d) Many alkaloids exhibit important pharmacological properties.

10 -Which of the following alkaloids does not contain nitrogen in heterocyclic ring?

(a) Narcotine (b) Ephedrine (c) Morphine (d) Quinine

11 -In plants, alkaloids usually accumulate in,

(a) young actively growing parts (b) epidermal and hypodermal cells

(c) bundle sheaths and latex vessels (d) all of above

12 - In tobacco plant, nicotine is synthesized in,

(a) leaves (b) stems (c) roots (d) all of above

13 - An alkaloid which is known to inhibit mitotic spindle formation in cells is,

(a) colchicine (b) coniine (c) quinine (d) none of the above

14 - which of the following alkaloids is not synthesized in opium poppy?

(a) Morphine (b) Thebaine (c) Codeine (d) Atropine

15 - An example of indole alkaloids is,

(a) pilocarpine (b) reserpine (c) papaverine (d) all of above

16 - Approximately how many alkaloids have been isolated from plants so far?

(a) 500 (b) 1000 (c) 2000 (d) 3000

17 - Terpenoid containing alkaloids (sterol alkaloids) occur in plants in combination with.

(a) Carbohydrates (b) Proteins (c) both (a) and (b) (d) none of the above

18 -Most important function of alkaloids in plants appears to,

(a) act as growth hormone (b) provide protection against predators

(c) to attract animals for pollination (d) none of the above

19 --Which of the following is not a phenolic compounds?

(a) Lignins and tannins (b) Flavonoids

(c) ,Coumarins (d) None of the above

20 - Except flavonoids, all other plant phenolics are biosynthesized in plants through,

(a) malonic acid pathway (b) mevafonic acid pathway

(c) shikmic acid pathway (d) none of the above

21 - In plants, flavonoids occur as glycosides that are soluble in water and are mostly,

(a) coloured (b) colourless (c) red co loured .. (d) yellow coloured

22 - Flavonoids mostly accumulate• in,

(a) cytosol (b) chloroplast (c) chromoplast (d) vacuole

الشفوى : 10 درجات

Read carefully and choose the write answer and write in your paper

1 - The basic carbon skeleton of flavonoid is,

(n) C6 – C3 – C6, (b) [C6 – C3 – C6]n (c) [C6 – C3]n (d) c6, - C2 – C6

2 - How are flavonoids synthesized in plants?

(n) By mevalonic acid pathway (b) By malonic acid pathway

(c) By shikimic acid pathway (d) by both (a) and (b)

3 - Primary function of lignin• in plants is,

(a) to provide mechanical support to plant

(b) to provide protection from physical, chemical and biological attack

(c) both (a) and (b) (d) none of the above

4 - The basic carbon skeleton of lignin is,

(a) C6 – C3 - C6 (b) (C6 – C3)n (c) (C6)n (d) (C6 – C3 - C6)n

5 - Flavonoids are phenolic compounds that contain,

(a) 15 - C (b) 10 - C (c) 30 - C (d) none of the above

GOOD LUCK Prof.Dr. M. A. ZIDAN

Assiut University Faculty of Science Botany & Microbiology Dept.		جامعة أسيوط كلية العلوم قسم النبات والميكروبيولوجى

Micerobial Ecology (494B)	Final exam (13/07/2020)	Time: 2 hours

1- Put (√) or (×) in front of the following sentences: - (60 Marks)

