

BIOL 358- MYCOLOGY

MARCH, 2018

1 HOUR 30 MINUTES

ANSWER ALL QUESTIONS IN BOTH SECTIONS A AND B

SECTION A

1. The most famous antibiotic is ...
 - a. Amoxycillin
 - b. Ampicillin
 - c. Penicillin
 - d. Tetracycline

2. The antibiotic above is best obtained from....
 - a. *Aspergillus ochraceous*
 - b. *Penicillium notatum*
 - c. *Penicillium chrysogenum*
 - d. *Penicillium griseofulvum*

3. Which of the following is not caused by a fungus?
 - a. Cigar-end rot of banana
 - b. Damping off
 - c. Mealy pod of cacao
 - d. Swollen shoot of cacao

4. Which of the following is **not** a branching pattern of the hyphae?
 - a. Paired
 - b. Lateral
 - c. Subapical
 - d. Whorl

- . Which of the following statement is **true**?
 - a. The majority of lichens are homoiomericous
 - b. Lichens are able to tolerate extremes of temperature and moisture
 - c. The lichen partnership is one of a controlled parasitism of the phototroph

- by the fungus.
- (d) Lichens typically possess four different growth forms
6. The black pod fungus attacks all part of the plant except
- Flower
 - Leaves
 - Root
 - Stem bark
7. Ectomycorrhizal fungi generally belong to.....
- Ascomycetes
 - Basidiomycetes
 - Deuteromycetes
 - Zygomycetes
8. Which of the following statements about four-celled spore is true?
- Each cell is capable of germinating
 - Median cells do not germinate
 - Only one cell is capable of germinating
 - Only the apical cell is capable of germinating
9. Spores produced by budding are often called.....
- Arthospores
 - Blastospores
 - Mitospores
 - Soredia
10. Body ringworm is caused by?
- An Ascomycete
 - A Basidiomycete
 - A Mastigomycota
 - A Zygomycete
11. Which among the following mycotoxins is a Neurotoxin?
- Aflatoxin
 - Citrinin
 - Ochratoxin
 - Patulin
12. Which of the following statements is false?
- fungi require higher amounts of carbohydrates in the media than bacteria do
 - Bacteria predominantly destroys proteins than fungi
 - bacteria are more efficient in degrading plant material than fungi
 - There are more filamentous fungi than there are unicellular ones

13. Dimorphism refers to;
a. Alternation of generation
b. The presence of both haploid and diploid thalli under different environmental conditions
 c. When the soma can be filamentous or yeast-like depending on the environmental conditions
d. When the life cycle is diplobiontic
14. Select the **odd** among the following in terms of complexity:
a. Ascomycota
b. Basidiomycota
c. Deuteromycota
 d. Zygomycota
15. Centrioles are present in these fungi
a. Ascomycota
b. Basidiomycota
 c. Mastigomycota
d. Zygomycota
16. Which of the following stages in the Zygomycetes is diploid?
a. Asexual spores
b. Hypha
c. Zygospangium
 d. Zygote
17. Choose the **correct** statement:
a. Fungi are autotrophic.
b. Most fungi are aquatic.
 c. Most fungi are decomposers.
d. The optimum Ph for most species is about 3.5.
18. What do fungi and arthropods have in common?
a. both groups are commonly coenocytic
b. the haploid state is dominant in both groups
c. both groups are predominantly saprophytic in nutrition
 d. both groups use chitin for the construction of protective coat.
e. both groups have cell walls
19. If there were no mycorrhizae, which of the following would be **true**?
a. there will be fewer infectious diseases
b. we wouldn't have antibiotics like penicillin
c. there would be no mushrooms for pizza
 d. a lot of trees would not grow well
e. cheeses like blue cheese or Roquefort cannot exist

20. Coenocytic structure implies being:
a. multicellular
 b. multinucleate
c. commensalistic
d. saprophytic
e. heterotrophic
21. Mycostasis refers to:
 a. Mycotoxicoses by the ascomycetes
b. Growth suppression imposed on rhizosphere fungi by the phylloplane flora
c. the dormancy imposed on fungal spores by soil and sometimes leaf surface microflora
d. Inhibition of growth by phytoalexins
22. A characteristic of fungal secondary metabolite is that:
a. they are produced by potentially growing cells
b. most are produced as families of related molecules
c. each is produced by just one specific strain of fungus
d. they play essential roles in spore formation
23. Most wine is made commercially with:
a. a culture of *Saccharomyces cerevisiae*
b. the natural fungal flora on the grape
c. in inoculums from the previous fermentation
d. A and B
e. A, B, C
24. The most important fungi for commercial enzyme production are species of:
a. *Agarics*
b. *Aspergillus*
c. *Neurospora*
d. *Saccharomyces*
25. The chitin in the fungal cell wall is:
a. a protein
b. a glycoprotein
c. a polysaccharide
d. a lipopolysaccharide
26. It is essential to include in a growth medium for any fungus:
a. an organic nitrogen source
b. an organic sulphur source
c. an organic phosphorus source
d. an inorganic nitrogen

