Faculty of Science
Assiut university

Second Semester exam. (2021-2022), Ecology of algae (374 B)
Botany and Microbiology Department
Time allowed: 2hours

Final Exam (50 marks)

Question no (1)

Shade(T) for true statements or (F)for False statements (1Mark each) for the following statements. (40marks)

1	Lichens are extremely hardy organisms able to survive in very extreme conditions
2	Epiphytic algae are found on moist soil
3	Agar -Agar extracted from the Phaeophyta
4	Silica is absolute requirement element for the growth of diatoms
5	Alga enters into a symbiosis is a slow-down of its growth rate.
6	Some bacteria have a symbiosis relationship with dinoflagellates
7	Cyanelles cells can live within animal cells in parasitic relationship
8	Lithophytic algae are those algae grown on bigger algal members
9	Microalgal classes have various light requirements for growth and photosynthesis
10	*Paramecium bursaria* has a mutualistic endosymbiotic relationship with chlorella
11	light influences the distribution of oxygen and nitrogen in the aquatic system
12	Epizoic algae grow in animal or protozoa in aquatic environment
13	A reef coral is a symbiotic association between an animal (the host) and unicellular dinoflagellate algae
14	Recently some algal group as diatoms have been used in forensic medicine.

15	Both pH and dissolved oxygen increase when the grazing increased in productive waters
16	Salamander embryo capsules appear green due to dense accumulations of algae surrounding the embryo
17	The fresh and marine algal group which found on plants called epiophytes
18	Marine algae as Laminaria, Fucus, Ascophyllum are used in feeding domestic animals
19	Epactiphytes are those algae grow on snow
20	*Cephaleurous* infections on tea and coffee plants called red rust disease
21	Algae can be used in sewage water purification and treatments
22	Exotoxins and endotoxins secreted by blue-green algae caused death of farm animals
23	Algae can used as a renewable source for energy production
24	At anode in MFCs, electrons combine with an electron acceptor to generate electricity
25	Presence of diatoms in the lungs can indicate a person died due to drowning
26	Lithophytic algae grown on moist rock and some plant trees
27	Endolithic algae live inside the rocks
28	The algal sp. which penetrate stomata of tropical plants called semi parasitic algae
29	A biological fuel cell is a bio-electrochemical system that converts chemical energy to electrical energy
30	Euplanktophytes, are those algal group which never free floating, e.g., diatoms
31	Many algal genera are found in beneath of the moist soil surface and are called terrestrial algae

32	Microbial fuel cells have the potential to Generate electricity from biodegradable biomass
33	The algae found on living aquatic animals such as shells, fishes are called epiphytic
34	Planktonic algae are growing , dispersed in water and attached to higher algal sp.
35	Several fresh water and marine algae are found in attached condition
36	Molybdenum was the main limiting nutrient to algal growth and fast-growing algae
37	Iodine extracted from chlorophyta
38	Freshwater phytoplankton is collected from lakes as from ponds by drawing a net slowly through the water
39	High initial cost is one reason of limit uses of MFCs
40	The study of the algae in all environments is the prime object ecology of algae

Question no (2)

Q-2: Choose the correct answer ..... (10 Marks)

1. Fungal piece in the symbiotic relationship with algae called .....

   a-Cyanelles b-Mycobiont c-Photobiont d- Phycobiont

2. ..... is very important for photosynthesis and for increasing the algae biomass

   a- Light b- phosphorus c- Magnesium d- { a, b and C }

3. .....live inside Paramecium cytoplasm in their symbiotic relationship

   a- Phycobiont b- Mycobiont c- Lichens d- {A and C }

4. Algae can be used in many beneficial aspects as .....

   a-Food supplements b-Remediation c- Energy production d- {a, b and C}

5. ..... improve the aeration of swamp soils and fix atmospheric nitrogen

   a- Chlorophyta b-Bacillariophyta c- Diatoms d- Cyanophyta

6. The algae occur in saline waters are known as .....

a-Halophytes b-Epiphytes c-Arial epiphytic algae d- lithophyte algae

7. Agar-Agar is dried or gel –like nitrogenous extract from .....

a-Rhodophyta b- Xanthophyta c- phaeophyta d-Chlorophyta

8. ..... is ideally suited as a filter for oils and for clearing solvents.

a- Agar-agar b- Carragenin c-Iodine d- Diatomite

9. MFCs can applies in .....

a- Electrical power generation b-Bio-hydrogen production

b- c-Treatment of wastewater d- {a,b and C}

10. Primary productivity is mainly influenced by .....

a-Nutrient b-Temperature c-grazing and successional cycle d-{a,b,c)

Good luck *Prof. Awatief F. Hifney*

Assiut University
Faculty of Science
Botany& Microbiology Department

Second Semester: June 2022
The time allowed: 2 hours
Total marks: 50 Marks
Course Code: 364 B

Answer the following questions (Q1 & Q2):

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

1. Club root disease causes malformed and enlarged leaves showing spindle or club-shaped swellings. ( )
2. Resting sporangia of *Synchytrium endobioticum* divide meiotically and germinate producing prosporangia in which uniflagellate zoospores (n) are produced. ( )
3. *Pythium debaryanum* causes root rot of ginger. ( )
4. The fungus *Plasmopara viticola* causes direct yield losses by rotting inflorescences and shoots. ( )
5. Inflorescences and flowers of Crucifers become thickened due to hypertrophy and hyperplasia of affected cells by *Albugo candida.* ( )
6. Infected tubers with *Spongospora subterranea*, irregular brown depressions are formed, filled with dusty brown masses of spore balls. ( )
7. The term aggressiveness is used to describe the capacity of a pathogen to invade and grow in its host plant and to reproduce on or in it. ( )
8. *Rhizopus* soft rot occurs on fruits and vegetables. ( )
9. The upper surface of grape leaf, the downy mildew can be seen within the border of the lesion as a delicate, dense, white to greyish, cotton-like growth. ( )
10. *Uncinula* appendages are simple and straight with bulb- like base. ( )
11. The disease caused by *Venturia inaequalis* manifests as dull black or grey-brown lesions on the surface of tree leaves, buds or fruits. ( )
12. The pectinolytic enzymes secreted by *Rhizopus* break down and dissolve the pectic substances of the middle lamella of the plant cells. ( )
13. Saprophytes are organisms which derive their nutrition from dead organic matter. ( )

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14. Some pathogens survive as dormant mycelium in the seeds or other propagative structures of host plants. ( )

15. Loose smut of wheat and barley by *Ustilago nuda* is embryonic infection. ( )

16. Dutch elm disease results in the blockage of the xylem tissue within the tree. ( )

17. *Spongospora* fungus is a vector of the potato mop-top virus. ( )

18. The ascospores of *Taphrina deformans* often bud in a rather yeast-like manner, even while still inside the ascus. ( )

19. *Sphaerotheca pannosa* causes powdery mildew of wheat and barley. ( )

20. The aecial stage of *Puccinia graminis* occurs on lower surface of wheat leaves. ( )

21. Uredinomycetes are plant pathogens which can only grow and reproduce on their host species causing smuts diseases. ( )

22. *Phytophthora nicotianae* causes black shank of Colocasia. ( )

23. Basidiomycetes are key decomposers and include the white rot fungi which can degrade lignin, the highly resistant polysaccharide found in brown wood. ( )

24. Short crop rotation with non-cruciferous crops is one of the club root disease managements. ( )

25. High plant resistance with high susceptibility approaches immunity. ( )

26. The fertilized oogonium in *Pythium* life cycle produces a thick- walled oospore of which germinate directly or forming zoospores. ( )

27. A mixture of copper sulfate and hydrated lime was shown to be effective against the late blight of potato. ( )

28. *Peronospora parasitica* causes downy mildews on cabbage and cauliflower. ( )

29. Ergot bodies are larger than the normal wheat grains. ( )

30. Parasites or saprophytes may have the faculty to change their mode of nutrition. ( )

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

31. .....is the development of necrotic spots resulting from rapid death of cells.

