

**BOT 125 - Plant Morphology**  
**Fall 1991**  
**Second Midterm Exam**

Name \_\_\_\_\_ Lab Section \_\_\_\_\_

Answer all questions on the Scantron sheet. There is only one correct answer to each question. Please turn in this sheet as well as the Scantron, and indicate your **lab** section on each.

1. Phycobilin pigments are found in the division
  - a. Chlorophyta
  - b. Chrysophyta
  - c. Phaeoophyta
  - d. Pyrrhophyta
  - e. Rhodophyta
2. The Bacillariophyceae (diatoms) and Xanthophyceae are both placed in the Chrysophyta because
  - a. they both consist of unicellular organisms only
  - b. they both have brown plastids
  - c. they both have dominant diploid generations
  - d. they both have silica cell walls
  - e. they both produce antheridia and oogonia on the same filaments
3. Zooxanthellae are members of the division
  - a. Chlorophyta
  - b. Chrysophyta
  - c. Phaeoophyta
  - d. Pyrrhophyta
  - e. Rhodophyta
4. The "red tide" is caused by members of the division
  - a. Chlorophyta
  - b. Chrysophyta
  - c. Euglenophyta
  - d. Pyrrhophyta
  - e. Rhodophyta
5. Members of the division \_\_\_\_\_ lack a cell wall.
  - a. Chlorophyta
  - b. Chrysophyta
  - c. Euglenophyta
  - d. Phaeoophyta
  - e. Pyrrhophyta

6. Mannitol is a food storage substance in the division
  - a. Chlorophyta
  - b. Chrysophyta
  - c. Euglenophyta
  - d. Phaeophyta
  - e. Pyrrophyta
7. In diatoms, an **auxospore** is equivalent to a
  - a. asexual spore
  - b. flagellated zoospore
  - c. gamete
  - d. meiospore
  - e. zygote
8. The zygote is the only diploid cell in the
  - a. Bacillariophyceae
  - b. Bryophyta
  - c. Chlorophyta
  - d. Phaeophyta
  - e. Xanthophyceae
9. The Chlorophyta and Pyrrophyta are similar in that most members of both groups
  - a. are multicellular
  - b. have chitin cell walls
  - c. have green plastids
  - d. have tinsel flagella
  - e. have two flagella
10. Phycoplast cell division
  - a. includes microtubules oriented at right angles to the mitotic spindle
  - b. is always found in organisms with a multi-layered structure
  - c. is found only in the Charophyceae
  - d. is the ancestral form of cell division
  - e. only happens in meiosis
11. Organisms of the division Rhodophyta
  - a. are never multicellular gametophytes
  - b. have chlorophyll b and  $\beta$ -carotene
  - c. have motile zoospores
  - d. have one or two tinsel flagella
  - e. store food as floridean starch

12. In the Rhodophyta, tetrasporophytes
  - a. come from carpospores
  - b. come from zygotes
  - c. produce carpospores by meiosis
  - d. produce gametes by mitosis
  - e. produce tetraspores by mitosis
13. In the Phaeophyta, gametophytes
  - a. are always unicellular
  - b. are haploid
  - c. are produced in carpocarps
  - d. come from zygotes
  - e. produce meiospores
14. In rockweeds, such as *Fucus*, meiospores
  - a. are diploid
  - b. are produced in archegonia
  - c. develop into large multicellular gametophytes
  - d. develop into large multicellular sporophytes
  - e. divide once to become gametes
15. The division Phaeophyta
  - a. contains more unicellular than multicellular species
  - b. contains organisms that play an important ecological role along temperate coastlines
  - c. contains over 200,000 species
  - d. is ancestral to the embryophytes
  - e. is the source of all edible seaweed and seaweed products
16. We know that the Charophyceae and the embryophytes are close relatives because they both have
  - a. chlorophyll c
  - b. multicellular, free-living sporophytes
  - c. phycoplast division
  - d. stomata
  - e. the multi-layered structure
17. The sterile jacket of the oogonium of *Chara* is most likely an adaptation
  - a. to allow colonization of the land
  - b. to prevent fertilization
  - c. to produce more meiospores
  - d. to protect the zygote
  - e. to provide nutrients to the developing sporophyte

