Multiple choice: select one best answer from the list of choices (4 points each). ※ 注意：請於試卷內之「選擇題作答區」依序作答。

1. Which of the following features is NOT shared by Chara and certain plants?
(A) apical growth.
(B) tissue organization in the nodal regions.
(C) flagellated cells other than sperm.
(D) pattern of plasmodesmatal connections.
(E) sporopollenin.

2. In the mushroom life cycle, karyogamy occurs in a:
(A) stipe.
(B) volva.
(C) sterigma.
(D) basidium.
(E) basidiospore.

3. Which of the following statements about bryophytes is FALSE?
(A) lack xylem and phloem.
(B) cell walls of their water-conducting cells are suberized.
(C) exhibit alternating heteromorphic generations.
(D) sporophyte is nutritionally dependent on gametophyte.
(E) gametophyte is usually larger than the sporophyte.

4. Microphylls differ from megaphylls in that microphylls:
(A) occur in most vascular plants.
(B) are associated with leaf gaps.
(C) are associated with protosteles.
(D) have branched veins.
(E) evolved from branch systems.

5. A student examining a flower that has only stamens, petals and sepals is:
(A) staminate and perfect.
(B) perfect and complete.
(C) perfect and incomplete.
(D) imperfect and complete.
(E) imperfect and incomplete.

6. In the anther of a flower, the microsporocytes divide by _____, forming _____.
(A) mitosis; haploid microsporocytes.
(B) mitosis; diploid microsporocytes.
(C) meiosis; haploid microspores.
(D) mitosis; diploid microspores.
(E) meiosis; haploid megaspores.

7. A mycorrhiza is a symbiotic association between a(n) _____ and a _____.
(A) alga; fungus.
(B) fungus; root.

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(C) lichen; root.
(D) alga; root.
(E) fungus; lichen.

8. Which of the following statements about sources and sinks in assimilate movement is FALSE?
(A) a plant part unable to meet its nutritional needs functions as a sink.
(B) in seedlings, the cotyledons commonly act as the major sinks.
(C) in mature plants, the upper leaves commonly act as sources for the shoot apex.
(D) in mature plants, the lower leaves commonly act as sources for the roots.
(E) developing fruits are highly competitive sinks.

9. Which of the following indicates the correct sequence of tissues through which water moves from the soil into the root?
(A) root hairs, endodermis, exodermis, cortical cells, vascular cylinder.
(B) root hairs, endodermis, cortical cells, vascular cylinder, exodermis.
(C) exodermis, endodermis, epidermis, vascular cylinder, cortical cells.
(D) epidermis, exodermis, cortical cells, endodermis, vascular cylinder.
(E) epidermis, endodermis, exodermis, cortical cells, vascular cylinder.

10. Which of the following statements is NOT consistent with the cohesion-tension theory?
(A) a gradient of water potential exists between the stem and the root.
(B) transpiration brings about a lowered water potential in the leaves.
(C) water in the xylem is under tension.
(D) a gradient of water potential provides the driving force for water movement.
(E) root pressure is essential to the movement of water from roots to leaves.

11. Plant hormonal regulation differs from animal hormonal regulation in that_____.
(A) there are no dedicated hormone-producing organs in plants while endocrine glands produce hormones in animals.
(B) the transport of plant hormones is local and limited.
(C) plants do not have feedback mechanisms like animals.
(D) only animal hormone concentrations are developmentally regulated.
(E) only animal hormones have either external or internal receptors.

12. In guard cells, _____ is the dominant osmoticum in the morning, and _____ is the dominant osmoticum in the afternoon.
(A) Cl^-; sucrose.
(B) malate; K^+.
(C) K^+, malate.
(D) sucrose; K^+.
(E) K^+; sucrose.

13. In the secondary growth of a tree, the periderm consists of:
(A) phellem only.
(B) phellogen only.
(C) phelloderm only.
(D) phellem and phellogen only.
(E) phellem and phellogen, and phelloderm.

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14. Which of the following features is unique to Angiosperms that helps them to become the most successful terrestrial plants?
(A) wind pollination.
(B) dominant gametophytes.
(C) fruits enclosing seeds.
(D) embryos enclosed within seed coats.
(E) the secondary growth.

15. The endosperm is a major part of monocot seed. In most eudicots, _____.
(A) there is also a substantial amount of the endosperm.
(B) the endosperm never starts to form after double fertilization.
(C) the endosperm nutrients are repackaged into the cotyledons.
(D) the endosperm replaces cotyledons during seed development.
(E) both the endosperm and cotyledons exist together at seed maturity.

16. In land plants, matrotrophy refers to the:
(A) attraction of sperm by the egg.
(B) nourishment of the zygote by the archegonium.
(C) transport of sugars through the placenta.
(D) division of the zygote within the venter.
(E) movement of sugars through plasmodesmata.

17. In ferns, the formation of antheridia in gametophytes is induced by:
(A) antheridiogens.
(B) antheridiophores.
(C) androecium.
(D) cytokinins.
(E) auxin.

18. Embryophytes are characterized by having:
(A) few mitotic divisions between fertilization and meiosis.
(B) a multicellular embryo that has stomata.
(C) a multicellular, matrotrophic embryo.
(D) a dominant gametophyte generation.
(E) vascular tissues.

19. Which of the following statements about the shoot and root apical meristems is FALSE?
(A) they are perpetually young tissues or cells.
(B) they are established during embryogenesis.
(C) it is through their activity that most plant development occurs.
(D) they lose the potential to divide soon after embryogenesis is complete.
(E) they generate cells that give rise to roots, stems, leaves, and flowers.

20. The three tissue systems of vascular plants are:
(A) the dermal, vascular, and ground tissue systems.
(B) protoderm, procambium, and ground meristem.
(C) parenchyma, collenchyma, and sclerenchyma.

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(D) epidermis, periderm, and protoderm.
(E) xylem, phloem, and epidermis.

21. A plant's body plan consists of a(n) _____ and a(n) _____ pattern.
(A) apical-radial; basal.
(B) apical-basal; radial.
(C) basal-radial; apical.
(D) apical; basal.
(E) radial; apical.

22. Which of the following is not an autotroph?
(A) a chemosynthesizer.
(B) a mushroom.
(C) an oak tree.
(D) a green alga.
(E) a moss.

23. In photosynthetic pathway, compared to C3 plants, C4 plants
(A) have the higher rate of photorespiration.
(B) only use PEP carboxylase for carbon fixation.
(C) have specialized bundle sheath cells.
(D) do not use rubisco for carbon fixation.
(E) are adapted to life in the temperate climate.

24. The role of Nod factors is to:
(A) stimulate the formation of infection threads.
(B) stimulate root-hair curling.
(C) activate the plant Nod genes.
(D) activate the bacterial Nod genes.
(E) activate the plant genes for nodule formation.

25. In the process of guttation, all of the following events occur EXCEPT:
(A) dew-like drops of water form at the tips of grass.
(B) dew-like drops of water form at the tips of leaves.
(C) water exudes through stomata that lack the ability to open and close.
(D) water exudes through openings in structures called hydathodes.
(E) water forms from the condensation of water from the air.

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