

大同大學 九十四 學年度 轉學考試 試題

考試科目:生物 系別:生物工程學系 第一頁, 共二頁

註:本次考試 不可以 參考自己的書籍及筆記; 不可以 使用字典; 不可以 使用計算器。

I. Multiple Choice (單選題, 每題 3 分)

1. Which of the following cells are especially adept at destroying tumor cells? (a) natural killer cells (b) plasma cells (c) mast cells (d) neutrophils
2. Which of the following plant hormone is influential in the opening and closing of stomata? (a) gibberellin (b) auxin (c) ethylene (d) abscisic acid
3. The waterproof region around the radial and transverse walls of endodermal cells is (a) pricycle (b) Casparian strip (c) apoplast (d) symplast
4. Which of the following contribute to the process of the filtration in the nephrons? (a) high hydrostatic pressure in the glomerular capillaries (b) large surface area for filtration (c) permeability of glomerular capillaries (d) active transport by the epithelial cells
5. The secondary oocyte of a woman is arrested in the second meiotic division until the stimulus of fertilization at (a) prophase II (b) metaphase II (c) anaphase II (d) telophase II
6. The best definition of osmotic pressure is (a) The movement of solute molecules from a higher to a lower concentration. (b) The force with which a solvent moves across a semi-permeable membrane from a higher to a lower concentration. (c) The active transport of a substance out of a cell to maintain equilibrium. (d) The movement of solute molecules from a lower to a higher concentration across a semi-permeable membrane.
7. By which of the following mechanisms can a cell transport a substance from a lower to a higher concentration? (a) Simple diffusion (b) Facilitated diffusion (c) Active transport (d) Osmosis
8. What is the fate of pyruvic acid in an organism that uses aerobic respiration? (a) It is reduced to lactic acid. (b) It is oxidized in the citric acid cycle. (c) It is reduced in the citric acid cycle. (d) It is catabolized in glycolysis.
9. Which of the following pairs is mismatched?
 - (a) Brightfield microscope-used to view stained specimens
 - (b) Phase-contrast microscope-used to see internal structures of cells in a natural state.
 - (c) Fluorescence microscope-uses fluorescent light source

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考試科目:生物 系別:生物工程學系 第二頁, 共二頁

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(d) Scanning electron microscope-used to view surface of specimen

10. Which of the following pairs is mismatched?

- (a) Endoplasmic reticulum-internal transport
- (b) Golgi complex-secretion
- (c) Lysosome-digestive enzymes
- (d) Peroxisome-energy storage

II. 問答題:

1. 請解釋以下有關細胞的名詞 (每小題 3 分):

- a. fluid mosaic model
- b. cytoskeleton
- c. phagocytosis
- d. gap junction
- e. nucleoli

2. 請解釋以下有關酵素的名詞 (每小題 3 分):

- a. apoenzyme
- b. active site
- c. competitive inhibition
- d. allosteric site
- e. feedback inhibition

3. 請簡述光合作用的光反應和暗反應以及各自的產物 (5 分)。

4. 何謂神經元 (neuron)之 action potential? 其形成之機制為何? (8 分)

5. 請比較細胞調節免疫 (cell-mediated immunity) 及抗體調節免疫 (antibody-mediated immunity)之異同。(8 分)

6. Cyclic-AMP 及 Ca^{2+} 可作為動物荷爾蒙之二級訊號者, 請說明其作用機制。(8 分)

7. 如何由一開花植物之根部橫切面判斷其為單子葉植物或雙子葉植物? (4 分)

8. 何謂蒸散作用? 其與植物內水份之輸送有何關係? (7 分)