1. Chronic granulomatous disease is caused by the *Mycobacterium marinum* infection and localized in skin, frequently occurred with aquarium keepers. ( )
2. Termites decompose cellulose and hemicellulose by diverse community of aerobes. ( )
3. Allochthoneus are foreign bacteria abundant in polluted surface water such as Sulphur purple green bacteria. ( )
4. Binal virus is A virus that has complex combinations of helical and polyhedral forms. ( )
5. *Plasmodium gametocyte* protozoa cause malaria disease. ( )
6. Parasitism is a widespread phenomenon where the predator engulfs or attacks the prey. ( )
7. Anaerobic bacteria dominate in the rumen of ruminant animals. ( )
8. Mycoplankton are fungi and fungus-like organisms, which also are significant in nutrient cycling in water bodies. ( )
9. Viruses are extracellular obligate parasites. ( )
10. Coliforms- refer to the various genera of the family Enterobacteriaceae which are maltose fermentors. ( )
11. The influenza virus and rhinoviruses are spread by sneezing; such viral infections are much more likely to spread in overcrowded conditions. ( )
12. In animals and humans virus infected cells release proteins called interferons which make the cells around them more resistant to attack by viruses. ( )
13. Parasitism is one of abiotic factors affecting the growth of microorganisms in water. ( )
14. Oligotrophic water trophicity is characterized by high nutrient concentrations and high microbial richness. ( )
15. Viruses cause serious diseases in animals such as hepatitis, polio, influenza and AIDS. ( )
16. Phytoplanktons are autotrophic, prokaryotic or eukaryotic algae that live near the water surface. ( )
17. Cholera is caused by *Vibrio cholera* with symptoms severe diarrhea, vomiting and muscle cramps. ( )
18. Spore formers as *Clostridium perfringens* are indication of recent fecal contamination. ( )

19. Helical virus consisting of nucleic acid surrounded by a hollow protein, multi-sided capsid. The most common polyhedral form is the icosahedron. ( )
20. Light is harmful to those microorganisms which are devoid from pigments. ( )
21. Many organisms that adapted to deep-water pressure can survive in the upper parts of the water column. ( )
22. Bacterioplankton, play an important role in remineralising organic material downs the water column. ( )
23. The polio virus attacks the motor neurones and the central nervous system causing lifelong paralysis or death. ( )
24. Rotaviruses affect mainly infants and young children. ( )
25. The periphyton is also an important indicator of water quality; responses of this community to pollutants can be measured at a variety of scales representing physiological to community-level changes. ( )
26. Bacteria present in water habitats may be divided into Autochthonous and Allochthonous bacteria. ( )
27. Hepatitis A virus (HAV), is a small, unenveloped RNA virus and this virus transmitted by fecal-oral route by ingestion and intestinal infection. ( )
28. Typhoid *disease* causes a severe diarrhea (white rice); Loss of 20 L/day; Vomiting and muscle cramps. ( )
29. Virions are unable to make copies of them and they must infect a living host cell in order to make more copies of themselves. ( )
30. The capsid is the fat coats that envelope the virus particles. ( )
31. Persons may be infected by microorganisms through drinking contaminated water, or by direct or hand-to-mouth transfer of the bacteria from feces or contaminated surfaces. ( )
32. Bacteriophages are viruses that infect bacteria. ( )
33. Coliforms are facultative anaerobe, Gram negative, non-spore forming, rod shaped, Ferment glucose, produce gas and acid within 48 h at 35 °C and ferment lactose. ( )
34. Synergism is the relationship in which both populations benefit from the relationship and this association is obligatory. ( )
35. *Giardia intestinalis* causes diarrhea. ( )
36. Predation occurs when one population produces a substrate inhibitory to another population. ( )
37. Rumen microbes are perform fermentation process by cellulolytic microbes that hydrolyze cellulose to free glucose that is then fermented, producing volatile fatty acids (e.g., acetic, propionic, butyric) and CH_4 and CO_2. ( )
38. Competition occurs when two populations are striving for the same resource of nutrients or the habitat. ( )

39. **In synergism, both populations are capable of surviving independently.** ( )

40. **Commensalism is a bidirectional relationship between populations in which two population benefits.** ( )

2- Choose the correct answer: (10 Marks)

