

※ 注意：請於試卷內之「選擇題作答區」依序作答。

單選題 2 pts each

1 . What are not included as a tissue system in plants?

- (A) Dermal tissue
- (B) Vascular tissue
- (C) Ground tissue
- (D) Cortex tissue

2 . What are not the major functions of vasculature?

- (A) Water transportation
- (B) Structural support
- (C) Carbon assimilation
- (D) Cell division and differentiation

3 . The characteristics of plant primary growth and secondary growth are?

- (A) Primary growth provides plant vertical elongation and secondary provides plant horizontal elongation.
- (B) Plants do not have simultaneous primary and secondary growth.
- (C) Primary growth exhibits circular cambium and secondary growth does not.
- (D) Both primary and secondary growth are contributed by shoot apical meristem.

4 . The partial negative and positive charges generate a strong mutual attraction between adjacent water molecules, which is called:

- (A) Molecule-molecule interaction
- (B) Hydrogen bonding
- (C) Van der Waals force
- (D) Cohesion force

5 . What is not the major factors affecting the efficiency of transpiration?

- (A) Root pressure
- (B) Light absorption
- (C) Cohesion theory
- (D) Capillarity effect

6 . Which ion regulate the mechanism for stomatal opening?

- (A) Potassium
- (B) Calcium
- (C) Magnesium
- (D) Chloride

7 . What is the definition of leaf index area?

- (A) The plant area covered by ground
- (B) The ground area covered by plants
- (C) The space area covered by plants
- (D) The plant area covered by space

8 . Where does casparian strip locate?

- (A) Stele
- (B) Root hair
- (C) Endodermis
- (D) Epidermis

9 . What includes tracheids and vessel elements. They are the most highly specialized of the xylem cells and are the principal water-conducting cells.

- (A) Libriform fibers
- (B) Ray parenchyma cells
- (C) Treachery elements
- (D) Fusiform cambium

10 . What phyllotaxy below indicates two leaves on one node?

- (A) Alternate
- (B) Spiral
- (C) Opposite
- (D) Whorled

見背面

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國立臺灣大學 112 學年度碩士班招生考試試題

科目：植物生理學(A)

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- 11 . Plants exert which mechanism to prevent too high leaf area index.
(A) Flowering
(B) Withering
(C) Self-pruning
(D) Dormancy
- 12 . What is not the major cell type in leaves?
(A) Palisade mesophyll cells
(B) Spongy mesophyll cells
(C) Epidermal cells
(D) Companion cells
- 13 . Mycorrhizae are a form of _____, are observed in more than 80% of the plants studied.
(A) Parasitism
(B) Mutualism
(C) Commensalism
(D) All options are incorrect
- 14 . What is not the type of short-distance transportation in plants?
(A) Simple diffusion
(B) Facilitated diffusion
(C) Active transportation
(D) Bulk flow
- 15 . The process happened mainly in leaves for plants to lose water into the atmosphere is called?
(A) Carboxylation
(B) Transpiration
(C) Photosynthesis
(D) Respiration
- 16 . What counts for the most volume in leaves?
(A) Substomatal space
(B) Vein
(C) Cuticle
(D) Stoma
- 17 . What is the shape of guard cells in monocots?
(A) Dumbbell
(B) Kidney
(C) Donut
(D) Star
- 18 . What is the major factor for the guard cell to create a space as stoma?
(A) Rich irrigation
(B) Continuous dark
(C) Continuous light
(D) Uneven thickness of cell wall
- 19 . The maximum tension that an uninterrupted column of any material can withstand without breaking is called:
(A) Tensile strength
(B) Continuous lane
(C) Continuous part
(D) Uneven thickness break
- 20 . Particles that are small enough to remain in suspension but too large to go into true solution
(A) Clay
(B) Colloids
(C) Silt
(D) All options are incorrect
- 21 . What is the correct sequence in photosynthetic carbon reduction cycle?
(A) Carboxylation - Reduction - Regeneration
(B) Carboxylation - Regeneration - Reduction
(C) Regeneration - Carboxylation - Reduction
(D) Regeneration - Reduction - Carboxylation

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22. What is not involved in the flow of electron transportation among PSII, cytochrome complex, and PSI during photosynthesis?
(A) QA passes the electrons to plastoquinone (P680+ Pheo QA)
(B) Pheo- passes the electrons to QA (P680+ Pheo QA-)
(C) Electrons finally end up into ATP
(D) Arrival of excitation energy at PSII reaction center P680
23. What is not a part of root?
(A) Pericycle
(B) Endodermis
(C) Shoot apical meristem
(D) Stele
24. What presents a barrier to the movement of water through the apoplastic space to the endodermis?
(A) Xylem
(B) Casparian band
(C) Ray parenchyma cells
(D) Vessel elements
25. What is a special case of diffusion involving the movement of water across a selectively-permeable membrane?
(A) Osmosis
(B) Transporter translocation
(C) Ion leakage
(D) All options are incorrect

※ 注意：請於試卷內之「非選擇題作答區」標明題號依序作答。

簡答題，每大題各 10 分

26. 請描述植物之光合作用、呼吸作用以及氮代謝如何參與在植物代謝與功能的平衡上。Please describe how photosynthesis, respiration and nitrogen metabolism contribute to achieve an intricate balance in plant metabolism.
27. 請就以下各點說明並比較植物-互利共生微生物與以及植物-病原微生物兩種交互作用之異同：(1) 辨識彼此，(2)植物防禦反應，(3)植物與微生物之間的營養關係，(4)交互作用之最後結果
28. 請說明並比較植物遭遇短期高光逆境(dynamic photoinhibition)與長期高光逆境(chronic photoinhibition)時期因應之機制，以利生存。
29. (1)請定義植物之馴化(acclimation)與適應(adaption)，(2)請舉例說明並比較植物對環境逆境之馴化與適應。
30. (1)請以植物光反應說明其訊息傳導路徑(signaling transduction pathway)之關鍵步驟，(2)請列出至少三項參與植物光反應與訊息傳導路徑之關鍵賀爾蒙或調控因子。

試題隨卷繳回