SLE132 Form and Function
Week 10

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**

1) Which of the following are problems associated with intensive irrigation? 1) _____

I) mineral runoff
II) over fertilisation
III) aquifer depletion
IV) soil salinisation

A) only I and II
B) only III and IV
C) only I, III, and IV
D) I, II, III, and IV

2) Which criteria allow biologists to divide chemicals into macronutrients and micronutrients? 2) _____
A) molecular weight of the element or compound
B) whether or not they are essential for plant growth
C) the quantities of each required by plants
D) how they are used in metabolism

3) Which elements are most often the limiting nutrients for plant growth? 3) _____
A) carbon, nitrogen, oxygen
B) carbon, sodium, chlorine
C) nitrogen, oxygen, hydrogen
D) nitrogen, potassium, phosphorus

4) Micronutrients are needed in very small amounts because _____. 4) _____
A) they play only a minor role in the growth and health of the plant
B) only the most actively growing regions of the plants require micronutrients
C) most of them are mobile in the plant
D) most serve mainly as cofactors of enzymes

5) Nitrogen fixation is a process that _____. 5) _____
A) recycles nitrogen compounds from dead and decaying materials
B) releases nitrate from the rock substrate
C) converts ammonia to ammonium
D) converts nitrogen gas into ammonia

6) Why is nitrogen fixation an essential process? 6) _____
A) Fixed nitrogen is often the limiting factor in plant growth.
B) Nitrogen fixers are sometimes symbiotic with legumes.
C) Nitrogen fixation can only be done by certain prokaryotes.
D) Nitrogen fixation is very expensive in terms of metabolic energy.

7) What major benefits do plants and mycorrhizal fungi receive from their symbiotic relationship? 7) _____
A) Fungi receive photosynthetic products in exchange for living in plant root nodules.
B) Plants receive nitrogen and phosphorus, and fungi receive photosynthetic products.
C) Plants receive increased root surface area, and fungi receive digestive enzymes.
D) Plants receive enzymes, and fungi receive nitrogen and phosphorus.

8) Carnivorous plants have evolved mechanisms that trap and digest small animals. The products of this digestion are used to supplement the plant's supply of _____. 8) _____
A) energy
B) lipids and steroids
C) nitrogen and other minerals
D) carbohydrates

9) Epiphytes are _____. 9) _____

A) plants that live in poor soil and digest insects to obtain nitrogen
B) plants that have a symbiotic relationship with fungi
C) plants that grow on other plants but do not obtain nutrients from their hosts
D) aerial vines common in tropical regions

10) For a plant, carbon and nitrogen are _____. 10) _____

A) macronutrients B) compost C) minerals D) micronutrients

11) Which one of the following is a plant micronutrient? 11) _____

A) phosphorus B) oxygen C) sulfur D) iron

12) Which of the following hormones promotes fruit ripening and dropping of leaves? 12) _____

A) abscisic acid B) auxin C) gibberellin D) ethylene

13) Which of the following hormones promotes seed germination? 13) _____

A) abscisic acid B) gibberellin C) ethylene D) auxin

14) Which of the following best describes the condition of a twig if the auxin produced by its apical meristem is conveyed equally down all sides? 14) _____

A) It will produce a flower.
B) It will bend to one side.
C) It will elongate.
D) It will branch near its tip.

15) Which of the following statements is TRUE? 15) _____

A) Plants and animals use hormones in very different ways.
B) A single hormone may have different effects depending on concentration and presence of other hormones.
C) Large amounts of hormones are required to affect plant growth and development.
D) A given hormone has the same effect on all parts of a plant.