1. **A complex mixture of algae, cyanobacteria, heterotrophic microbes, and detritus that is attached to submerged surfaces in most aquatic ecosystems. They usually present in the shore line zone.**
   a. Periphyton b. Benthos c. Planktons
2. ***Strepococcus pyrogenes* causes**
   a. strep throat disease b. malaria disease c. infantile diarrhea
3. **Photoautotroph, chemoautotroph, chemoorganoautotrophs native bacteria in water ecosystems, such as Heliobacteria; Nitrifying bacteria; Ferruginous bacteria and Sulfuric bacteria**
   a. Allochthonous bacteria b. Autochthonous bacteria c. Pathogenic bacteria
4. **The envelope of enveloped virus particles is usually derived from a host cell membrane by**
   a. Budding b. Fragmentation c. Both a, b
5. **The causal agents for amebic dysentery, malaria, and African sleeping sickness.**
   a. Protozoan infections b. Fungal infections c. Bacterial infections
6. **Sleeping sickness is caused by**
   a. *Trypanosoma brucei* b. *Plasmodium gametocyte* c. *Giardia intestinalis*
7. **Botulism is gastro-intestinal food/water borne caused by**
   a. *Vibrio cholera* b. *Salmonella typhi* c. *Clostridium botulinum*
8. **Biological methods for water treatment includes**
   a. Biodegradation b. Biosorption c. Both a & b
9. **Microorganisms that decompose dead leaves, twigs and animals and return nutrients to the soil using enzymes.**
   a. Decomposers b. Autotrophs c. Both a & b
10. **Spore formers indicate for old fecal contamination**
    a. *Clostridium perfringens* b. *E. coli* c. *Streptococcus*

Good Luck

Prof. Dr. Mohamed Hemida Abd-Alla **Dr. Elhagag Ahmed Hassan**

Assiut University Faculty of Science Botany & Microbiology Dept.		جامعة أسيوط كلية العلوم قسم النبات والميكروبيولوجى
Microbial Ecology (494B)	**Oral exam (13/07/2020)**	

1- Choose the correct answer: **(10 Marks)**

1. **Spore formers indicate for old fecal contamination**
   a. *Clostridium perfringens* b. *E. coli* c. *Streptococcus*
2. **The causal agent for poliomyelitis**
   a. Polio virus b. Rota virus c. Hepatitis B
3. **Physical methods for water treatment includes**
   a. filtration b. precipitation c. both a & b
4. **Organisms that obtain energy by the oxidation of electron donors in their environments**
   a. Chemoautotrophs b. Photoautotrophs c. Both a&b
5. **Bacterial communities that are considered as foreign communities and are abundant in waters of high fertility and polluted surface waters.**
   a. Allochthonous bacteria b. Autochthonous bacteria c. pathogenic bacteria

Good Luck

Prof. Dr. Mohamed Hemida Abd-Alla **Dr. Elhagag Ahmed Hassan**

Botany and Microbiology Department

Final Exam. For Students of the Fouth Level

Second Semester: 2019/2020 Xerophytes and Halophytes (B432) Time : 2 hours

Answer on the following Questions:(50 Marks)

I- Choose the correct answer :(15 Marks)

1- Leaves are reduced to spines in: a-succulents b-cacti c-true xerophytes.

2-Root system is very well developed in: a-xerophytes b-helophytes c- halophytes.

3- Stomata present in pits are called: a-hydathodes b-surface c-sunken

4- Plants tolerate dehydration are called: a-resurrection b-cactus c-succulent ..plants

5- Physiological dry habitats are inhabited by: a-xerophytes b-halophytes c-cacti

6- Halophytes in the tropical regions are: a- herbaceous b-shurbs c-trees

7- Cryno-halophytes that: a- excrete b-accumulate c- not permeable .....salts

8- Example of Succulent halophyte is: a- *Salicornia* b- *Limoniastrum* c- *Juncus*

9- Seed germination in mangrove plants is: a- epigeal b- hypogeal c-vivipary

10- UV-absorbing molecules means: a- flavonoids b-proteins c-resins

11- In temperate zones, halophytic vegetation is: a- trees b-shurbs c- herbs

12- Pneumatophores are develop from: a- roots b-stems c- leaves

13-Sodium accumulation is harmless on: a- hydrophytes b-helophytes c- halophytes

14- Protoplasm is less viscous in: a-glycophytes b-hydrophytes c-xerophytes

15-Bicmass decreased with increasing salinity in:

a- obligatory b- facultative c. halo-phobous .... halophytes

II- Put the symbol (√) or (×) on the followings: (35 Marks)

1-Resurrection plants stay alive because they tolerate severe dehydration ( ).

2- Xeromorphism means adaptation of xerophytes grown in dry habitats ( ).

3- Plant reflectivity a color of plant which serve to reflect sunlight ( ).

4-Food storage in swollen parts of the plant is known as succulence ( ).