27. Which of the following statements is not true?
- All yeast reproduce by budding
 - Some yeast reproduce by fission
 - Fission is the main method of Asexual Reproduction in the Schizosaccharomycetales
 - yeast occur predominantly in the unicellular state
28. Fungal spores generally contain
- Diploid nuclei
 - Haploid nuclei
 - Haploid $2n$ stage
 - Synkaryotic state
29. Which of the following statement is not true?
- Lichens exist farther north than any plant of the arctic region
 - The dominant lichen mycobiont is basidiomycetes
 - Most of the phototrophic organisms found in lichens also occur as free living species in nature
 - In the homoiomerous lichen, the algae are more or less evenly distributed throughout the thallus
30. Which of the following statement about lichens is false?
- Sexual reproductive structures of the lichens are always that of the fungal component
 - Any one species of the lichen have same algal and fungal component
 - The fungus appears to parasitize the algal cells but also lives saprophytically on the algal cells that die.
 - The lichenized zygomycetes are generally of the foliose type
31. The methods of plasmogamy in which the species produce morphologically differentiated uninucleate or multinucleate gametangia is referred to as
- Gametangial copulation
 - Gametangial contact
 - Planogametic copulation
 - Spermatization
32. Which of the following statement about Mycorrhiza is false?
- Increases the solubility of minerals
 - Improve the uptake of nutrients (NPK)
 - Protects the host roots against pathogens
 - Move carbohydrates from one plant to the other and produce plant hormones

- e. An infected root tip is covered by a mantle in the endomycorrhizas
33. Which of the following statements about Lomasomes is correct?
a. A membranous layer on the cell wall
b. A membranous structure beneath the plasma membrane
c. It is involved in the cell wall formation
d. Present only in plants and fungi
34. Which is the odd among the following?
a. Ascospores
b. Basidiospores
c. Sporangiospores
d. Zygospores
35. In fungi, when karyogamy does not immediately follow plasmogamy.....
a. sexual reproduction can occur in specialized structure
b. results in more genetic variation during sexual reproduction
c. allows fungi to reproduce asexually most of the time
d. creates dikaryotic cells
36. Why do biologists who study lichens sometimes refer to the symbiotic relationship between fungus and algae as "controlled parasitism"?
a. together the fungi and alga may parasitize and kill other living organisms, such as plants
b. each contributes to the maintenance of the other
c. Fungal haustoria may kill algal cells, but at a pace slow enough not to destroy all the algae present.
d. Algal cells die at a faster rate than fungal cells
e. Fungal cells reproduce slower than algae, thus becoming enclosed and unable to grow.
37. Fungi have an advantage over other microbes in recycling organic matter. This is because..... Select the most appropriate among the following.
a. They are capable of indefinite growth
b. They have the ability to withstand extremely low temperatures and there are few thermophilic ones as well
c. They break down organic compounds including cellulose, gums and waxes other microbes avoid
d. They prefer and survive better in acidic media than other microorganisms.
38. Structures formed by symbiotic fungi inside plant cells are:
a. Appressoria
b. Haustoria
c. Hartig net

- d. Rhizomorph
39. The role of this spore is predominantly that of dispersal. This spore is....
a. Ascospore
b. Chlamydospore
c. Conidia
d. Zygospore
40. Reproductive structures consisting of photosynthetic cell surrounded by fungal hyphae are called:
a. Ascospores
b. Basidiospores
c. Conidiospores
d. Soredia
41. Which statement is **not true** of the fungal nutrition?
a. Some are active predators
b. Some fungi form mutualistic association with other organisms
c. All fungi require mineral nutrition
d. Ca is essential in the nutrition of all fungi
42. Which of the following statements is **not true** of the fungi?
a. A multicellular fungus has a body called mycelia
b. Hyphae are composed of individual mycelium
c. Many fungi tolerate highly hypertonic environments
d. They are anchored to their substratum by rhizoids
43. The condition described as $n + n$ is said to be:
a. Diplobiontic
b. Dikaryotic
c. Haplobiontic
d. Monokaryotic
44. Which of the following statements is **not true**?
a. Conidium is sexual spore
b. Conidium is enclosed
c. Majority of deuteromycetes are either saprophytic or weak parasite
d. Zygospore is an asexual spore
45. The initial source of the psychedelic drug lysergic acid diethylamide was:
a. Ascomycetes
b. Basidiomycetes

