

Part I: 單選題 (每題 2分, 共50分)

9. Haustoria are _____ found in _____ fungi.
A) spores; saprophytic D) gametangia; endophytic
B) gametes; symbiotic E) sporangia; pathogenic
C) hyphae; parasitic
10. The most abundant type of lipid in the plant cell membrane is:
A) phospholipid. B) cholesterol. C) stigmaterol. D) triglyceride. E) glycolipid.
11. Which of the following is NOT an essential element?
A) potassium B) zinc C) boron D) lead E) chlorine
12. When scientists describe the genetic code as degenerate, they mean that:
A) it becomes disorganized over time.
B) many amino acids have more than one codon.
C) some codons specify stop signals.
D) it varies with cell type.
E) it varies among species.
13. Chlorophyll appears green because it:
A) absorbs green light. D) both reflects and transmits green light.
B) both absorbs and reflects green light. E) transmits violet light.
C) both absorbs and transmits green light.
14. Homologous chromosomes pair up during:
A) prophase I. B) prophase II. C) metaphase I. D) metaphase II. E) telophase I.
15. Water potential is defined as the:
A) tendency of water to enter a cell. D) kinetic energy of water.
B) tendency of water to leave a cell. E) potential energy of water.
C) mechanical energy of water.
16. Plastocyanin and pheophytin are components of:
A) Photosystem I.
B) Photosystem II.
C) the photosynthetic electron transport chain.
D) the photosynthetic ATP synthase.
E) the water-splitting enzyme.
17. Within the plant cell, glycolysis occurs in:
A) mitochondria. D) the endoplasmic reticulum.
B) the cytosol. E) the nucleus.
C) chloroplasts.
18. Gram-positive and gram-negative bacteria are distinguished by differences in their:
A) plasma membranes. B) cell walls. C) storage materials. D) size. E) shape.

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19. A bacillus has a _____ shape.
A) spherical B) spiral C) cylindrical D) curved E) triangular
20. Which of the following statements about Gregor Mendel is FALSE?
A) He demonstrated that inherited characteristics are determined by discrete factors.
B) He performed experiments with the garden pea.
C) He studied the offspring of several generations.
D) He analyzed his results mathematically.
E) He became famous for his work during his lifetime.
21. Commercial growers of chrysanthemums can delay flowering by a short _____ treatment _____.
A) light; at the beginning of the night. D) dark; in the middle of the day.
B) light; in the middle of the night. E) dark; at the end of the day.
C) light; at the end of the night.
22. In isolated barley aleurone cells, treatment with GA causes the levels of α -amylase to _____ and treatment with ABA causes the levels to _____.
A) increase; remain unchanged D) decrease; increase
B) decrease; remain unchanged E) increase; increase
C) increase; decrease
23. Which of the following lists the phases of the cell cycle in the correct sequence?
A) G₁, G₂, S, M D) G₂, G₁, S, M
B) G₁, G₂, M, S E) S, M, G₁, G₂
C) G₁, S, G₂, M
24. Which of the following is unique to cell division in plants?
A) migration of the nucleus to the center of the cell
B) migration of the mitochondria to the periphery of the cell
C) duplication of the centrosome
D) duplication of the mitochondria
E) duplication of the endoplasmic reticulum
25. Which of the following is NOT a role of cellular membranes?
A) regulating the exchange of substances between a cell and the surrounding air, soil, and water
B) regulating the exchange of substances among cells
C) controlling the passage of materials among compartments within the cell
D) preventing the establishment of differences in electrical potential between the cell and its environment
E) permitting the establishment of difference in electrical potential between adjacent compartments of the cell.

接背面

Part 2：問答題（共 50 分）

1. 試述 C3 植物，C4 植物，CAM 植物 在光合作用過程中的同異之處及其生態意義。(15 分)
2. 植物的生長過程中，何謂一級生長 (primary growth)，及二級生長 (secondary growth)，各發生在那些部位？(10 分)
3. 水份從土壤進入根組織的橫向輸送中，何謂 apoplastic movement，symplastic movement 及 transcellular movement？(10 分)
4. 試解釋花器形成過程中 homeotic genes 的 ABC model，如何影響花朵形態之發生？(15 分)

試題必須隨卷繳回