5-Phylloclades leaf-like stems of halophytes covered with spines ( ).

6 -Cactus plants store a little of water ( ).

7-HS proteins are synthesized in cells as a response to water stress ( ).

8- Stomata confined to lower epidermis of leaf are called epistomatous ( ).

9- Preferential halophytes show optimum growth in saline habitats ( ).

10-Cork warts are dotted with local cork formation in mangrove leaves ( ).

11- Xerophytes develop many shallow normal roots ( ).

12- Shrubs appearance is dome-shaped due to their racemose branching ( ).

13- Obligatory halophytes plants that grow only in saline environments ( ).

14- Flavonoids are UV-absorbing and act like sunscreen for the plant. ( ).

15- During dry times, xerophytytes may stop growing and go dormant ( ).

16- Excessive accumulation of sodium is harmful for halophytes ( ).

17-Ephemerals have long life cycles ( ).

18-Endodermal cells in xerophytes have silica crystals ( ).

19-Water adsorbed by colloidal particles is Bound-water ( ).

20-Arctic Plants are drought resistant plants under hot conditions ( ).

21- Xerophytes leaves are covered with silvery hairs. ( ).

22-Adaptations of xerophytes reduced permeability of epidermal cells ( ).

23-Non-Succulent Perennials are called true xerophytes ( ).

24-Succulents accumulate large amounts of water during dry season ( ).

25- Cactaceae species have stems that are round and store a lot of water. ( ).

26-Plants may drop their leaves in times of dryness ( ).

27- The rate of seed germination is reduced in xerophytes ( ).

28--Root hairs are very well developed in halophytes ( ).

29-Helophytes are stunted, woody hard and covered with thick bark ( ).

30--Lamina in halophytes may be divided into many leaflets ( ).

31-Mechanical & vascular tissues in xerophytes are well developed ( ).

32--The osmotic potential in halophytes is higher than that in xerophytes ( ).

33-Xerophytes have greater potentiality to resist wilting ( ).

34--UV rays cannot cause damage to plants, and lead to DNA mutations. ( ).

35-Flavonoids are UV-absorbing and act like sunscreen for plants. ( ).

36-As temperature increases, the HSP protein expression also increases ( ).

Oral Exam.

-Make a correct sentence from column (A) and column (B): (10 Marks)

Colum (A)	Colum (B)
1- Arctic Plants	( ) covered with tiny hairs is called tomentose.
2-Ephemerals	( ) refers to secretion of resins and waxes by Plants
3-True xerophytes	( ) have silica crystals in xerophytes.
4-Succulents	( ) activated in more severe stress conditions.
5-Cacti leaves	( ) reflects light and heat.
6- Plant surface	( ) live under conditions when the ground is frozen.
7-Shiny glazed leaf	( ) have fleshy and swollen organs.
8-Epidermal cells	( ) are drought evaders have a short life cycle.
9-Bound-water means	( ) are reduced to spines or vestigial.
10-Protective molecules	( ) are drought resistant plants.
11-Leaf abscission	( ) water adsorbed by colloidal particles.

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GOOD LUCK

Prof. K.A. Farghali

Assiut University
Faculty of Science
Botany Department
Jun. 2020

Course code: 434B
Course: Flora of Egypt
2nd Semester – Final Exam
Time: 2 Hours
Marks: 80

No. of questions: 1
No. of Pages:2

Answer the following question (80 marks) (2 marks each)

