

國立成功大學

113學年度碩士班招生考試試題

編 號： 313

系 所： 臨床醫學研究所

科 目： 生命科學

日 期： 0202

節 次： 第 3 節

備 註： 不可使用計算機

※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

一．選擇題 (50 分，共 10 題，每題 5 分)

1. The plasma membrane is not involved the process of

- (A) signaling transduction.
- (B) endocytosis.
- (C) osmosis.
- (D) recycling of cytosolic proteins.

2. Which of the following function is not associated with the endomembrane system?

- (A) ATP synthesis.
- (B) glycosylation of proteins.
- (C) Ca^{2+} storage.
- (D) protein synthesis.

3. Which of the following statements is incorrect?

- (A) Carbohydrates are sugars and polymers of sugars.
- (B) Carbohydrates can form large polymers and have structural functions.
- (C) Carbohydrates are polymers that can serve as energy storage for the cells.
- (D) Carbohydrates are composed exclusively of carbon and hydrogen atoms.

4. Which of the following statements about lipids and fats is true?

- (A) Cholesterol is a saturated fat.
- (B) Both phospholipids and fats contain fatty acids attached to a glycerol molecule.
- (C) Lipids are a specialized group of fat.
- (D) In contrast to lipids, fats can be composed by saturated or unsaturated fatty acids.

5. If the DNA content of a diploid cell in the G_1 phase of the cell cycle is represented by x , then the DNA content of the same cell at the metaphase of meiosis I would be

- (A) $0.25x$
- (B) $0.5x$
- (C) x
- (D) $2x$

6. The immediate energy source that drives ATP synthesis by ATP synthase during oxidative phosphorylation is the
- (A) flow of electrons down the electron transport chain.
 - (B) oxidation of glucose.
 - (C) H^+ concentration gradient across the inner mitochondrial membrane.
 - (D) transfer of phosphate to ADP.
7. How many homologous chromosome pairs can be seen in the karyotype of a normal autosomal cell of a human male?
- (A) 22
 - (B) 23
 - (C) 44
 - (D) 46
8. In an animal cell, which protein plays an important role in the formation of a cleavage furrow during cytokinesis?
- (A) myosin.
 - (B) tubulin.
 - (C) cohesion.
 - (D) motor protein.
9. Which of the following statements is incorrect?
- (A) Brown fat generates heat in hibernating animals.
 - (B) Brown fat generates heat from stored fat with ATP production.
 - (C) Brown fat generates heat in humans.
 - (D) Brown fat is made up of cells packed with mitochondria.
10. Most CO_2 from catabolism is released during
- (A) glycolysis.
 - (B) the citric acid cycle.
 - (C) lactate fermentation.
 - (D) electron transport.

二. 簡答題 (50 分，共 5 題，每題 10 分)

[尚有下一頁]

Please briefly define the following terms.

1. Cell therapy.
2. Gene editing.
3. Cytokine releasing syndrome.
4. Metabolic syndrome.
5. Cancer stem cells.