

# BOT 125 - Plant Morphology

## Fall 1998, Midterm

1. **Read these directions before you begin.**
2. Write your name on your Scantron sheet and make sure it is on the 8½×11 "cheat sheet" (**tests without names will not be graded**).
3. Write your **lab** section on the Scantron sheet in the box marked "Hour" (sect. 1 = MW 3-6, sect. 2 = TTh 1-4). **Scantrons without lab sections will have one point deducted from the total.**
4. Check this test to make sure it has all pages, 1–4.
5. Mark all answers on the Scantron sheet. There is *only one* correct answer to each question.
6. When you are finished, turn in both the Scantron and the 8½×11 "cheat sheet" on the front table. ***Please keep this sheet.***

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| <ol style="list-style-type: none"> <li>1. _____ are <b>always</b> haploid.               <ol style="list-style-type: none"> <li>a. gametophytes</li> <li>b. meicytes</li> <li>c. meiosporangia</li> <li>d. sporophytes</li> <li>e. zygotes</li> </ol> </li> <li>2. _____ are <b>always</b> diploid.               <ol style="list-style-type: none"> <li>a. Gametangia</li> <li>b. Gametes</li> <li>c. Gametophytes</li> <li>d. Meicytes</li> <li>e. Meiospores</li> </ol> </li> <li>3. _____ are <b>never</b> diploid               <ol style="list-style-type: none"> <li>a. Gametangia</li> <li>b. Gametes</li> <li>c. Meicytes</li> <li>d. Meiosporangia</li> <li>e. Sporophytes</li> </ol> </li> <li>4. _____ is a Class and _____ is an Order.               <ol style="list-style-type: none"> <li>a. Alismataceae . . . Ginkgophyta</li> <li>b. Brassicaceae . . . Magnoliales</li> <li>c. Chrysophyceae . . . Heterobasidiomycetes</li> <li>d. Magnoliopsida . . . Zygnematales</li> <li>e. <i>Penicillium</i> . . . <i>Phytophthora</i></li> </ol> </li> <li>5. "Red" chloroplasts               <ol style="list-style-type: none"> <li>a. are similar to free-living cyanobacteria</li> <li>b. have chlorophylls a, b, c, and d</li> <li>c. have fucoxanthin as an accessory pigment</li> <li>d. lack chlorophyll</li> <li>e. show no similarities to free-living prokaryotes</li> </ol> </li> <li>6. A polyphyletic group               <ol style="list-style-type: none"> <li>a. consists of a common ancestor and all its descendents</li> <li>b. consists of a common ancestor and some, but not all, of its descendents</li> <li>c. excludes its common ancestor</li> <li>d. is a natural group, that exists independent of human perception</li> <li>e. is the same thing as a clade</li> </ol> </li> </ol> | <ol style="list-style-type: none"> <li>7. An ascus is an example of a(n)               <ol style="list-style-type: none"> <li>a. asexual sporangium</li> <li>b. gamete</li> <li>c. meiosporangium</li> <li>d. oospore</li> <li>e. zygospor</li> </ol> </li> <li>8. An auxospore, an oospore, and a zygospor walk into a bar. The bartender says, "You'll have to leave. We don't serve _____ here."               <ol style="list-style-type: none"> <li>a. asexual spores</li> <li>b. gametes</li> <li>c. meiospores</li> <li>d. zoospores</li> <li>e. zygotes</li> </ol> </li> <li>9. An organism has aseptate haploid filaments. If it forms zygospor and is not photosynthetic, its cell walls are probably made of               <ol style="list-style-type: none"> <li>a. cellulose</li> <li>b. chitin</li> <li>c. nothing—it has no cell walls</li> <li>d. peptidoglycan</li> <li>e. silica</li> </ol> </li> <li>10. An organism produces meiospores and asexual spores. The meiospores are _____ and the asexual spores are _____.               <ol style="list-style-type: none"> <li>a. diploid . . . diploid</li> <li>b. diploid . . . haploid</li> <li>c. haploid . . . diploid</li> <li>d. haploid . . . haploid</li> <li>e. their ploidy levels cannot be determined with the information given</li> </ol> </li> <li>11. Ascogenous hyphae come from the _____ and form the _____.               <ol style="list-style-type: none"> <li>a. ascogonium . . . ascocarp</li> <li>b. ascogonium . . . zygospor</li> <li>c. ascospores . . . ascocarp</li> <li>d. ascospores . . . oospores</li> <li>e. ascus . . . zygote</li> </ol> </li> </ol> |
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12. Because \_\_\_\_\_, the Ascomycota have a dikaryotic phase.
- karyokinesis is not immediately followed by cytokinesis
  - plasmogamy is not immediately followed by karyogamy
  - syngamy is not immediately followed by meiosis
  - they have a diploid dominant life cycle
  - they have no sexual reproduction
13. Botanists learn the ploidy level of cells, organs, and organisms by
- counting their chromosomes
  - looking them up in a book
  - looking to see if they are drawn in red or green
  - sequencing their DNA
  - understanding their place in the sexual life cycle
14. False homology is called \_\_\_\_\_.
- homoplasy
  - homospory
  - monophyletic
  - parallel evolution
  - paraphyletic
15. Flowering plants are one of the groups of seed plants. Flowering plants can have either one or two cotyledons. Other seed plants have two cotyledons. The principle that tells us that two cotyledons are ancestral to one cotyledon in the flowering plants is called
- doctrine of signatures
  - homology
  - homoplasy
  - natural classification
  - outgroup comparison
16. Gametophytes produce
- gametes by meiosis
  - gametes by mitosis
  - meiocytes by syngamy
  - meiospores by meiosis
  - meiospores by mitosis
17. In alternation of generations, sporophytes produce
- gametes by meiosis
  - gametes by mitosis
  - meiocytes by syngamy
  - meiospores by meiosis
  - meiospores by mitosis
18. In botany, the study of cells and tissues is called
- anatomy
  - ecology
  - histology
  - morphology
  - mycology
19. In organisms with a haploid dominant life cycle, gametes
- are diploid
  - are produced by meiosis
  - are produced by mitosis
  - are the *result* of syngamy
  - are also called zygotes
20. In organisms with alternation of generations, the asexual sporangia, gametangia, and meiosporangia may look similar. This is because they
- are all haploid
  - are all multicellular
  - are formed by the same genetic and developmental pathways
  - are formed on the same sporophytes
  - have the same function
21. In the Myxomycota, the plasmodium is
- a cluster of haploid cells
  - a single large cell with many diploid nuclei
  - a single large cell with many haploid nuclei
  - an asexual sporangium
  - made of plectenchyma
22. Meiospores are always \_\_\_\_\_ and meiocytes are always \_\_\_\_\_.
- diploid . . . diploid
  - diploid . . . haploid
  - haploid . . . diploid
  - haploid . . . haploid
  - their ploidy levels depend on the structures that produced them
23. Oogamous gametes are
- always flagellated
  - diploid
  - egg and sperm
  - produced only by Oomycota
  - the same size
24. Organisms of the Division \_\_\_\_\_ neither cellulose nor chitin cell walls.
- Ascomycota
  - Chytridiomycota
  - Myxomycota
  - Oomycota
  - Zygomycota
25. *Phytophthora infestans* ( \_\_\_\_\_ ) is an example of \_\_\_\_\_
- black mildew . . . a facultative human pathogen
  - brewer's yeast . . . an organism that has mitochondria, but doesn't use them.
  - common pizza mushroom . . . an organism that is reproduced asexually by people, from a group of organisms that reproduces only sexually in the wild.
  - late blight of potato . . . asexual reproduction causing more infection than sexual reproduction
  - peanut mold . . . an organism that produces a dangerous toxin in stored foods
26. Plectenchyma consists of
- diploid mycelium
  - flat sheets of cells, one cell thick
  - masses of asexual sporangia
  - three-dimensional tissue made of compacted filaments
  - three-dimensional tissue that results from cells dividing in three dimensions