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

1. **Swiss, made many journeys to Spain and to Orient.**
   (a) Boisser (b) Delile (c) Forsskal (d) Niebuhr
2. **He was the first chairman to Botany Dept., Cairo University (1925).**
   (a) Ramis (b) Mushler (c) G. Tackholm (d) Schweinfurth
3. **He founded Assiut University herbarium (1961).**
   (a) M. Hassib (b) Mushler (c) V. Tackholm (d) N. Hadidi
4. **The code (ICBN) is the folder of international code of .....**
   (a) nomenclature (b) cultivated plants (c) identification (d) classification
5. **If a species has more than one name, only one is valid and the others are .....**
   (a) synonyms (b) types (c) vernacular (d) hybrids
6. **The naming of taxonomic groups is based on priority of .....**
   (a) publication (b) collection (c) identification (d) all the preceding
7. **The correct name to Banger (البنجر) is .....**
   (a) *Brassica rapa* (b) *Brassica* sp. (c) *Brassica Rapa L.* (d) *Brassica rapa L.*
8. **If a holotype indicated by the author who described a taxon has been lost, new type is .....**
   (a) isotype (b) lectotype (c) semitype (d) non of the preceding
9. **Currently seen as a data bank, with a huge stock of information: -**
   (a) botanical garden (b) herbarium (c) library (d) all the preceding
10. **Amoung the systems that used for the arrangement of herbarium .....**
    (a) Linnaeus system (b) Bessey system (c) Boissier system (d) all the preceding
11. **A study contains very brief descriptions of the distinction between taxonomic categories**
    (a) monograph (b) revision (c) synopsis (d) abstract
12. **Divided the phytogeographical regions of the world according to latitude into 4 regions**
    (a) Ronald Good (b) Franz (c) Hansen (d) Firbas
13. **In his division to globe, Good included Egypt areas in ..... kingdom**
    (a) boreal (b) antarctic (c) palaeotropic (d) new tropical
14. **According to Tackholm 1974, we usually recognize ..... phytogeographical regions**
    (a) four (b) five (c) six (d) seven
15. **The mediterranean semi desert (Mma.) present from Abukir to Sollum is known as: -**
    (a) eastern (b) western (c) isthmic (d) arabic
16. **Amoung the street trees that belonging to Anacardiaceae and planted in Assiut is .....**
    (a) *Schinus molle* (b) *Anacardium nanum* (c) *Anacardium humile* (d) all the preceding
17. **The most beautiful trees in the world and with red-scarlet flowers is .....**
    (a) *Cassia fistula* (b) *Bauhinia variegata* (c) *Delonix regia* (d) all the preceding
18. **The flowers of *Callistemon citrinus* is take the shape of .....**
    (a) leg of bird (b) trumbet (c) brush-like (d) beard of pasha
19. **The common street trees growing in Egypt and belonging to Papilionaceae**
    (a) *Dalbergia sissoo* (b) *Tipuana spicosa* (c) *Erythrina indica* (d) all the preceding

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20. **The Scientific name of the *Citrus* trees named (جريب فروت) is .....**

(a) *C. myrtifolia* (b) *C. aurantium v. amara* (c) *C. paradise* (d) *C. aurantium v. deliciosa*

21. **The edible fruits of *Prunus avium* is ..... coloured**

(a) shiny red (b) yellow (c) brownish yellow (d) all the preceding

22. **The Moraceae fruit trees that used as a remedy for snake and scorpion bites is .....**

(a) *Ficus carica* (b) *Morus alba* (c) *Ficus sycamorus* (d) all the preceding

23. **The crop of ..... never flowers or produces seeds in Egypt, it is propagated vegetatively**

(a) *Trigonella* (b) *Arachis* (c) *Saccharum* (d) *Oryza*

24. **Amoung the most used crops as fodder, with blue flowers arranged in racemes**

(a) *Arachis hypogaea* (b) *Trifolium alexandrinum* (c) *Medicago sativa* (d) all the preceding

25. **Libb asmar (اللب الاسمر) is obtained from certain varieties of *Citrulus vulgaris* var. .....**

(a) *pepo* (b) *ovefera* (c) *cantalipensis* (d) *colocynthoides*

26. **Amoung the spices plants of the family Apiaceae and cultivated as ornamental plant: -**

(a) *Ocumium basilicum* (b) *Coriandrum sativum* (c) *Ammi visnaga* (d) *Apium graveolens*

27. **Cultivated as a vegetable that eaten its inflorescence fresh or after cooking: -**

(a) *Hibiscus esculentus* (b) *Cynara cardunculus* (c) *Corchorus olitorius* (d) *Solanum melongena*

28. **Cultivated as a source of dyes: -**

(a) *Lawsonia inermis* (b) *Ricinus communis* (c) *Hibiscus esculentus* (d) all the preceding

29. **Cultivated for more than 4000 years for the fruits and valuable oil they contain.**

(a) *Corchorus olitorius* (b) *Asparagus officinalis* (c) *Lawsonia inermis* (d) *Olea europa*