Ⓐ Hypersensitivity Ⓑ Susceptibility Ⓒ Resistance

32. Infections on young peach leaves by *Taphrina deformans* occur at temperatures of .....

Ⓐ 5-10 °C Ⓑ10-21°C Ⓒ 28 °C

33. Biological control of *Rhizopus* on stored peaches and nectarines has been achieved by.....

Ⓐ *Candida* Ⓑ *Pichia* Ⓒ Both a & b

34. Zoospores of *Synchytrium endobioticum* ..... on host epidermis before infection.

Ⓐ Germinate Ⓑ Encyst Ⓒ Divide

35. *Phytophthora infestans* is .....

Ⓐ Polycyclic Ⓑ Monocyclic Ⓒ Both a & b

36. *Plasmopara viticola* grows out through the stomata of infected tissue and produces sporangiophores on leaf surface at temperatures above.....

Ⓐ 25 °C Ⓑ 13 °C Ⓒ 5 °C

37. Emergence of infected bean seedlings by *Pythium* is .....

Ⓐ Poor Ⓑ High Ⓒ Both a & b

38. *Sclerospora graminicola* caused downy mildews on.....

Ⓐ Cereals Ⓑ *Helianthus* Ⓒ Cucurbits

39. *Pythium* antheridium produces ....., which enters the oogonium.

Ⓐ Nuclei Ⓑ Fertilization tube Ⓒ Spherical zoospores

40. Dwarf bunt of wheat caused by.....

Ⓐ *Tilletia contraversa* Ⓑ *Urocystis cepulae* Ⓒ *Tilletia barclayana*

41. Infected peach leaves by *Taphrina deformans* are .....

Ⓐ Deformed Ⓑ Puckered and curled Ⓒ Both a & b

42. Young shoots infected by *Plasmopara viticola* are .....and become thickened and distorted.

Ⓐ Light brown Ⓑ Stunted Ⓒ Dull green

43. The anamorph of *Taphrina* is a single- celled budding yeast named .....

Ⓐ *Pichia* Ⓑ *Lalaria* Ⓒ *Candida*

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44. Large irregular cauliflower-like warts or galls develop on all underground parts except roots are symptoms of.....

Ⓐ Powdery scab of potatoes Ⓑ) Black warts of potatoes Ⓒ Both a & b

45. Asexual reproduction in *Rhizopus* occurs by means of .....

Ⓐ Sporangiospores Ⓑ Oospore Ⓒ Zygospores

46. Crucifers' epidermis ruptures exposing a white powdery mass of spores.

Ⓐ White rust Ⓑ Late blight Ⓒ Damping off

47. ..... a fungus in which the thallus is differentiated into vegetative and reproductive regions.

Ⓐ Eucarpic Ⓑ Holocarpic Ⓒ Holocarpism

48. Appearance of black soot like mass of the fungal pathogen spores on host infected parts.

Ⓐ Smuts disease Ⓑ Early Blight Ⓒ Nectria canker

49. *Phyllactinea corylea* causes powdery mildew of.....

Ⓐ Oak Ⓑ Mango Ⓒ Apple

50. Indirect losses of infected grape by *Plasmopara viticola* can result from premature defoliation of vines due to .....

Ⓐ Foliar infections Ⓑ Water-soaked Ⓒ Winter injury

51. Apple fruits infected by *Venturia inaequalis* are less marketable due to .....

Ⓐ Reduce fruit quality Ⓑ Black fungal lesions Ⓒ Both a & b

52. Sclerotia of *Claviceps purpurea* produced in small grains fall on the surface of .....

Ⓐ Wheat plants Ⓑ Soil Ⓒ Heads of cereals

53. ..... type of conidiophores consists of short stipe of one or more cells, conidiogenous cell and a chain of conidia.

Ⓐ Ovulariopsis Ⓑ Oidium Ⓒ Oidiopsis

54. *Plasmodiophora brassicae* stimulates abnormal growth of affected parts, resulting in .....

Ⓐ Swollen clubs' roots Ⓑ Malformed leaves Ⓒ Powdery scab

55. The pathogen is a non-mycelial, unicellular, holocarpic biotrophic chytrid fungus.

Ⓐ *Phytophthora infestans* Ⓑ*Spongospora subterranea* Ⓒ *Synchytrium endobioticum*

56. *Phytophthora* oogonium fertilized by .....antheridium.

Ⓐ One Ⓑ Numerous Ⓒ Two

57. *Rhizopus* hyphae grows on host surface, it produces stolons and at the next point of contact with the surface produce.....

Ⓐ Gametangia Ⓑ Rhizoids Ⓒ Sporangium

58. Infection by *Ustilago nuda* occurs through .....

Ⓐ Ovary walls Ⓑ Leaves Ⓒ Root hairs

59. Inflorescences and flowers of *Portulaca* become thickened due to..... of affected cells.

Ⓐ Hypertrophy Ⓑ Hyperplasia Ⓒ Both a & b

60. Naked asci of *Taphrina* containing ..... are produced on the host surface giving them a dusty appearance

Ⓐ Ascospores Ⓑ *Lalaria* Ⓒ Both a & b

61. *Aspergillus* causes .... and fruit rot.

Ⓐ Bread mold Ⓑ Seed decays Ⓒ Both a & b

62. Fresh fruits and vegetables should be harvested and handled carefully to avoid.....

Ⓐ Moisture Ⓑ Wounds Ⓒ Ventilation

63. From the appressorium of Erysiphales fungus, a penetration hypha grows through the cuticle and plant cell wall then swells out in the epidermal cell to form .....

Ⓐ Haustorium Ⓑ Germ tube Ⓒ Conidiophores

64. The ergot bodies consist of a mass of .....

Ⓐ Vegetative fungal hyphae Ⓑ Rind Ⓒ Fungal spores

65. Cool damp nights and warm sunny days favor the development of.....

Ⓐ Appressorium Ⓑ Powdery Mildew Ⓒ Germ tube

66. Fungal spores are disseminated by wind and infect the shoot of plant.

Ⓐ Soil-borne disease Ⓑ Air-borne disease Ⓒ Seed-borne disease

67. ..... are the classic mushrooms and toadstools, composed of highly complex fruiting bodies.