- c. Deuteromycetes
d. Zygomycetes
46. The fungus that almost collapse the French wine industry is
a. *Phytophthora citricola*
b. *Plasmopara viticola*
c. *Sclerotium rolfsii*
d. *Phytophthora infestans*
47. Rhizoids may be connected by:
a. Hyphal strand
b. Mycelial strands
c. Stolon
d. Stroma
48. Which is **not true** about adventitious septum?
a. Associated with cell division
b. Changes in protoplasm concentration
c. Not perforated
d. Typically common with the lower fungi
49. Which of the following statements is **incorrect**?
a. *Candida albicans* is yeast that causes candidiasis or thrush in humans
b. Candidiasis typically infects the mouth or vagina
c. *C. albicans* is part of the normal flora of the vagina and gastrointestinal tract.
d. Predisposition factors to candidiasis include obesity, alcoholism and the use of broad spectrum antibiotics and steroids
50. The spore whose ornamentation entails a network of raised ridges which are normally represented by lines in a plane figure is called:
a. alveolate
b. reticulate
c. spiny
d. verrucose
51. The most predominant asexual spores formed by fungi are:
a. Chlamydospores
b. Conidia
c. Sporangiospores
d. Zoospores
52. The initial structure that comes out from a germinating spore is called:
a. Germ tube

53. b. Hyphae
c. Infection peg
d. Mycelium
53. Woronin bodies are associated with the septum in:
a. Ascomycetes and Deuteromycetes
b. Ascomycetes and Basidiomycetes
c. Basidiomycetes and Deuteromycetes
d. Zygomycetes and Deuteromycetes
54. Which are the imperfect fungi?
a. Ascomycetes
b. Basidiomycetes
c. Deuteromycetes
d. Zygomycetes
55. In what way are fungi and protozoans similar?
a. Both have cell walls
b. Both are filamentous
c. Both can be pathogenic
d. Both are septated
56. In what way do mushrooms and moulds differ?
a. In the size of their structures
b. Moulds are filamentous fungi, mushrooms are not
c. Mushrooms have hyphae, moulds do not
d. Mushrooms are filamentous fungi, moulds are not
57. Fungal spores:
a. May be dispersed by air current
b. Can be sexual or asexual
c. Can give rise to mycelium upon germination
d. All of the above
58. Fungi are the only organisms with a..... stage in the life cycles.
a. Dikaryotic
b. Diploid
c. Haploid
d. Polyploidy
59. The slime mould and water mould are strictly:
a. Ascomycetes
b. Basidiomycetes
c. Not fungi

DEPARTMENT OF THEORETICAL AND APPLIED BIOLOGY

MYCOLOGY

QUIZ 1 (45 MINUTES)

25.5

INDEX NUMBER..... 4516515

① 1. Fungal cell wall is composed of chitin or cellulose or both, together with other complex organic molecules.

2. Why are the slime moulds not strictly regarded as fungi?

① Slime moulds do not possess the reproductive structure (Hyphae) in any stage of their life cycle and lack cell walls.

3. What are some of the limitations of the definition of term "fungi"?

① 4. There are some organisms mycologists have studied more or less by default but are probably not fungi. The vegetative phase consists of plasmodium and it is a multinucleate mass of protoplasm lacking cell wall. These are plasmodial and cellular slime moulds.

5. Ainsworth divided fungi into 2 categories. These are:

- ① i) Eumycota
ii) Myxomycota

6. Indicate the importance of fungi in the following areas:

a. Human diseases

① Fungi are used in the production of antibiotics in fighting or curing certain diseases in human.

b. Plant diseases

① Fungi causes disease such as Fungi feeds and eradicate disease causing pathogens of plants such as nematodes.

c. Cocoa industry

① Fungi causes disease such as black pod in cocoa fruit and trees causing a loss to the cocoa industry.

d. Plant growth

Fungi associates with plants in mycorrhizal associations
providing necessary nutrients for plants growth and aiding in nutrient absorption.

c. Industry

Dye and other necessary chemical components in the industries can be obtained from fungi. Certain antibiotic producing industries make use of fungi.