27. The “slug” of the Acrasiomycota
- can eat organisms as large as a small puppy
  - is a single multinucleate cell
  - is an aggregation of many separate cells
  - is involved in sexual reproduction
  - turns into a meiosporangium
28. The Acrasiomycota are like the \_\_\_\_\_ because they both ingest bacteria, and they are like the \_\_\_\_\_ because they both have cellulose cell walls.
- Ascomycota . . . Zygomycota
  - Chytridiomycota . . . Myxomycota
  - Oomycota . . . Ascomycota
  - Myxomycota . . . Oomycota
  - Oomycota . . . Zygomycota
29. The asexual spores of the Ascomycota are
- called conidia
  - diploid
  - formed by meiosis
  - formed inside asexual sporangia
  - zoospores
30. The asexual spores of the Oomycota are
- called conidia
  - formed by meiosis
  - formed inside meiosporangia
  - haploid
  - zoospores
31. The best evidence for the amount of evolutionary kinship between any two organisms is
- how primitive or advanced they are
  - the homologies they share
  - their place in the classification in the book
  - their place on a cladogram
  - their similar fossils
32. The Chytridiomycota are similar to the Oomycota because \_\_\_\_\_ and different from them because \_\_\_\_\_.
- they are both photosynthetic . . . the Oomycota are terrestrial
  - they are both septate . . . the Oomycota lack flagellated cells
  - they both have chitin cell walls . . . the Oomycota are absorptive
  - they both have flagellated cells . . . the Oomycota have cellulose cell walls
  - they both lack cell walls . . . the Oomycota are never parasitic
33. The closest relatives of the Eukaryotes are probably
- animals
  - chloroplasts
  - Eubacteria
  - Metabacteria ("Archaea")
  - the Eukaryotes have no relatives
34. The filaments that form a mycelium are called
- coenocytes
  - dikaryons
  - heterokonts
  - hyphae
  - myconemata
35. The fungi are more closely related to the \_\_\_\_\_ than they are to any other member of this list:
- animals
  - cyanobacteria
  - metabacteria
  - plants
  - primitive eukaryotes without mitochondria
36. The Kingdom Protista is paraphyletic because
- it includes *all* the descendants of a common ancestor.
  - it is a clade.
  - it is not prokaryotic.
  - it lacks a common ancestor.
  - its common ancestor is also the ancestor of plants, animals, and fungi.
37. The Linnaean Hierarchy
- always shows evolutionary relationships.
  - applies to plants only, and is not used for animals.
  - consists of Species, Genus, Family, Order, Class, Phylum, and Kingdom.
  - has no connection with scientific names.
  - was invented by Carl Linnaeus.
38. The plasmodium of Myxomycota feeds by
- breaking down and absorbing decaying vegetation
  - dumpster-diving
  - ingesting bacteria
  - parasitizing animals
  - photosynthesis
39. The primary means of reproduction in Acrasiomycota is by
- formation of asexual spores
  - formation of gametes
  - formation of meiospores
  - mitosis of the myxamoebae
  - splitting of the "slug"
40. We can distinguish homology from homoplasy because
- all homologies tell parts of the same story
  - all homologies look alike
  - all homoplasies tell parts of the same story
  - all homoplasies look alike
  - homoplasy exists independent of human perception
41. We know that the eukaryotes are monophyletic because they all have
- a cell wall
  - alternation of generations
  - chloroplasts
  - nuclei
  - the same genetic code