18. The bryophyte group with the fewest derived features (and thus the greatest number of ancestral features) is the
- Anthocerotopsida
  - Hepaticopsida
  - Isoëtopsida
  - Muscopsida
  - Sphenophylloidsida
19. The pores of the gametophytes of the Hepaticopsida
- allow air exchange to the tissues below
  - are homologous with the stomata of vascular plants
  - are only found on the gametangia
  - are only found on the sporangia
  - produce asexual reproductive structures called *gemmae*.
20. The Anthocerotopsida
- are called "liverworts"
  - are non-photosynthetic
  - characteristically have one chloroplast per cell
  - have conductive cells in their sporophytes
  - have single-celled gametophytes
21. Leafy liverworts
- are most common in temperate regions, less common in the tropics
  - have midribs on their leaves
  - have true stomata
  - produce meiosporangia on their sporophylls
  - produce sporophytes with short setae and elaters
22. In mosses, the calyptra
- consists of diploid cells
  - contains conductive cells
  - is an important adaptation for spore dispersal
  - is the remains of the antheridium
  - usually falls off the capsule before the spores are released
23. Water-conducting cells in mosses are called
- hydroids
  - leptoids
  - sieve cells
  - stomata
  - tracheids

24. Food-conducting cells in vascular plants are called
  - a. hydroids
  - b. leptoids
  - c. sieve cells
  - d. stomata
  - e. tracheids
25. The cells of xylem
  - a. are alive at maturity
  - b. are called leptoids
  - c. are never elongated
  - d. have lignified secondary wall thickenings
  - e. transport dissolved sugars
26. The earliest vascular plants
  - a. consisted of gametophytes only
  - b. had dichotomously branched stems
  - c. had lateral sporangia
  - d. had leaves, roots, and cones
  - e. lacked cuticle
27. Plants of the division Psilophyta have
  - a. large, photosynthetic gametophytes
  - b. lateral sporangia
  - c. leaves
  - d. protosteles
  - e. roots
28. In the Psilophyta, a synangium consists of
  - a. a cluster of meiospores
  - b. a sporophyll and its attached sporangium
  - c. fused asexual sporangia
  - d. fused gametangia
  - e. fused meiosporangia
29. The gametophytes and sporophytes of *Psilotum* are similar because they both
  - a. are photosynthetic
  - b. form gametangia
  - c. form meiosporangia
  - d. have roots
  - e. have tracheids
30. The sporangia of the Lycopphyta
  - a. are always arranged in strobili
  - b. are always homosporous
  - c. are located on the microphylls
  - d. are terminal on the stems
  - e. produce only asexual spores
31. The microphylls of the Lycopphyta
  - a. are homologous to the leaves of the mosses
  - b. are homologous to the leaves of the Psilophyta
  - c. are homologous to the leaves of the seed plants
  - d. are produced only by the gametophytes
  - e. characteristically have a single vascular bundle

32. Endosporic gametophytes
- are associated with homosporous
  - are found only in the Lycopodiopsida
  - are usually bisexual
  - are usually photosynthetic
  - form within the meiospore wall
33. The modern genus most closely related to the extinct Lepidodendrales is
- Equisetum*
  - Isoetes*
  - Lycopodium*
  - Psilotum*
  - Selaginella*
34. In the Lycophyta, secondary growth occurs only in
- the extinct Lepidodendrales
  - the Isoëtopsida
  - the Isoëtopsida and the extinct Lepidodendrales
  - the Lycopodiopsida
  - the Selaginellopsida
35. In heterosporous lycopods, the male gametophyte consists of little more than
- a meiosporangium
  - a rhizoid
  - a thallus
  - an antheridium
  - an archegonium
36. In both the Isoëtopsida and the extinct Lepidodendrales,
- both the root and the shoot produce lateral organs, called rootlets and microphylls
  - homosporous sporangia are always arranged in strobili
  - large, tree-like plants are ecological dominants in swamp habitats
  - megaspores are always produced by microsporangia
  - the vascular cambium produces only secondary phloem