7. Complete the table below

Name of antibiotic	Source organism(fungi)	Usage
Tetracycline		Used to cure certain bacteria infections
Amoxycillin		

NB: antibiotic does not include PENICILLIN

8. What are the two main divisions of Phycomycetes

- i) Zygomycotina
ii) Mastigomycotina

9. These are membrane structures lying between the plasma membranes and the cell walls, they are unique to the fungal family and are not common in other organisms.

Lomasomes

10. Give the differences between these related pairs of terminologies

i. Dikaryotic cell and synkaryotic cell

Dikaryotic cell has a single nucleus and diploid number of chromosomes but a synkaryotic cell has a single nucleus and haploid number of chromosomes

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ii. Lichen and mycorrhiza

① Lichen is an association between a fungi and an algae but mycorrhiza is an association between a fungi and the roots of a plant.

iii. Higher fungi and lower fungi

② Higher fungi are the type of fungi that have complex structures but lower fungi are the type of fungi that possess less complex structures.

iv. Mycelial strand and rhizomorph

③ Mycelial strand is a thread-like structure from a fungi's mycelium but a rhizomorph is a root-like structure produced to serve as a support.

v. Appresorium and haustorium

④ An appresorium is a hyphal appendage that forms a bulbous structure on the substrate and penetrate the substrate slightly while a haustorium is a parasitic appendage of fungi that penetrate deeper into the host and absorbs nutrients.

vi. Infection cushion and rhizoid

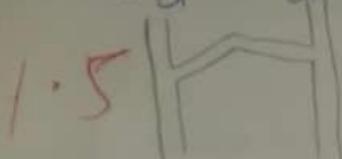
⑤ Infection cushion is an appendage that forms within the cells of the host but a rhizoid is an appendage that forms

vii. Hyphae and mycelium

⑥ Hyphae is the component or the body of fungi of a growing fungi but a mycelium is the body of a fungi just producing from a spore.

11. With the aid of a diagram, describe the three main types of hyphal anastomosis and state their biological significance if there are any

i) Hypha to hypha



ii) Hypha + Peg



iii) Peg to Peg



This type of hyphal anastomosis occurs when a hypha comes into contact with another hypha. Hyphes protrude towards each other aiding in reproduction.

A hypha detects certain chemicals and protrude towards a peg of a different hypha.

Two pegs from different hyphae come into contact.

12. Briefly describe the two kinds of septation and state its importance in a fungi

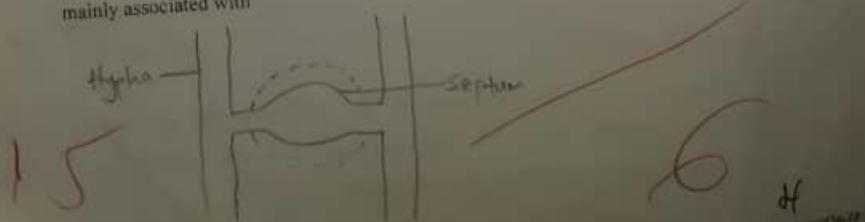
(i) Septation that occurs within the hypha. This forms daughter cells and also differentiates reproductive cells from somatic cells. It also differentiates dead cells from the living ones.

(ii) Septation that occurs at the base only. This type of septation occurs only at the base of the hypha and aids in the elongation of the hypha.

13. State any structure that is associated with fungal septa and their function

Cell wall - It is produced within the hypha to aid in septation. Its production makes the septation possible.

14. Make an annotated diagram of a dolipore septum and state the group of fungi that it is mainly associated with



ASIS

15. Explain and give an example of a fungi that falls under the ff.

Vesicular-arbuscular endomycorrhiza

This is the swelling of the hypha which occurs in the intracellular portion of the cell.

2) ✓

Ectomycorrhiza

3)

16. Network-hypha..... is a type of mycorrhiza in which the fungal component forms a Hartig net.

4)

Complete the following statements

17. Thermophilic fungi refers to fungi that is able to thrive or live in harsh conditions.

5)

18. Which does better in an acidic medium, fungi or bacteria

Fungi does better in acidic medium, a pH of 6

6)

19. Which of the two requires a higher carbohydrate content in a media, bacteria or fungi... bacteria

Fungi doesn't make use of carbohydrate

7)

20. The term dimorphism refers to the different forms of the same structure or substance

8)

5
Pen Commission

2