Ⓐ Uredinomycetes Ⓑ Ustilagomycetes Ⓒ Hymenomycetes

68. Powdery mildew disease on flowers causes.....

Ⓐ Discolored and dwarfed Ⓑ Fail to open Ⓒ Arched

69. The white rust is spread by either .... or by sporangia mechanical movement.

Ⓐ Oospore-infected seed Ⓑ Zygospores Ⓒ Conidia

70. The haustorium is a fungus structure that takes the nutrients from the.....

Ⓐ Plant Ⓑ Soil Ⓒ Both a & b

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

Assiut University Faculty of Science Botany and Microbiology Department	Host parasite relationship (B 366) Time allowed: 2 hours 2021-2022 8/6/2022

يرجى التظليل باستخدام القلم الحبر الجاف الازرق

Q1 Shade the Correct Answer; A, B, C or D (25 marks, One mark each)

1. Following are considered structural changes occur in diseased plants except A) Wilt B) Sterile flowers C) Hairy roots D) Crown galls

2. All of the followings are growth promoting substances except:
A) Dormin B) Auxins C) Cytokinins D) Gibberellins.

3. One of the following is not associated with hypertrophy:

A) Dwarfing B) Club root C) Warts D) Leaf curl

4. The establishment of parasitic relationship between host and the parasite is called: A) Pathogenicity B) Pathogenesis C) Invasion D) Infection

5. The relationship between the parasite and the host is known as:
A) Parasitism B) Pathogenicity C) Survive D) Penetration

6. Symptoms associated with Atrophy or Hypoplasia is called:
A) Witches brooms B) Cankers C) Dwarfing D) Club root

7. In foolish seedling disease of rice, the rice seedlings infected with *Fusarium moniliforme* grow rapidly and become much taller than the healthy plants due to secretion of: A) Dormin B) Auxins C) Cytokinins D) Gibberellins.

8. 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

9. Fungal spores first germinate forming: A) Stomata B) Appresorium C) Haustoria D) Germ tube

10. Pathogens can affect absorption of water in diseased plants by one of the followings: A) Formation of abscission layer, B) Alteration of cell wall permeability C) Formation of pathogenic polysaccharides, D) Formation of tyloses

11. In indirect penetration the germ tubes enter the host through:

A) Wounds. B) Intact plant surfaces. C) Floral parts. D) Root hairs.

12. Entry through non- cutinized surfaces is represented by one only of the following: A) Flowers. B) Stomata C) Lenticels D) Wounds

13. The propagules that initiate the infection are called: A) Sufficient inoculum B) Primary inoculum C) Secondary inoculum D) Inoculum

14. The natural opening which serves as venues of entry for plant pathogens is: A) Lesions B) Injury C) Lenticel D) Wounds

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

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

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

18. *Pythium debaryanum* can infect 127 different plants within different families, it has: A) Narrow host range B) Wide host range C) Restricted host range D) Specific host range

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

20. The extreme degree of susceptibility in which rapid death of the host cells of infection site is called: A) Hypersensitivity B) Invasion C) Colonization D) Infection

21. Under ideal conditions of experiment where every advantage is given to the pathogen, inoculum potential that can cause successful infection is: A) high density of inoculum B) low density of inoculum C) even one spore D) Large number of spores

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

23. Spores of *Tilletia* sp. only germinate A) after exposure to temperature below 10 C B) as soon as they are fully formed C) until the following spring D) until the chains of spores are broken

24. It denotes that the pathogen cannot establish parasitic relationship with the host A) Immunity B) Resistance C) Tolerance D) Susceptibility

25. Some pathogens are host specific because: A) Spores germinate only in presence of nutrients exuded by the host B) Spores germinate only in presence of nutrients exuded by the pathogen C) Many fungal pathogens must grow first before penetration D) Many fungal pathogens need fast multiplication before penetration

Q2 Shade (T) for true statements or (F) for false statements: (25 marks, One mark each)

26 ( ) ( ) All infectious diseases are transmissible.

27 ( ) ( ) Leaf curl is a symptom associated with overgrowths.

28 ( ) ( ) Invasion is the spreading of the pathogen through the host.

29 ( ) ( ) Certain pathogen are known to produce enzymes that can degrade waxes in the cuticle.

30 ( ) ( ) Necrotroph used to describe a parasite that kills host tissues in advance of penetration.

31( ) ( ) Unfavorable intensity of light is considered as one of the animate causes of plant disease.

32 ( ) ( ) Pectic enzymes are two groups: Pectic esterase and Polygalacturanase.

33 ( ) ( ) Direct penetration occurs through intact plant surfaces.

34 ( ) ( ) In non-specialized pathogens like Pythium, a high density of inoculum is needed for success infection.

35 ( ) ( ) The pathogen should be susceptible for the success of infection.

36 ( ) ( ) Usually the obligate parasite are host specific.

37 ( ) ( ) Symptoms associated with overgrowths include Warts.

38 ( ) ( ) In several plant diseases, the pathogen interfere directly with the reproduction of the host plant by killing the embryo of the seed as in case of ergot.

39 ( ) ( ) In direct penetration the host exerts its own efforts to break the pathogen barriers.

40 ( ) ( ) The word rust means sooty or charcoal-like powder.

41 ( ) ( ) Pathogens can cause balance in hormonal system of the diseased plants.

42 ( ) ( ) Indirect penetration can occur through injuries or wounds.

43 ( ) ( ) The germination process of spores is being stimulated by diffusion of secretions from the pathogen.

44 ( ) ( ) The infective propagules coming in contact with the living host are known as inoculum.

45 ( ) ( ) Infection cushion is necessary for penetration in case of *Armellaria mellea.*

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

47 ( ) ( ) Recognition system means the pathogen grows from the point of entry to varying extents without showing adverse effect on tissues.

48 ( ) ( ) In late blight 75% of the foliage is killed, so photosynthesis is greatly induced.

49 ( ) ( ) Fungi obtain pectinolytic enzymes are important in soft rot diseases

50 ( ) ( ) Chlorosis is the yellowing resulted from infection by viruses, fungi, and bacteria.

WITH MY BEST WISHES

Prof. A. Y. Abdel-Malek

انتهت الاسئله

Assiut University-Faculty of Science- Botany and microbiology department

Second semester (2021/2022)
Final exam of Microbial metabolism (Code: 392B)
Bachelor's degree (Third level) **Date: 22/6/2022**

Time: 2 hour **Total marks: 50 marks**

Answer the following question

(A) Choose the correct answer each of the following: (25 marks, one for each):

1- Photosynthesis in purple bacteria occurs in……..

A) choroplast B) intracytoplasmic memberane
C) thylakoid D) chlorosomes

2- …….. have been shown to use Reductive TCA cycle

A) Green photosynthetic bacteria B) some thermophillic bacteria
C) reducing sulfate bacteria D) all of them

3- Glucose is made from, ……

A) pyruvate, glycerol and amino acids B) pyruvate
C) glycerol D) amino acids

4- Reductive Acetyl CoA pathway Found in ……..

A)anaerobic bacteria B) anaerobic bacteria and archaea
C) cyanobacteria D) archaea

5-Amino acids may be synthesized from……

A) Entner-Douderoff pathway intermediates
B) Kreb cycle intermediates
C) Pentose phosphate pathway intermediates
D) All of them

6- A bifunctional enzyme, ……catalyzes the reactions of Reductive Acetyl CoA pathway

A) carbon monoxide dehydrogenase/ acetyl-CoA synthase
B) nitrogenase
C) ribulose bisphosphate carboxylase
D) Carbamyl Phosphate Synthetase

7- The light reactions (in the thylakoids):

A) Release O2
B) Reduce NADP+ to NADPH
C)Generate ATP from ADP
D) all of them

8- A ..... bond is formed when an amino group of one amino acid joins the acid group of another.

A) covalent B) peptide C) glycosidic D) hydrogen

9- Dicarboxylate/4-hydroxybutyrate forms an extra molecule of acetyl-CoA, with.....

