

Name _____

Student Number _____

Biology 20, Exam #1. Please put your name and student number on the exam. READ THE QUESTIONS CAREFULLY and choose the one best answer for each question.

Multiple Choice: 2 points each, 60 points total.

1. Which of the characteristics of living things is one way of “cheating death”?
 - a. growth and development
 - b. responsiveness
 - c. evolution
 - d. reproduction
 - e. organization

2. Metabolism can be defined as
 - a. changing in size over time.
 - b. extracting and obtaining energy to grow and develop.
 - c. responding to external stimuli.
 - d. photosynthesis.
 - e. utilization of vitamins.

3. Which element is not required by all living things?
 - a. carbon (C)
 - b. boron (B)
 - c. iron (Fe)
 - d. potassium (K)
 - e. silica (Si)

4. The function of carbohydrates in plants is primarily
 - a. energy storage.
 - b. energy source.
 - c. structure.
 - d. all of the above are functions of carbohydrates.

5. Proteins in plants function in all of the following except
 - a. major structural molecules.
 - b. enzymes.
 - c. regulation of cell processes.
 - d. transport of materials.
 - e. storage.

6. An example of a toxic plant protein would be
 - a. gluten.
 - b. ricin.
 - c. linolenic acid.
 - d. belladonna.
 - e. cortisone.

7. The fatty lipids commonly found in plants differ from animal lipids in
 - a. unsaturation (number of double bonds).
 - b. aromatic nature.
 - c. phase state at room temperature.
 - d. all of the above.
 - e. only a and c are true.

8. The “nut” with the highest lipid content by weight is the
- hazelnut.
 - macadamia nut.
 - coconut.
 - chestnut.
 - cashew.
9. The function of nucleic acids includes which of the following?
- genetic material
 - translation mechanism
 - energy transfer.
 - all of the above.
 - only a and b.
10. Which of the fundamental tissues of plants give pears their gritty texture?
- parenchyma.
 - collenchyma.
 - sclerenchyma.
 - fibers.
 - tracheids.
11. The tissue that is most commonly found as support tissue in herbaceous plants is
- parenchyma.
 - collenchyma.
 - sclerenchyma.
 - tracheids.
 - vessel elements.
12. The tissue in plants specialized for the transporting of food is
- xylem.
 - parenchyma.
 - phloem.
 - periderm.
13. Which of the following is not dead at functional maturity?
- vessels.
 - collenchyma.
 - fibers.
 - tracheids.
14. The organelle of photosynthesis is (1) whereas the organelle of respiration is (2)
- (1) chloroplast (2) golgi body.
 - (1) chloroplast (2) mitochondria.
 - (1) chloroplast (2) leucoplast.
 - (1) chromoplast (2) nucleus.
 - (1) chromoplast (2) ribosome.

15. Celery is actually a
- leaflet.
 - petiole.
 - stem.
 - vine.
16. The outgrowths of root epidermal cells that function to increase surface area for water and nutrient absorbance are
- spongy cells.
 - root hairs
 - pericycle.
 - endodermis
 - companion cells.
17. Vascular bundles in stems include all but
- fibers.
 - phloem.
 - xylem.
 - pith.
18. One of the ways that monocot leaves differ from dicot leaves is that in monocot leaves
- there is a pallisade layer.
 - the xylem is on the lower surface of the leaf.
 - there are roughly equal numbers of stomates on the upper and lower surface.
 - there are more stomates on the lower surface.
 - both a and d are characteristic of monocot leaves
19. A plant that can reproduce asexually through propagative roots is
- corn.
 - horseradish.
 - buffalo gourd.
 - buttress roots.
 - white potato.
20. Bracts are
- pine needles.
 - climbing leaves.
 - insectivorous leaves.
 - floral leaves.
 - spines.
21. Linneaus contributions to modern taxonomy include all except
- standardizing the scientific names to Latin binomials.
 - beginning of higher orders of classification.
 - standardizing the convention of utilizing Latin descriptive binomials.
 - introducing the 6 kingdom concept.
 - the starting point of naming priority of most scientific names.

22. The correct order for the taxonomic levels of classification is
- kingdom, class, division, order, family, genus, species
 - kingdom, order, family, division, class, genus, species
 - kingdom, division, class, family, order, genus, species
 - kingdom, division, class, order, family, genus, species
 - division, kingdom, family, order, class, genus, species
23. Whisk ferns (psilophyta) lack
- spores.
 - xylem.
 - stems.
 - roots.
24. Phylogenic classification attempts to
- classify organisms for convenience
 - classify organisms based on evolutionary relationships.
 - classify organisms to increase communication.
 - classify organisms to confuse people.
 - all of the above except d.
25. Cycads were used in the past for the production of starch. This practice has stopped in part because
- the starch is of poor quality.
 - the plants grow too slowly.
 - the starch is contaminated with ephedrine.
 - the plants grow too fast
- 26-29 Matching. Match the angiosperm plant family with the appropriate description
- Orchidaceae
 - Poaceae (graminaceous plants)
 - Brassicaceae (crucifers or mustards)
 - Cucurbitaceae (cucurbit or squash)
 - Rosaceae (rose family)
26. Dicot family that includes many important temperate fruit crops
27. Monocot family that is the largest in terms of numbers due to its importance as food crops
28. Dicots with cross-like flowers, strong flavor, and high levels of vitamin C
29. Dicot family that contains among the oldest of cultivated plants in the New World
30. Among the economic importance of both some algae and legumes, one could include
- sources of high protein food sources.
 - sources of emulsifiers like gum arabic and carrageen.
 - sources of important elements like iodine.
 - sources of toxic blooms of growth

6. Where is the pectin middle lamella found in plant cells? What are the major sources of pectin and what is one of the uses of pectin? (3 pts.)

7. Give one representative of a vegetable from each of the major plant organs (stem, root, leaf and flower). For two of the vegetables you list, indicate if it is a monocot or a dicot. (4 pts)

8. Consider this parsnip. What plant organ is it? How can you tell? (2 pts)

9. How does a dicot root differ in gross and fine anatomy from a monocot root? How does the fine anatomy of a dicot stem differ from a monocot stem? (4 pts).

10. Pick two of the following major divisions of true plants. Give its common name, any special feature of the group plus an economic or historical use of a member of the division. (6 pts)
Bryophyta, Psilophyta, Sphenophyta, Pterophyta, Ginkgophyta, Gnetophyta, or Coniferophyta

11. Of the groups of algae listed below, which is not eukaryotic? For three of the groups listed, describe its economic and ecological significance. (5 pts)
Cyanobacteria (blue-green algae), Chrysophyta (gold-brown algae), Rhodophyta (red algae), Phaeophyta (brown algae), Pyrrophyta (dinoflagelates).