30. **A wild thistle with white-mottled pinnatified leaves and violet flowering heads.**

(a) *Matricaria chamomilla* (b) *Centaurea calcitrapa* (c) *Silybium marianum* (d) *Senecio vulgaris*

31. **A poisonous Apiaceae weed that has recently been tried to cancer with good effect.**

(a) *Sorghum virgatum* (b) *Ammi majus* (c) *Euphorbia peplus* (d) *Chrozophora plicata*

32. **Deserts are those area where the annual rainfall measures less than ..... a year**

(a) 50 mm (b) 250 mm (c) 500 mm (d) 1000 mm

33. **The Egyptian desert extends between Nile Valley & Red Sea is known as .....**

(a) Western (b) Arabic (c) Lybian (d) all the preceding

34. **Devoid of high mountains and noted for its long chain of dunes**

(a) Arabic desert (b) eastern desert (c) Isthmic desert (d) Lybian desert

35. **Among desert plants and belonging to family Compositae is ..... b**

(a) *Zilla spinosa* (b) *Echinops spinosus* (c) *Bassia muricata* (d) *Citrullus colocynthis*

36. **The western Mediterranean region or Mariut region (Mma.) is known as .....**

(a) arid desert (b) semi desert (c) isthmic desert (d) arabic desert

37. **On seashore of Mma., pilae marinae formed by the leaf-sheaths fibre of .....**

(a) *Hyoseris lucida* (b) *Orlaya maritime* (c) *Posidonia ocenica* (d) *Pancratium maritimum*

38. **Several plants can be seen on the Mma. cemented sand dunes, of which .....**

(a) *Crucianella maritime* (b) *Echium sericeum* (c) *Echiochilon fruiticosum* (d) all the preceding

39. **Among the growing barley fields plants of Mma. is .....**

(a) *Salicornia fruticosa* (b) *Statice pruinosa* (c) *Achillea santolina* (d) all the preceding

40. ***Alkanna tinctoria* is growing in barley fields and is belonging to .....**

(a) Aizoaceae (b) Boraginaceae (c) Cistaceae (d) Cruciferae

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Best Wishes

Prof. Momen Zareh

Assiut University Faculty of Science Botany & Microbiology Department Second semester 2019/2020	Final Exam Host Parasite Relationship Time allowed: 60 minutes Student Name:

QUESTION ONE

Study the following sentences and select the one best answer:

1) The death of tissues is called
   a) Necrosis
   b) Chlorosis
   c) Chromosis
   d) Pathogenesis
2) The following are the most common necrotic symptoms except
   a) Leaf spots
   b) Blights
   c) Wilts
   d) Damping off
3) The relationship between the parasite and the host is known as:
   a) Parasite
   b) Pathogen
   c) Parasitism
   d) Penetration
4) The plant recovers as soon as the conditions (suplly of water) become favorable this type of wilting is called:
   a) Physiological wilt
   b) Pathological wit
   c) Histologial wilt
5) The rapid death and collapse of very young seedlingis called:
   a) Canker
   b) Dry rot
   c) c) Scab
   d) Damping off
6) Symptoms associated with Atrophy or Hypoplasia is called:
   a) Witches brooms
   b) Cankers
   c) Dwarfing
   d) Club root
7) The Science of Plant Pathology has all the following objectives except:
   a) Study the causes of plant diseases.
   b) Study the mechanism of disease development by pathogen.
   c) Study the host-pathogen relationship.
   d) Study the mechanism of cell division.
8) The ability of the pathogen to cause a disease is called:
   a) Virulence
   b) Infection
   c) Pathogenesis
   d) Pathogenicity

9) An organism kills host tissues in advance of penetration is called:
   a) Biotroph
   b) Necrotroph
   c) Autotroph
   d) Saprotroph
10) The establishment of parasitic relationship between host and the parasite is called:
   a) Pathogenicity
   b) Pathogenesis
   c) Invasion
   d) Infection
11) Following are the symptoms of plant diseases due to the appearance of the visible pathogen except:
   a) Mildews
   b) Wilts
   c) Rusts
   d) Smuts
12) The following are animate causes of plant diseases except:
   a) Flowering plants
   b) Protozoa
   c) Nematodes
   d) Atmospheric impurities
13) One of the following is not associated with hypertrophy:
   a) Dwarfing
   b) Club root
   c) Warts
   d) Leaf curl
14) The type of defense that minimize crop losses without restricting disease development.
   a) Disease escape
   b) Tolerance
   c) Immunity
15) Organisms that derive the materials they need for growth from living plants;
   a) Parasites
   b) Halophytes
   c) Saprophytes