A) pyruvate synthase B) 4-hydroxybutyryl-CoA dehydratase

C) pyruvate synthase and PEP carboxylase D) PEP carboxylase

10- urea, nucleotides or amines not used in protein synthesis and can be acted upon by ..... to release the ammonia

A) deaminases B) decarboxylases C) aminotransferases

D) deaminases, decarboxylases and aminotransferases

11- **All of the following produce oxygen as a product of photosynthesis except**

A) cyanobacteria. B) Plants.

C) purple sulfur bacteria. D) algae.

12- Microbial ammonium assimilation is catalyzed by ..... at low concentration of NH3?

A) glutamate dehydrogenase and glutamine synthetase B) protease

C) glutamine synthetase and glutamate synthase D) ATP citrate lyase

13- Phosphorylation of glucose during glycolysis performed in presence of ..... enzyme

a- Phosphohexoseisomerase
b- Hexokinase
c- Aldolase
d- Enolase

14-During urea cycle Arginine converted to .....in presence of Arginase enzyme

a- Citrullin
b- Aspartate
c- Ornithine
d- Fumarate

15-By Transamination reaction Alanine converted to .....

a- Glutamate
b- Pyruvate
c- Fumarate
d- Succinate

16- Which enzymes could break triacylglycerols down to fatty acid and glycerol?

a- Proteases
b- Glycerol Kinase
c- Amylases
d- Lipases

17-Acyl Carnitin converted to Carnitin and Acyl CoA in .....

a- Cytoplasm
b- Plasma membrane
c- Mitocondrial matrix
d- Mitocondrial membrane

18-The fourth reaction of fatty acid oxidation is

a- Oxidation to 3–Ketoacyl CoA
b- Hydration to L–3–Hydroxylacyl CoA
c- Thiolysis to produce Acetyl–CoA
d- oxidation to *trans*-Δ^2-Enoly-CoA

19-The citric acid cycle enzymes are found in.....

a- Plasma membrane
b- Mitocondrial membrane
c- Mitocondrial matrix
d- Cytoplasm

20-Succinyl CoA converted to Succinate by Succinyl CoA synthetase and produce .....

a- ATP
b- ADP
c- GTP
d- NADH

21-Citrate formed in TCA cycle by condensation of .....

a- Acetyl-CoA and Fumarate
b- Acetyl-CoA and Oxaloacetate
c- Acetyl-CoA and Isocitrate
d- Acetyl-CoA and Succinate

22-Pyruvate decarboxylase enzyme converts Pyruvate to .....

a- Ethanol
b- Lactic acid
c- Acetaldehyde
d- Acetic acid

23-Entner-Doudoroff (ED) pathway commons in .....

a- Yeast
b- Grame (-)
c- Grame (+)
d- Fungi

24-The pentose phosphate pathway yields are .....

a- NADPH and xylose 5- phosphate
b- NADPH and ribose 5-phosphate
c- NADH and ribose 5-phosphate
d- NADH and xylose 5- phosphate

25-..... is the process by which the energy stored in NADH and $FADH_2$ is used to produce ATP.

a- Glycolysis
b- Fermentaion
c- Oxidative phosphorylation
d- Kerbs cycle

B) Question: Choose true (√) or false (×) for the following sentences: (25 marks)

26. The reduction of Molecular nitrogen to ammonia is an energy expensive process.

(a) True (b) False

27. Oxaloacetate is reduced to succinyl-CoA in Dicarboxylate/4-hydroxybutyrate cycle.

(a) True (b) False

28. All proteins have a unique sequence of amino acid residues.

(a) True (b) False

29. Green sulfur bacteria produce oxygen as a product of photosynthesis.

(a) True (b) False

30. Catabolic and anabolic pathways use the same cofactors.

(a) True (b) False

31. Photoheterotrophs microorganisms obtain CO_2 as a carbon source.

(a) True (b) False

32. In calvin cycle, six ATP is expended to regenerate ribulose bisphosphate.

(a) True (b) False

33. In reductive TCA cycle, the key enzyme is ribulose bisphosphate carboxylase.

(a) True (b) False

34. In 3-hydroxypropionate bicycle, results in the net fixation of two molecules of CO_2 into one molecule of glyoxylate.

(a) True (b) False

35. Oxygenic photosynthesis uses one photosystem (PS I) to generate ATP in "cyclic" manner.

(a) True (b) False

36. NH4+, NO2-, and NO3- the most frequent inorganic N sources assimilated by photosynthetic organisms and bacteria.

(a) True (b) False

37. hydroxybutyryl-CoA is dehydrated to crotonyl-CoA.

(a) True (b) False

38. In cyclic photophosphorylation, the electrons are used to reduce NADP+, and electrons are returned to chlorophyll from H_2O or H_2S.

(a) True (b) False

39. Krebs cycle is the first stage of carbohydrate metabolism.

(a) True (b) False

40. Embden–Meyerhof–Parnas (EMP) pathway doesn't need oxygen.

(a) True (b) False

41. Coupled formation of ATP and NADH occurs during Payoff phase of glycolysis.

(a) True (b) False

42. Oxidative phases of Pentose Phosphate Pathway is reversible reactions feed to glycolysis.

(a) True (b) False

43. Oxidation of Fatty Acids occurs on the mitochondrial membrane.

(a) True (b) False

44. β-Oxidation of Acyl-CoA produces Acyl –CoA shorten by three carbon atoms.

(a) True (b) False

45. Fungi utilize some amino acids by direct uptake across the hypha membrane.

(a) True (b) False

46. Xylose can enter the glycolytic pathway through the pentose phosphate pathway.

(a) True (b) False

47. Lactate dehydrogenase enzyme helps in converting acetyl-CoA to Lactate during lactic acid fermentation.

(a) True (b) False

48. The Pyruvate Dehydrogenase Complex Consists of Four distinct enzymes.

(a) True (b) False

49.Pyruvate is the end product of the second phase of glycolysis.

(a) True (b) False

50.The first reaction of fatty acid degradation is hydration to L–3–Hydroxylacyl CoA.

(a) True (b) False

With our best wishes

Prof. Sanaa Mohamed Fahmy ***Dr. Maysa M. A. Ali***

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Faculty of Science
Botany&Microbiology Department

Date: June 15, 2022
The time allowed: 2 hours
Total mark: 50

Second Semester final Examination 2021 / 2022
(Fermentation industry)
Subject: Course 314B

Students: (Industrial chemistry section)

General Instructions: -Answer the following questions.

