國立彰化師範大學 101 學年度碩士班招生考試試題

系所：生物學系　　組別：丙組　　科目：普通生物學

☆☆請在答案卷上作答☆☆　　

一、 單擇題：(20%)

1. Which of the following is derived from the ground tissue system?
   A) root hair B) cuticle C) periderm D) pith E) phloem

2. Which of the following best describes advantages conferred by compound leaves versus simple leaves?
   A) There's a greater chance of capturing photons in intermittently shady areas.
   B) There is less chance of damage in high-wind areas.
   C) There's a reduced chance of herbivory.
   D) There is less surface area for water loss.
   E) There's a greater chance of capturing photons in intermittently shady areas and less chance of damage in high-wind areas.

3. Long-distance electrical signaling in the phloem has been shown to elicit a change in all of the following *except*
   A) rapid leaf movement.
   B) gene transcription.
   C) a switch from C_4 to C_3 photosynthesis.
   D) gene transcription.
   E) phloem unloading.

4. According to the pressure flow hypothesis of phloem transport,
   A) solute moves from a high concentration in the source to a lower concentration in the sink.
   B) water is actively transported into the source region of the phloem to create the turgor pressure needed.
   C) the combination of a high turgor pressure in the source and transpiration water loss from the sink moves solutes through phloem conduits.
   D) the formation of starch from sugar in the sink increases the osmotic concentration.
   E) the pressure in the phloem of a root is normally greater than the pressure in the phloem of a leaf.

5. Which of the following is a primary difference between ectomycorrhizae and endomycorrhizae?
   A) Endomycorrhizae have thicker, shorter hyphae than ectomycorrhizae.
   B) Endomycorrhizae, but not ectomycorrhizae, form a dense sheath over the surface of the root.
   C) Ectomycorrhizae do not penetrate root cells, whereas endomycorrhizae grow into invaginations of the root cell membranes.
   D) Ectomycorrhizae are found in woody plant species; about 85% of plant families form ectomycorrhizae.
   E) There are no significant differences between ectomycorrhizae and endomycorrhizae.

國立彰化師範大學 101 學年度碩士班招生考試試題

系所：生物學系　　組別：丙組　　科目：普通生物學

☆☆請在答案卷上作答☆☆　　

6.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
A) energy. B) carbohydrates. C) lipids and steroids. D) minerals. E) water.

7. Charles and Francis Darwin discovered that
A) auxin is responsible for phototropic curvature.
B) auxin can pass through agar.
C) light destroys auxin.
D) light is perceived by the tips of coleoptiles.
E) red light is most effective in shoot phototropism.

8. Garden beans and many other eudicots have a hooked hypocotyl during germination. Which of the following is true concerning hypocotyls and/or the hypocotyl hook?
A) It is the first structure to emerge from a eudicot seed.
B) It pushes the cotyledons up through the soil.
C) It straightens when exposed to sufficient water.
D) It is stunted in an etiolated seedling.
E) It emerges after the successful establishment of the radicle.

9. A botanist discovers a plant that lacks the ability to form starch grains in root cells, yet the roots still grow downward. This evidence refutes the long-standing hypothesis that
A) falling statoliths trigger gravitropism.
B) starch accumulation triggers the negative phototropic response of roots.
C) starch grains block the acid growth response in roots.
D) starch is converted to auxin, which causes the downward bending in roots.
E) starch and downward movement are necessary for thigmotropism.

10. Which of the following statements is *true* of protoplast fusion?
A) It occurs when the second sperm nucleus fuses with the polar nuclei in the embryo sac.
B) It can be used to form new plant varieties by combining genomes from two plants.
C) It is used to develop gene banks to preserve genetic variability.
D) It is the method of test-tube cloning that produces whole plants from callus.
E) It occurs within a callus that is developing in tissue culture.

國立彰化師範大學 101 學年度碩士班招生考試試題

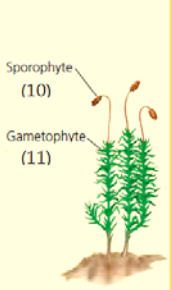
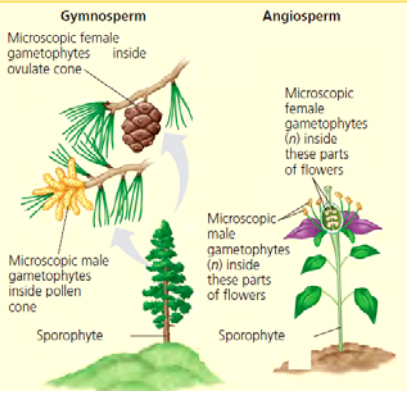
系所：生物學系　　組別：丙組　　科目：普通生物學

☆☆請在答案卷上作答☆☆　　

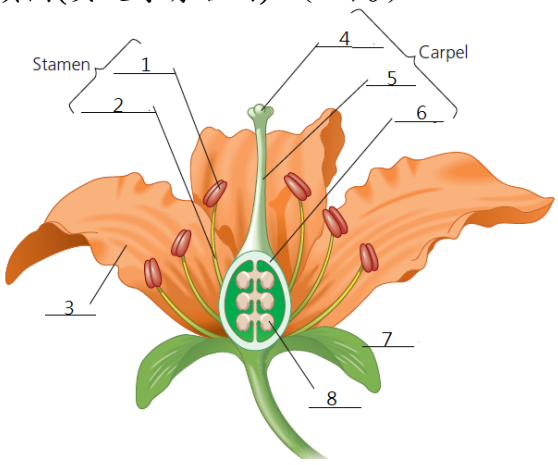
二、填圖＆配合題：(46%)

1. 配合題(請依圖片標號填入下列英文選項，可重複選擇)：(22%)

(a) n (haploid)
(b) 2n (diploid)
(c) Fern
(d) Seed plant
(e) Moss
(f) Nonvascular
(g) Vascular
(h) Have seed
(i) Seedless

	PLANT GROUP		
Plant Group	(1)	(2)	(3)
With/ Without vascular	(4)	(5)	(6)
With/Without seed	(7)	(8)	(9)
Example			

2. 填圖(英文專有名詞)：(24%)



三、問答題：(34%)

1. What's the difference between **photophosphorylation** and **oxidative phosphorylation**？(畫圖 5%、製表 4%、申論 5%，共 14%)

2. Detail describe urine formation processes in human body.（畫圖 3%、說明 7%，共 10%）

3. Explain "cytoplasmic segregation", "induction", "totipotent" and relation of these three items in development processes.（10%）