

第一部分：選擇題 64 分，每題 2 分 ※ 注意：請於試卷內之「選擇題作答區」依序作答。

1. Triaperturate pollen is characteristic of:
 - a. eudicots.
 - b. dicots.
 - c. monocots.
 - d. magnoliids.
 - e. gymnosperms.
2. In the process of double fertilization, one sperm fuses with the _____, and the other sperm fuses with the _____.
 - a. egg; synergids
 - b. egg; polar nuclei
 - c. egg; antipodals
 - d. synergid; polar nuclei
 - e. synergid; antipodals
3. As the seed develops, the ovary wall becomes the:
 - a. perisperm.
 - b. pericarp.
 - c. endosperm.
 - d. nucellus.
 - e. integument.
4. The largest angiosperm family is the:
 - a. Magnoliaceae.
 - b. Asteraceae.
 - c. Piperaceae.
 - d. Orchidaceae.
 - e. Aristolochiaceae.
5. Flowers with a long corolla tube are most likely pollinated by:
 - a. bats.
 - b. birds.
 - c. moths.
 - d. bees.
 - e. beetles.
6. Which of following lists the correct developmental sequence in eudicots, where I is the globular stage; II, the heart stage; III, the proembryo; IV, the torpedo stage; and V, the zygote?
 - a. V, III, I, II, IV
 - b. I, V, IV, II, III
 - c. III, V, II, IV, I
 - d. V, I, III, II, IV
 - e. V, III, II, I, IV
7. In eudicots, in which most of the endosperm is absorbed by the embryo, the cotyledons:
 - a. are large and fleshy.
 - b. are thin and membranous.
 - c. develop into the scutellum.
 - d. are absent.
 - e. absorb stored food during resumption of embryonic growth.
8. Which of the following events is NOT associated with seed germination?
 - a. Imbibition
 - b. Activation of existing enzymes
 - c. Synthesis of new enzymes
 - d. Synthesis of food reserves
 - e. Initiation of cell division and cell enlargement
9. In temperate regions of the world, after-ripening is triggered by:
 - a. drought.
 - b. high humidity.
 - c. low temperature.
 - d. high temperature.
 - e. low oxygen levels.
10. 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.
 - d. epidermis, periderm, and protoderm.
 - e. xylem, phloem, and epidermis.
11. In vascular plants, food is conducted through:
 - a. companion cells only.
 - b. sieve cells only.
 - c. sieve-tube elements only.
 - d. sieve cells and sieve-tube elements only.
 - e. companion cells, sieve cells, and sieve-tube elements.
12. Which of the following is NOT a function of trichomes?
 - a. Providing structural support
 - b. Defending against insects
 - c. Secreting salts
 - d. Absorbing water and minerals from the soil
 - e. Reflecting solar radiation

13. When a seed germinates, the _____ is the first structure to emerge.
a. plumule b. root c. hypocotyl d. epicotyl e. cotyledon
14. The sequence of regions in a growing root, beginning immediately behind the rootcap, is:
a. elongation, maturation, cell division. b. cell division, maturation, elongation.
c. cell division, elongation, maturation. d. elongation, cell division, maturation.
e. maturation, elongation, cell division.
15. The rhizosphere is the layer of:
a. nitrogen-fixing bacteria surrounding the root. b. soil bound to the root.
c. mucigel bound to the root. d. root hairs and mucigel.
e. sloughed-off rootcap cells.
16. Which of the following is(are) NOT produced by the shoot apical meristem?
a. Leaf primordia b. A protective covering c. Bud primordia
d. Phytomeres e. Cells of the primary plant body
17. Plants that grow completely submerged have leaves with:
a. no stomata. b. stomata only on the upper surface. c. stomata only on the lower surface.
d. stomata sunken in depressions. e. many epidermal hairs.
18. A succulent leaf is one that is specialized for:
a. growth in aqueous habitats. b. chemical defense. c. protection against predators.
d. water storage. e. food storage.
19. At the end of the first year's growth, bark is composed of:
a. periderm. b. cork. c. all tissues outside the vascular cambium. d. only secondary tissues.
e. only primary tissues.
20. "Hardwood" is the name given to wood:
a. found in conifers. b. found in eudicots and magnoliids. c. composed of functional phloem.
d. composed of primary xylem. e. having no commercial value.
21. Which of the following statements about plant hormones is FALSE?
a. The same hormone can elicit different responses in different tissues.
b. The same hormone can elicit different responses at different times in the same tissue.
c. A tissue's response to a hormone depends on the sensitivity of the tissue to that hormone.
d. All plant hormones can be classified into five groups.
e. Hormones can exist in conjugated forms.
22. Which of the following statements about abscisic acid is FALSE?
a. It is a growth inhibitor.
b. It induces the closing of stomata.
c. It prevents premature seed germination.
d. It inhibits the production of seed storage proteins.
e. It stimulates the yellowing of leaves.