Q1. Place a tick (√) or (×) on the following. (40 marks)

1. Addition of phenylacetate stimulates the production of penicillin G by direct biosynthesis. ( )
2. Dilution plate method is applied for preparing a desired diluted solution suitable for microbes isolation from soil. ( )
3. Production of dextran by fermentation occurs in the absence of microbial living cells. ( )
4. Penicillins and cephalosporins are β-lactam ring containing antibiotics derived from amino acids. ( )
5. In penicillins antibiotics, those which contain five cyclic membered amide β-lactam ring are the most effective. ( )
6. Penicillin V is a natural one and is only produced when phenoxyacetate is added. ( )
7. In continuous stirred tank reactors, the sparger, in combination with impellers (agitators), allows for improved gas distribution throughout the vessels. ( )
8. Glycerol is a major by-product of ethanol fermentation by *Saccharomyces cerevisia*. ( )
9. During commercial production of penicillin by fermentation, slowly metabolizable sugars such as lactose is used or fed continuously with high dose of glucose. ( )
10. Optimum pH value for penicillin production by fermentation is 7-7.5. ( )
11. During product recovery, penicillin is extracted from aqueous filtrate into butyl or amyl acetate at very low pH. ( )
12. Crystals of penicillin K-salt are recovered by filter centrifuge. ( )

Continue from page 1 to 4

13. Penicillin biosynthesis is described into 2 main steps namely catalytic step, and exchange of different chains. ( )

14. Acyl-CoA synthetase and Acyl-CoA epimerase, a two-enzyme system that helps in converting isopenicillin N into penicillin N. ( )

15. Ring expansion of isopenicillin N gives deacetoxycephalosporin C. ( )

16. Deacetylcephalosporin C can be converted into cephamycin C by *Penicillium chrysogenum*. ( )

17. Isopenicillin N is converted to penicillin G in the help of IPN epimerase. ( )

18. The tripeptide ACV forms a bicyclic ring by oxidative ring closure. ( )

19. Streptomycin molecule consists of 2-deoxy-2-methylamine-glucose, L-streptose, and streptidine. ( )

20. Tetracyclines inhibit bacterial cell wall synthesis. ( )

21. Lincomycins are sulfur-containing antibiotics. ( )

22. The polypeptide antibiotics are of 3 main groups: neutral, acidic, and basic compounds. ( )

23. Bolymyxin B sulfate isolated from *Bacillus polymyxa* has free carboxyl groups. ( )

24. Ethanol fermentation is classified as aerobic one. ( )

25. Glycolysis is carried out in cytosol of all microbial cells. ( )

26. Molasses, wood, and agriculture wastes are row materials that used in microbial fermentation as a carbon source. ( )

27. Continous cultures maintain microorganisms at exponential phase of growth. ( )

28. Incubation under shaking conditions is a preferable method during preparation of industrial microbes biomasses. ( )

29. The bioreactor should provide withdrawal of cells/medium. ( )

30. Continous culture is an open system in which nutrients are utilized in relatively slow rate. ( )

31. Industrial microbes must be slow growing ones. ( )

32. Soil surface is a suitable location for microbes isolation. ( )

Continue from page 1 to 4

33. **During batch fermentation, the process is stopped once the product is formed. ( )**

34. **During continous fermentation, nutrients are added only once at the beginning of the process. ( )**

35. **In the first step of glycolysis, glucose is transformed into glucose-6-phosphate which is catalyzed by the enzyme hexokinase. ( )**

36. **During lactic acid fermentation, the presence of lactic acid bacteria on the surface of raw materials is necessary. ( )**

37. **Itaconic acid is of growing interest for the chemical industry, because of its potential to replace crude oil-based products like acrylic acid. ( )**

38. **During ethanol fermentation, the pyruvate molecules break down to acetaldehyde ones, a step catalyzed by pyruvate decarboxylase. ( )**

39. **Ethanol fermentation is used for biofuel production. ( )**

40. **During glycerol production, dihydroxyacetone phosphate is reduced to glycerol-3-phosphate, a step catalyzed by glycerol-3-phosphates. ( )**

Q2. Choose the correct answer. (10 marks)

41. **According to the side chain, which one of the following is the chemical name of ampicillin?**

a. Benzylpenicillin
b. Phenoxymethylpenicillin
c. D-α Amino benzyl penicillin
d. 1- amino cyclohexyl penicillin

42. **Which one of the following is the main producer of penicillin?**

a. *Penicillium cyclopium*
b. *Penicillium chrysogenum*
c *Aspergillus terreus*
d. *Aspergillus clavatus*

43. **At the beginning of penicillin fermentation, pH is set at a certain value. Which one of the following is to be?**

a. 4.0 - 4.5
b. 4.5 -5
c. 3.0 – 3.5
d. 5.5 -6

Continue from page 1 to 4

44. Which one of the following represents the correct members of lactone rings in macrolides?

a. 10 b. 11

c. 13 d. 15

45. For any one of the following groups is erythromycin related to?

a. Macrolides b. Tetracyclins

c. β- lactam d. Polypeptides

46. From any one of the following was gramicidin isolated from?

a. *Bacillus cereus* b. *Bacillus subtilis*

c. *Bacillus brevis* d. *Bacillus thuringiensis*

47. Which one of the following is applied for streptomycin production?

a. *Aspergillus flavus* b. *Streptomyces griseus*

c. *Penicillium notatum* d. *Streptomyces erthreus*

48. Which one of the following is the main producer of itaconic acid?

a. *Ustilago maydis* b. *Aspergillus terreus*

c. *Candida sp.* d. *Aspergillus flavus*

49. Which enzyme of the following is involved in the conversion of pyruvate into lactic acid (LA)?

a. LA kinase b. LA oxidase

c. LA dehydrogenase d. LA hydrolase

50. Which one of the following represents pH value required during ethyl alcohol fermentation?

a. 3-3.2 b. 4 - 4.5

c. 4.8 - 5 d. 5.6 – 5.8

Good luck

Prof. Dr. Ahmed Lotfy El-Sayed

Continue from page 1 to 4

Department of Botany and Microbiology Faculty of Science Assiut University		Microbiology (Third level) - 2021/2022 Final Examination of Microbial Enzymes (394 B) Second Semester – 2 hours

Final Exam "50 Marks"

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

1-An enzyme speeds up a reaction by raising the activation energy.	( )
2-Enzymes have more allosteric sites in their structure that have great specificity.	( )
3-EC 6 *ligases* enzymes join two molecules with covalent bonds.	( )
4-EC numbers are four digits developed for nomenclature of enzymes.	( )
5-Enzyme kinetics, the study of biochemical reaction rates (reaction velocity) catalyzed by an enzyme.	( )
6-K_m is the substrate concentration required for an enzyme to reach one-third its maximum velocity.	( )
7-Michaelis and Menton reported a mathematical relationship between substrate concentration and rate of product formed (or substrate consumed).	( )
8-Endoenzymes needed for biochemical pathways and function in inside the cell.	( )
9-Constitutive enzymes inducible, produced only in presence of specific substrates.	( )
10-In competitive inhibitors: Inhibitors do not enter the active site, but bind to allosteric site causing active site shape change.	( )
11-Holoenzymes are smaller than their substrate and have globular shape.	( )
12- Prosthetic groups loosely bound to proteins.	( )
13-Cosubstrate groups tightly bound to proteins.	( )
14-***Vmax*** is the substrate concentration required for an enzyme to reach one-half its maximum velocity.	( )
15-K and Ca are cofactors tightly bound to proteins	( )
16-Fe and Zn are cofactors loosely bound to proteins	( )
17-There are two main models that explain the formation of the enzyme-substrate complex: the lock & key model and the induced fit model.	( )
18-Most enzymes act in pH between 2 and 5	( )
19-Some enzymes need other associated molecules to work. These molecules are called enzyme coenzymes and they can be mineral ions, or organic molecules.	( )