16) Which of the following hormones promotes seed dormancy? 16) _____

A) ethylene B) gibberellin C) cytokinin D) abscisic acid

17) Plant hormones _____. 17) _____

A) affect only cells with the appropriate receptor
B) in plant cells naturally exist in very large amounts
C) are unable to move from one cell to another
D) change their shape in response to stimulus

18) Experiments on the positive phototropic response of plants indicate that _____. 18) _____

A) auxin moves down the plant apoplastically
B) auxin is synthesised in the area where the stem bends
C) auxin can move to the shady side of the stem
D) light destroys auxin

19) Which of the following statements best summarises the acid–growth hypothesis in an actively growing shoot? 19) _____
A) Auxins and gibberellins together act as a lubricant to help stretch cellulose microfibrils.
B) Auxins activate aquaporins that increase turgor pressure in the cells.
C) Auxin stimulates proton pumps in the plasma membrane and tonoplast.
D) Auxin–activated proton pumps lower the pH of the cell wall, which breaks bonds and makes the walls more flexible.

20) If a farmer wanted more loosely packed clusters of grapes, he would most likely spray the immature bunches with _____. 20) _____
A) abscisic acid B) cytokinins C) auxin D) gibberellins

21) _____ prevents seeds from germinating until conditions are favourable for the growth of the plant. 21) _____
A) Ethylene B) Gibberellin C) Abscisic acid D) Zeaxanthin

22) Vines in tropical rain forests must grow toward large trees before being able to grow toward the sun. To reach a large tree, the most useful kind of growth movement for a tropical vine presumably would be _____. 22) _____
A) negative gravitropism
B) the opposite of circadian rhythms
C) negative thigmotropism
D) negative phototropism

23) Plants often use changes in day length (photoperiod) to trigger events such as dormancy and flowering. It is logical that plants have evolved this mechanism because photoperiod changes _____. 23) _____
A) can reset the biological clock
B) predict moisture availability
C) are more predictable than air temperature changes
D) are modified by soil temperature changes

24) Which of the following is exemplified by a pea tendril contacting a string or wire and coiling around it for support? 24) _____
A) phototropism B) thigmotropism C) photoperiod D) gravitropism

25) Experimental plants that were sent up in space shuttle missions did not exhibit all of their normal tropisms. Which of the following responses would you most expect to be lacking from these plants? 25) _____
A) thigmotropism B) photoperiod C) phototropism D) gravitropism

26) Which of the following best describes night–neutral plants? 26) _____
A) Plants tend to flower when nights become shorter.
B) The plants flower at night.
C) Plants tend to flower when nights become longer.
D) The flowering in these plants is not affected by photoperiod.

27) Which of the following triggers flowering for plants sensitive to photoperiod? 27) _____
A) day length
B) temperature
C) night length
D) intensity of sunlight

28) Oats are eaten by humans as oatmeal or rolled oats, and as feed for livestock such as cattle. In order for an oat plant to make the part we eat (the seed), it must flower and be pollinated. Typically, oat plants flower when days are lengthening (i.e., late spring to early summer). What is the best classification for oat plants? 28) _____

A) long night B) short night C) short day D) night neutral

29) Eukaryotes that are not fungi, animals, or plants are classified in a "catch–all" category called _____. 29) _____

A) bacteria B) archaea C) seaweeds D) protists

30) Which of the following are most closely related to plants? 30) _____

A) red algae B) green algae C) brown algae D) slime molds

31) _____ are responsible for toxic red tides. 31) _____

A) Diatoms B) Plasmodial slime molds
C) Red algae D) Dinoflagellates

32) A photoautotrophic unicellular organism with a shell made of silica is most likely a(n) _____. 32) _____

A) dinoflagellate B) foram C) diatom D) apicomplexan

33) All protists are _____. 33) _____

A) unicellular B) mixotrophic C) symbionts D) eukaryotic

34) Dinoflagellates _____. 34) _____

A) lack mitochondria B) include species that cause malaria
C) possess two flagella D) are all autotrophic

35) A large seaweed that floats freely on the surface of deep bodies of water would be expected to lack which of the following? 35) _____

A) holdfasts B) bladders
C) thalli D) gel–forming polysaccharides

36) A biologist discovers an alga that is marine, multicellular, and lives at a depth reached only by blue light. This alga is most likely a type of _____. 36) _____

A) golden algae B) brown algae C) green algae D) red algae