23. Dwarf mutant plants are short because they:
- synthesize too much gibberellin.
 - synthesize too much abscisic acid.
 - cannot synthesize ethylene.
 - cannot synthesize auxin.
 - cannot synthesize gibberellin.
24. Which of the following statements about protein kinases is FALSE?
- They may function as hormone receptors.
 - They may regulate membrane proteins related to ion channels.
 - They are enzymes.
 - They transfer phosphate groups to specific proteins.
 - They are a type of transcription factor.
25. Which of the following statements about tropisms is FALSE?
- They are growth responses.
 - They are responses to an external stimulus.
 - They are directional responses.
 - Responses involve bending or curving.
 - Positive responses are away from the stimulus.
26. Circadian rhythms have cycles of approximately:
- 12 minutes.
 - 1 hour.
 - 24 hours.
 - 1 month.
 - 12 months
27. The primary purpose of seed banks is to:
- provide a storehouse for seeds to be used in times of famine.
 - preserve the genetic characteristics of wild varieties and early cultivars of crop plants.
 - make seeds available to farmers who cannot afford to purchase them.
 - provide seeds to be used solely for genetic engineering.
 - store dormant seeds until ways can be found to germinate them.
28. As dead organic materials are broken down by bacteria and fungi, the nitrogen not used by these organisms is released as _____ in a process called _____.
- NH_4^+ ; ammonification
 - NO_3^- ; nitrification
 - NO_2^- ; nitrification
 - N_2 ; denitrification
 - N_2O ; denitrification
29. In the symbiotic association between bacterium and legumes, the bacteria provides the plant with:
- an energy source.
 - carbon-containing molecules.
 - nitrogen.
 - phosphate.
 - sulfate.
30. _____ is one of the main ways in which phosphorus is lost from terrestrial ecosystems.
- Leaching
 - Evaporation
 - Burning
 - Recycling
 - The action of microorganisms
31. A plant loses the greatest amount of water through the:
- leaf cuticle.
 - stem cuticle.
 - root cuticle.
 - stomata.
 - lenticels.

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32. Unlike grassland plants, plants growing in shady forests:

- a. have large leaf surfaces.
- b. have thick cuticles.
- c. have sunken stomata.
- d. transpire at a rate that is unaffected by air currents.
- e. transpire at a rate that is unaffected by humidity.

第二部分：問答題 36 分 ※ 本大題請於試卷內之「非選擇題作答區」標明題號依序作答。

1. Insect pollination probably accelerated the early evolution of angiosperms. As the angiosperms continued to evolve, and relationships with specialized pollinators became more tightly linked, the number and arrangement of floral patterns became stereotyped. Please describe four evolutionary trends among angiosperms flowers. (16 points)

2. Distinguish between fleshy fruits, dry indehiscent fruits, and dry dehiscent fruits. Give an example of each. (20 points)

試題隨卷繳回