20- Many vitamins are enzyme cofactors that cannot be synthesized by the organism and must be obtained from the diet.	( )
21-The active site is formed by groups of Fatty acids	( )
22-Enzymes of cellular respiration being located in Nucleus	( )
23-In induced fit hypothesis, a change in the configuration of an enzyme's active site induced by Substrate	( )
24-From enzymes properties, the specificity of binding depends on the precisely defined arrangement of Atoms at the active site.	( )
25-Q10 is the doubles or triples increase with every 10C rise in temperature.	( )
26-In reversible inhibition, an inhibitor attaches to the enzyme by weak bond	( )
27-In feedback inhibition, a metabolic reaction is blocked by Products	( )
28-In detergent industry used xylanase enzyme	( )
29-Enzymes accelerate reactions by decreasing ΔG.	( )
30-Wounds treated with lipase enzyme	( )
31-Cancer treated with L-asparagenase enzymes	( )
32-In diagnoses, high amylase in the blood serum indicate Acute pencreatites	( )
33- Enzymes facilitate the formation of the transition state by decreasing EC number	( )
34-*Thermus aquaticus* produces DNA polymerase	( )
35-In EC numbers the digit 3 represents the reaction position	( )
36-*Aspergillus niger* used in production of the digestive enzymes	( )
37- Isomerase enzyme plays a role in bleaching of wheat and soybean flours	( )
38-*Aspergillus flavus* used in industries of feeds	( )
39-In fuel production used cellulase enzyme	( )
40-Pectinase belongs hydrolases class	( )

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

	A	B	C	D
41-*Aspergillus oryzae* used in industries of	Cheeses	Papers	Textiles	Leathers
42-*Pyrococcus furiosus* produces	Amylase	Protease	Xylanase	DNA polymerase
43- Lipoxygenase belong-----class	Isomerase	Hydrolase	Oxido-reductase	Lyase
44-When ATP levels are low, Phosphofructokinase stimulate by----	AMP	ADP	ATP	Any of them
45-When ATP levels are high, Phosphofructokinase reduced by----	AMP	ADP	ATP	Any of them
46-preciptation of enzyme by	Sod.sulfate	ethanol	TCA	All of them
47-Enzymes of glycolysis located in	Mitochondria	Cytoplasm	Nucleus	All of them
48-In paper industry used ---------- enzymes for the bleaching	Hemicellul-ase	Protease	Amylase	All of them
49-In corn syrup used ----------	Cellulose	Protease	Amylase	All of them
50-Autism treated with----------	Cellulose	Protease	Amylase	All of them

Good luck ***Prof Dr. Hassan Hasaan***

Assiut University - Faculty of Science
Final Exam (Second Semester, 2021 -2022)

Course Title: تصميم تجارب Code: ٣١٦ ز Time: 2 Hours

اسم الطالب /

المستوى

1 2 3 4

رقم جلوس الطالب (يكتب ويظلل)

0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9

Q1: Shade (T) for True statements or (F) for False statements: (25marks; 1mark each)

1	T	F	6	T	F	11	T	F	16	T	F	21	T	F
2	T	F	7	T	F	12	T	F	17	T	F	22	T	F
3	T	F	8	T	F	13	T	F	18	T	F	23	T	F
4	T	F	9	T	F	14	T	F	19	T	F	24	T	F
5	T	F	10	T	F	15	T	F	20	T	F	25	T	F

Q2: Shade the correct answer; A, B, C or D :- (25 marks; 1mark each)

26	A	B	C	D	31	A	B	C	D	36	A	B	C	D	41	A	B	C	D	46	A	B	C	D
27	A	B	C	D	32	A	B	C	D	37	A	B	C	D	42	A	B	C	D	47	A	B	C	D
28	A	B	C	D	33	A	B	C	D	38	A	B	C	D	43	A	B	C	D	48	A	B	C	D
29	A	B	C	D	34	A	B	C	D	39	A	B	C	D	44	A	B	C	D	49	A	B	C	D
30	A	B	C	D	35	A	B	C	D	40	A	B	C	D	45	A	B	C	D	50	A	B	C	D

توقيع الملاحظ اسماً

	القسم مُقدم الامتحان: قسم المحاصيل – كلية الزراعة - جامعة أسيوط	

الفصل الدراسي الثاني – العام الجامعي 2022/2021
الامتحان النظري لمقرر: ز 316 " تصميم التجارب"
لجنة الممتحنين: أ.د. عاطف ابوالوفا أحمد أ.د. عادل محمد محمود المراجع الداخلي: أ.د. باهي راغب بخيت

السؤال الأول (30 درجة): أختر علامة (T) امام العبارات الصحيحة أو (F) أمام العبارات الخاطئة مما يلي:

1- يُحسَب استقلال العوامل من المعادلة $\chi^2=\sum_1^k(O-E)/E$ ومعنوية χ^2 تشير الى وجود ارتباط بين العوامل تحت الدراسة ( ).
2- يقيس أي من معامل الارتباط (r) ومعامل الانحدار (b) العلاقة بين عاملين أحدهما مستقل (X) والأخر تابع (Y) ( ).
3- تكون الفروق بين المُعَامَلات معنوية إذا F النظرية المقابلة لها ($F_{0.05}=2.71$) في مربع لاتيني 6*6 إذا كان:
Total SS = 122, Rows SS = 3, Columns SS = 4, EMS = 0.95 ( ).
4- لدراسة الفروق بين عاملين في تجربة 3^2 باستخدام تصميم Split Block Design فإن:
Error c = Total SS – MP. SS – Strips SS – AB SS – R SS ( ).
5- عند استخدام تصميم القطع المنشقة Split Plot Design فيتم توزيع مستويات العامل الأقل أهمية على الوحدات التجريبية الرئيسية (Whole plot) بينما توزع مستويات العامل الأكثر أهمية على الوحدات المنشقة (Sub-plot) ( ).
6- يزيد التكرار المتخفي بالتجارب العاملية من دقة التجربة ولا يُمَكِن من دراسة التفاعل بين العوامل تحت الدراسة ( ).
7- يمكن حساب التأثير الرئيسي (Main effect) للعامل B في تجربة 2^2 من $B = ½ \{ab + b – a – (1)\}$ ( ).
8- معامل الانحدار يكون غير معنوي إذا كان $\sum xySS=3.3, \sum x^2SS=1.0, \sum y^2SS=11.0, n=5, F_{0.05}=10.13$ ( ).
9- يمكن حساب جميع التأثيرات بطريقة Orthogonal في التجربة 2^5 ( ).
10- من فروض تحليل الاختلاف أن يكون تأثير البيئة والمعاملات تجميعي (Additive).
11- عند مقارنة متوسط معاملتين فقط بعد تحليل التباين فتتساوى قيمة كل من LSD و LSR ( ).
12- يستخدم التباين المتجمع كتباين عام للمُعَاملات إذا كان لديك:
F_p $LogS^2_p = -36.816, \sum(F_i\ LogS^2_i) = -36.961, C = 0.044 , \chi^2_{0.05} = 9.49$ ( ).
13- تُستخدم المعادلة $[\sum c_iT_i]^2/rt\sum c_i^2$ لحساب مجموع مربعات الانحرافات لمنحنى الاستجابة الخطى linear SS ( ).
14- النموذج الرياضي لتصميم Split Plot في نظام RCBD هو $X_{ijk} = \mu + A_i + \varepsilon_{ik} + B_j + AB_{ij} + \delta_{ijk}$ ( ).
15- درجات حرية Error b تساوى a(b-1)(r-1) في تصميم Split Plot عند تنفيذه في CRD, RCBD, LS ( ).
16- يُمكن التحكم في دقة الخطأ التجريبي عن طريق التصميم التجريبي ( ).
17- توزيع المُعَاملات عشوائيا على الوحدات التجريبية من أهم القواعد الأساسية في تصميم التجارب ( ).
18- في تجربة عاملية 2^2 فإن $\sum_1^{abr}X^2_{ijk} - (\sum X)^2/rab \neq \sum_1^{abr}(\sum X - \overline{XG})^2$ ( ).
19- عند تساوى قيم المكررات وأيضاً تساوى قيم المُعَامَلات في تصميم RCBD فإن Total SS = Error SS ( ).
20- يتطلب حساب تحليل الاتجاه أن تكون مستويات المعاملة كمية وتتغير بدرجات متساوية ( ).
21- تكون الفروق بين المُعَامَلات معنوية في تصميم LS به t = 4, Treat. SS = 3.36, Error SS= 6.36 ( ).
22- تكون فروق المُعَامَلات معنوية بتصميم RCBD به $t=r= 4$, Treat. SS=Error SS=18.6, $t_{0.05}=3.86$ ( ).
23- قيمة $(\sum r - t) \neq t\ (r - 1)$ لحساب درجات حرية الخطأ التجريبي لتصميم CRD عند تساوى r ( ).
24- إذا كانت $\sum xySS=12, \sum x^2SS=10, \sum y^2SS=16$ فإن معامل الارتباط r بين X، Y يساوى 0. 9 ( ).
25- عدد المقارنات المستقلة بين المُعَامَلات هو (t+1) وأن يكون مجموع المُعَامِلات لكل منها صفراً ($\sum c_i = 0$) ( ).