16) Organisms which always obtain their food in nature from living tissues on which they complete their life cycle are called:
   a) Saprophyte
   b) Necrotroph
   c) Biotroph
   d) Autotroph
17) The capacity of a pathogen to invade and grow in its host is known as:
   a) Aggressiveness
   b) Tolerance
   c) Elicitors

18) The time lapsing between inoculation and appearance of symptoms is called:

a) Invasion period
b) Incubation period
c) Resistant period

19) Antagonism is defined as:

a) One organism is injured by another.
b) One organism is benefit by another.
c) Nothing from all mentioned before.

20) In absence of their cultivated host, animate pathogens must find alternate source of:

a) Infedtion
b) Penetration
c) Incubation
d) Survival

21) All of the following are considered dormant organs of pathogen serve as a source of survival except:

a) Sclerotia
b) Mycelial fragments
c) Chlamydospores
d) Oospores

22) The propagules of the pathogen to be attached on their host surface have on their surface:

a) Chlamydospores
b) Appresorium
c) Haustoria
d) Mucilagenous sheath

23) Fungal spores first germinate forming:

a) Stomata
b) Appresorium
c) Haustoria
d) Germ tube

24) Pythium debaryanum can infect 127 different plants within different families, it has:

a) Narrow host range.
b) Restricted host range.
c) Specific host range
d) Wide host range.

25) The events constituting disease cycle is called:

a) Pathogenesis.
b) Pathogenicity.
c) Pathology
d) Pathogen

QUESTION TWO

Write YES or NO in parentheses for each of the following sentences

1- ( ) Pathogens are the organisms that derive its nutrients for growth from non living plant.
2- ( ) Necrotroph used to describe a parasite that kills host tissues in advance of penetration.
3- ( ) Aggrssiveness describes the capacity of a pathogen to invade the host.
4- ( ) Unfavorable intensity of light is considered as one of the animate causes of plant disease.
5- ( ) The word rust means sooty or charcoal-like powder.
6- ( ) Chlorosis is the yellowing resulted from infection by viruses, fungi, and bacteria.
7- ( ) Hyperplasia the abnormal increase in the size of a plant organ due to an increase in size of cells.
8- ( ) Leaf curl is a Symptom associated with overgrowths.
9- ( ) The capacity of the pathogen to cause a disease is known as pathogensis.
10- ( ) Specific host range is the pathogen attacks only one species or genus of plant.
11- ( ) In ectoparasite, the main body of the pathogen lies under the surface of the host.
12- ( ) Fungi that cause vascular wilts invade the phloem tissue of the plant.
13- ( ) Invasion is the spreading of the pathogen through the host.
14- ( ) When a spore germinates it produces a germ tube, i.e., the first part of mycelium that can penetrate the host plant.
15- ( ) Indirect penetration occurs through intact plant surfaces.
16- ( ) In non-specialized pathogens like *Pythium,* a high density of inoculum is needed for success infection.
17- ( ) Inoculum potential is the amount of propagules that is sufficient to cause a disease.
18- The infective propagules coming in contact with the living host are known as inoculum.
19- ( ) The pathogen should be not susceptible for the success of infection.
20- ( ) The environmental conditions should be favorable for the host for the success of infection.
21- ( ) Usually the obligate parasite are host specific.

22- ( ) Disease escape is the ability of a susceptible plant to avoid the damaging disease stress because of the way it grows.

23- ( ) Fungicides and insecticides are considered from abiotic causes of plant diseases.

24- ( ) Chromosis means change of diseased plant color to red, purple or orange.

25- ( ) Disease is the sum of the normal chemical reactions that are inhibited in the cell and in the tissues of the plant as a result of irritation

End of Questions