42. When they form the asexual sporangium, the cells of Acrasiomycota have \_\_\_\_\_ cell walls.
- cellulose
  - chitin
  - no
  - peptidoglycan
  - silica
43. Which of the following statements is clearly false?
- All organisms that live by fermentation split off from the eukaryotes before they acquired mitochondria.
  - Chloroplasts were obtained independently by several different groups of eukaryotes.
  - In land plants, the gene for one subunit of RuBisCO is in the chloroplast, and the gene for the other subunit is in the nucleus.
  - Mitochondria contain DNA.
  - Some chloroplasts are very similar to free-living cyanobacteria.
44. Which of the following statements is false?
- Linnaeus believed that all species were separately created.
  - Linnaeus developed the epithet to help people remember the genus and differentia.
  - Scientific names are italicized because they are in a foreign language, Latin.
  - The plural of "genus" is "genera".
  - Two species can be in the same Family, but be in different Classes.
45. You are looking at an aseptate filament that produces zoospores. It is a member of a Division that you have seen in class. Which Division or Divisions does it belong to, and what more would you need to know to narrow it down to one Division?
- Myxomycota or Chytridiomycota—its ploidy level
  - Oomycota—nothing
  - Oomycota or Chytridiomycota—the composition of its cell wall
  - Zygomycota—nothing
  - Zygomycota or Ascomycota—its ploidy level
46. You are taking a lab practical exam. The card says “What is the ploidy level of these meiospores of *Funaria* of the Bryophyta?” You were certain that Bryophyta weren’t supposed to be on the exam. In fact, Dr. Clark never even lectured about them. But you have to put down an answer anyway. The correct answer is
- dikaryotic
  - diploid
  - gamete
  - haploid
  - zygote
47. You have discovered a new phylum of algae that has brown plastids. You would **not** be surprised to discover that it has
- $\beta$ -carotene
  - chlorophyll c
  - no mitochondria
  - no nucleus
  - phycobilins
48. Zoospores
- always lack flagella
  - always have flagella
  - are always diploid
  - are always haploid
  - are always asexual
49. Zygospores differ from most other zygotes because
- they are diploid
  - they are haploid
  - they are multinucleate
  - they form as a result of meiosis
  - they form as a result of syngamy
50. Zygotes are the only diploid cells in the
- Ascomycota
  - Chytridiomycota
  - Myxomycota
  - Oomycota
  - zygotes are haploid, not diploid