السؤال الثاني (30 درجة) أختر الإجابة الصحيحة من بين A, B, C, D.:

26- عند مرور خط الانحدار أسفل نقطة الأصل لمحوري X، Y فإن معادلة خط الانحدار تكون:

(A) $\hat{Y} = bX$. **(B)** $\hat{Y} = a + bX$. **(C)** $\hat{Y} = a - bX$. **(D)** $\hat{Y} = -a + bX$.

27- إذا كان لديك

	a_1	a_2
b_1	30	32
b_2	36	26

فإن التفاعل AB يكون:

(A) 0.0 **(B)** -6 **(C)** -2 **(D)** 2

28- في تجربة عاملية بها عدد n من العوامل فَيُمكن حساب عدد التفاعلات الثلاثية من:

(A) n(n-1)(n-2)/6 **(B)** n(n-1)/2 **(C)** n(n+1)/2 **(D)** n(n+1)(n+2)/6

29- إذا كان MSE = 10.4 في تجربة عاملية بها a = b = r = 4 فإن $S_{\bar{a}}$ (A) يكون:

(A) 0.57 **(B)** 0.41 **(C)** 1.14 **(D)** 0.81

30- إذا كانت قيمة معامل التقدير R = 0.88 فإن قيم معامل الارتباط r تكون:

(A) 0.995 **(B)** 0.885 **(C)** 0.938 **(D)** 0.665

31- يُشير التفاعل المعنوي بين العوامل إلى:

(A) عدم استقلالها **(B)** صعوبة تفسير النتائج **(C)** عدم تساوى التأثير البسيط للعامل تحت مستويات الأخر **(D)** كل ما سبق

32- تُحول البيانات المنضربة إلى متجمعة باستخدام:

(A) اللوغاريتم **(B)** الجذر التربيعي **(C)** التحويل الزاوي **(D)** كل ما سبق

33- من فوائد استخدام المكررات في التجارب العلمية في:

(A) تقدير الخطأ التجريبي **(B)** زيادة دقة التجربة **(C)** زيادة مجال استخدام التجربة **(D)** كل ما سبق

34- من أهم الفروض الأساسية لتحليل الاختلاف أن تكون الأخطاء التجريبية:

(A) مستقلة **(B)** متجانسة **(C)** تتوزع طبيعيا **(D)** كل ما سبق

35- إذا كان MSE=22.2 و r=5 و $t_{(Dunnett)0.05}$=2.76 و $t_{(Dunnett)0.01}$=3.45 فإن الفرق بين $\bar{X}_1$=20.20 , $\bar{X}_2$=30.30 يكون:

(A) غير معنوى **(B)** معنوى **(C)** معنوى جدا **(D)** كل ما سبق

36- تُشير عدم معنوية تحليل الاتجاه الخطى Linear SS أن المستوى الأمثل مقارنة بباقي مستويات العامل تحت الدراسة يكون:

(A) أقل منها **(B)** أكثر منها **(C)** من بينها **(D)** كل ما سبق

37- يَكُون تحليل الاختلاف في تصميم LS في:

(A) اتجاه **(B)** اتجاهين **(C)** ثلاث اتجاهات **(D)** كل ما سبق

38- يمكن حساب درجات حرية Error C في تصميم Split Block من:

(A) (a-1)(b-1)(r-1) **(B)** (b-1)(r-1) **(C)** (a-1)(r-1) **(D)** (a-1)(b-1)

39- سَجلت المُعَامَلات (1), a, b, ab قِيَمَاً قدرها 50, 54, 62, 74 على الترتيب وأن r = 4 فإن AB SS يكون:

(A) 4 **(B)** 16 **(C)** 32 **(D)** 64

40- يمكن حساب تباين العينة من:

(A) $S^2=\sum(X-\bar{X})^2/n-1$ **(B)** $S^2=\sum X^2-(\sum X)^2/n-1$ **(C)** $S^2=[\sum X^2-(\sum X)^2/n]/n-1$ **(D)** كل ما سبق

41- يَكُون التحليل المناسب لتنفيذ تجربة 3^3 بالمعمل هو:

(A) اتجاه **(B)** اتجاهين **(C)** ثلاث اتجاهات **(D)** كل ما سبق

42- لدراسة تأثير كل من الضوء والحرارة على وزن الأسماك المختلفة في العمر والتركيب الوراثي فإن التصميم المناسب هو:

(A) CRD **(B)** RCBD **(C)** LS **(D)** كل ما سبق

43- إذا كان $MSE = 4.88$ و $r = 4$ و $t_{0.05}=2.086$ و $t_{0.01}=2.845$ فإن الفرق بين $\bar{X}_5 = 10.0$, $\bar{X}_1= 3.0$ يكون:

(A) غير معنوي **(B)** معنوي **(C)** معنوي جدا **(D)** كل ما سبق

44- إذا كانت $\bar{X}= 3.0$, $\bar{Y} = 9.0$ $n=5$, $\sum y^2SS=16$, $\sum x^2SS=10$, $\sum xySS=12$ فإن معادلة خط الانحدار هي:

(A) $\hat{Y} = 1.2X.$ **(B)** $\hat{Y} = 5.4 + 1.2X.$ **(C)** $\hat{Y} = 5.4 - 1.2X.$ **(D)** $\hat{Y} = 4.5 + 2.1X.$

45- تكون قيمة معامل التقدير R من المسألة السابقة (رقم 21) هي:

(A) 0.900 **(B)** 0.933 **(C)** 0.966 **(D)** 0.999

46- إذا كانت $n = 9$ وأن $\bar{X} = 16$, $\mu = 15.5$, $S^2 = 1.5$ فإن قيمة t المحسوبة إذا كانت $t_{0.05} = 2.31$ تكون:

(A) غير معنوية **(B)** معنوية **(C)** معنوية جداً **(D)** كل ما سبق

47- تكتب المعاملة $a_1b_1c_1$ بنظام (1) أو: **(A)** $a_0b_0c_0$ **(B)** 000 **(C)** 111 **(D)** كل ما سبق

48- من شروط مقاييس التشتت:

(A) سهل الفهم والحساب **(B)** لا ترتبط قيمته بقيمة المتوسط **(C)** يعتمد على جميع القيم في حسابه **(D)** كل ما سبق

49- تشمل $\sum_1^{ab}F^2/r - (\sum X)^2/rab$ لدراسة عاملين (A) و (B) في تصميم RCBD كل من:

(A) $[\sum_1^a A^2/rb -(\sum X)^2/rab]$ **(B)** $[\sum_1^b B^2/ra -(\sum X)^2/rab]$ **(C)** $[\sum_1^{ab} AB^2/r -(\sum X)^2/rab$-**(A)**-**(B)**] **(D)** [كل ما سبق]

50- إذا كان MS لكل من E. a=0.47, E.b=0.64, R=1.56, A=20.25, B=6.56, AB=0.47 وأن $a=3, b=4, r= 4$ في تصميم مناسب فإن التفاعل AB يكون:

(A) غير معنوي **(B)** معنوي **(C)** معنوي جدا **(D)** كل ما سبق

---------- انتهت الأسئلة مع التمنيات بالتوفيق ----------

Assiut University Faculty of Science Botany & Microbiology Dept.		جامعة أسيوط كلية العلوم قسم النبات والميكروبيولوجى
Mycology 2 (362B)	Final exam 3rd level students	Time: 2 hours Date: 14th June 2022

➢ **Shade the correct answer in provided bubble sheet using a blue ballpoint pen.**

Q1: Choose the correct answer: (25 Marks)

1. **Which types of spores produced in soil by germination of *Puccinia* teleutospores and infect berberis leaf?**

   A. Aeciospores B. Basidiospores

   C. Pycniospores D. Zoospores

2. **Asexual spores produced by Ascomycetes are .....**

   A. Conidia B. Ascospores

   C. Basidiospores D. Sporangiospores

3. **The causal agent of the loose smut of wheat**

   A. *Ustilago tritici* B. *Puccinia graminis f. sp. tritici*

   C. *Ustilago maydis* D. *Urocystis tritici*

4. **Which of the following fungi producing ascostroma with numerous apothecia**

   A. *Nectria fuckeliana* B. *Claviceps purpurea*

   C. *Morchella esculenta* D. None of them

5. **Which of the following contains globose, scattered asci?**

   A. Sclerotium B. Cleistothecium

   C. Perithecium D. Stroma

6. **Yeasts are characterized by .....**

   A. Riboflavin production B. Budding

   C. Symbiotic fermentation D. All of the above

7. **A type of reproduction in which a new cell develops from an outgrowth (projection).**

   A. Ascospore formation B. Binary fission

   C. Chlamydospore D. Budding

8. **Which of the following fungi produce asci-containing 4 ascospores?**

A. *Emericella quadrineata* B. *Eurotium amstelodami*

C. *Talaromyces flavus* D. *Saccharomyces cervisiae*

9. **Which of the following penicillia cause spoilage of garlic fruits?**

A. *Penicillium expansum* B. *P. marnefii*

C. *P. allii* D. *P. digitatum*

10. **The section that characterized by producing spores with multi-transverse septa**

A. Dictyosporae B. Didymosporae

C. Scolecosporae D. Phragmosporae

11. **Ascomycetes are closely associated with insects could kill insects under appropriate environmental conditions**

A. Entomopathogenic fungi B. Nematophagous fungi

C. Coprophilous fungi D. Corticolous fungi

12. **Monoverticillate penicilli related to Subgenus .....**

A. Penicillium B. Aspergilloides

C. Furcatum D. Divaricatum

13. **Fungi that can live as both filamentous and yeast stages**

A. Dimorphic B. Heterotrophic

C. Holocarpic D. None of them

14. ***Chaetomium* is characterized by producing .....**

A. Perithecium with hairs B. Apothecium with hairs

C. Perithecium without hairs D. Cleistothecium with hairs

15. **The sexual stage in Talaromyces is called .....**

A. Apothecium B. Gymnothecium

C. Cleistothecium D. Perithecium

16. **Which of the following fungi produce spores in groups and causing onion smut:**

A. *Ustilago tritici* B. *Urocystis cepula*

C. *Fusarium oxysporum* f. sp. *cepae* D. *Botrytis cinerea*

17. **All the following are asexual fruiting bodies produced by Ascomycetes EXCEPT**

A. Acervuli B. Synemmata

C. Sporodochia D. Ascomata

18. **Which of the following spore is haploid uninucleate**

A. Basidiospore
B. Teleutospore
C. Aeciospore
D. Uredospore

19. **In Basidiomycota, dikaryon mycelium means that each cell has**

A. Single haploid nucleus
B. Single diploid nucleus
C. Two haploid nuclei
D. Two diploid nuclei

20. **Which of the following penicillia cause skin infections to AIDS patients?**

A. *Penicillium chrysogenum*
B. *P. marneffei*
C. *P. citrinum*
D. *P. allii*

21. **Formation of capsules is characteristic to .....**

A. *Taphrina*
B. *Candida*
C. *Saccharomyces*
D. *Cryptococcus*

22. **Stalked multicellular teleutospores formed in .....**

A. *Phragmidium*
B. *Uromyces*
C. *Agaricus*
D. *Tilletia*

23. **The standard ending for families of fungi is .....**

A. -aceae
B. -ales
C. -mycotina
D. none of the above

24. ***Pseudoallescheria boydii* belongs to order**

A. Eurotiales
B. Microascales
C. Hypocreales
D. Dipodoascaceae

25. ***Amanita* is .....**

A. Edible fungus
B. Rust fungus
C. Smut fungus
D. Nonedible fungus

Q2: Choose (T) or (F) for the following: **(25 Marks)**

1. All members of Ascomycotina producing eight-celled ascospores ( )
2. Most fungi are living hypogean. ( )
3. *Aspergillus flavus* is the anamorph of *Aspergillus petromyces* ( )
4. Ascoma necks show phototropism phenomenon in *Erysiphe* ( )
5. *Microsphaera* produces single- ascus in ascomata ( )
6. "Dead Man Fingers" is the name of *Xylaria polymorpha* ( )
7. All edible fungi belong to Division: Basidiomycota ( )
8. *Claviceps purpurea* is the causal agent for ergot disease in rye ( )
9. Not all *Penicillium* teleomorphs producing cleistothecia ( )
10. Arthropods associated Pyrenomycetes *Torrubiella* grows on spiders. ( )
11. The teleomorph of *Trichoderma* is *Nectria* ( )
12. *Leveillula taurica* containing one ascus ascomata with myceloidal-like appendages and conidia are solitary ( )
13. Psychrophiles are fungi can live in wide range of temperatures ( )
14. *Uromyces faba* is characterized by Autoecious and Macrocyclic life cycle. ( )
15. *Setosphaeria* is the teleomorph of *Alternaria* ( )
16. Ascomycota is classified according to asexual stage. ( )
17. Rust and smut fungi are similar because both lack basidiomata ( )
18. The conidial head of *Aspergillus niger* is radiate ( )
19. Sexual fruiting bodies produced by *Sphaerotheca* is ascostroma ( )
20. Spoilage of apple fruits is caused by *P. expansum* ( )
21. *Cordyceps* is endoparasite on insects ( )
22. *Curvularia* produces dark conidia with only transverse septa ( )
23. Aflatoxin B is an alkaloid given to women in the third stage of labor to prevent hemorrhage ( )
24. Ascocarp may be present or absent in the Ascomycota ( )
25. *Cochliobolus* produces filiform ascospores ( )

Good Luck

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