

※ 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。

Part I：50%

一、選擇題：每題 2 分，共 40 分

1. 關於胰臟分泌的荷爾蒙與其釋放細胞的配對，下列何者正確？
 - (A) 升糖激素由 β 細胞分泌；胰島素由 α 細胞分泌
 - (B) 升糖激素由 α 細胞分泌；胰島素由 β 細胞分泌
 - (C) 升糖激素及胰島素均由 α 細胞分泌
 - (D) 升糖激素及胰島素均由 β 細胞分泌

2. 關於造成酸、鹼中毒的原因解釋，下列何者錯誤？
 - (A) 嚴重糖尿病患者，會有代謝性酸中毒
 - (B) 慢性腎衰竭常會併發嚴重的代謝性酸中毒
 - (C) 醛固酮分泌過多會造成腎小管性酸中毒 (tubular acidosis)
 - (D) 劇烈的嘔吐，也可能會造成酸中毒

3. 通常在阿茲海默式症 (Alzheimer's Disease) 患者身上，可發現分泌那一類神經傳導物質的神經細胞明顯喪失？
 - (A) 正腎上腺素 (norepinephrine)
 - (B) 血清張力素 (serotonin)
 - (C) 乙醯膽鹼 (acetylcholine)
 - (D) 多巴胺 (dopamine)

4. 痛覺接受器的特性是：
 - (A) 慢適應性 (slowly adapting)
 - (B) 快適應性 (rapidly adapting)
 - (C) 痛覺過敏 (hyperalgesia)
 - (D) 側抑制 (lateral inhibition)

5. 下列有關膽囊收縮素 (cholecystinin) 的敘述何者錯誤？
 - (A) 促進膽囊排放膽汁
 - (B) 縮短胃排空時間 (emptying time)
 - (C) 由十二指腸與空腸黏膜的細胞所分泌
 - (D) 腸道內容物有脂肪時可刺激其分泌

6. 下列何種情形不是增加腎素(renin)分泌的因素？
- (A) 血鈉降低
 - (B) 血鉀降低
 - (C) 交感神經興奮
 - (D) 入球小動脈血量減少
7. 下列何者為葡萄糖進入小腸上皮細胞的機制？
- (A) 簡單擴散
 - (B) 次級主動運輸
 - (C) 初級主動運輸
 - (D) 胞噬作用
8. 下列何者的活性需藉由腸激酶(enterokinase)的作用產生？
- (A) 胃蛋白酶(pepsin)
 - (B) 胰凝乳蛋白酶(chymotrypsin)
 - (C) 羧肽酶(carboxypeptidase)
 - (D) 胰蛋白酶(trypsin)
9. 下列何者不是下視丘所分泌的荷爾蒙？
- (A) 皮促素釋素(CRH)
 - (B) 促性腺素激素(GnRH)
 - (C) 催乳素抑制激素(PIH)
 - (D) 促腎上腺皮質素(ACTH)
10. 下列何種激素由脂肪組織分泌？
- (A) 飢餓素(ghrelin)
 - (B) 瘦體素(leptin)
 - (C) 抑制素(inhibin)
 - (D) 褪黑激素(melatonin)
11. 下列何者與血紅素(hemoglobin)的結合能力最低？
- (A) N₂
 - (B) O₂
 - (C) CO₂
 - (D) CO

12. 與肥大細胞(mast cell)功能相似，且能釋出肝素的血球為：

- (A) 中性白血球
- (B) 嗜伊紅性白血球
- (C) 嗜鹼性白血球
- (D) 淋巴球

13. 在三餐的吸收期(absorptive state)，身體多數細胞主要以下列何者為其能量之來源？

- (A) 葡萄糖 (glucose)
- (B) 脂肪酸(fatty acids)
- (C) 胺基酸(amino acids)
- (D) 乳酸鹽(lactate)

14. 下列何者不是純感覺神經？

- (A) 嗅神經
- (B) 視神經
- (C) 三叉神經
- (D) 前庭耳蝸神經

15. 下列那一神經核的神經細胞退化，會導致帕金森氏症？

- (A) 黑質
- (B) 杏仁核
- (C) 丘腦
- (D) 蒼白球

16. 催產素 (oxytocin) 是由下列何者生成？

- (A) 下丘腦
- (B) 松果腺
- (C) 腦下腺神經部
- (D) 腦下腺腺部

17. 下列關於腺體的敘述，何者錯誤？

- (A) 可能是單細胞或多細胞
- (B) 分為外分泌腺及內分泌腺
- (C) 具有分泌的功能
- (D) 由結締組織特化而來

18. 下列何種肌肉細胞在高頻率刺激時其收縮力最容易加成？

- (A) 骨骼肌
- (B) 心肌

- (C) 小腸平滑肌
- (D) 小動脈平滑肌

19. 下列何結構與長期記憶有較直接相關？

- (A) 松果體
- (B) 扣帶回
- (C) 海馬回
- (D) 下丘腦

20. 腎臟的緻密斑(macula densa)是由那一構造的細胞特化？

- (A) 近曲小管
- (B) 遠曲小管
- (C) 入球小動脈
- (D) 出球小動脈

二、問答題：共 10 分

1. 請描述血糖濃度之調節機制。(5%)
2. 請說明甲狀腺分泌異常，會造成的疾病並分別說明其治療方法。(5%)

Part II : 50%

Multiple choice questions (2.5% each)

1. What happens when the sensory area of the cerebral cortex is damaged?
 - a. Loss of vision
 - b. No perception of pain
 - c. Loss of two-point discrimination
 - d. No perception of touch

2. Dysmetria is often observed in which of the following condition?
 - a. Cerebellar lesions
 - b. Extra pyramidal lesions
 - c. Pyramidal lesions
 - d. None of the above

3. What is the function of GABA on CNS?
 - a. Inhibits glial cell
 - b. Activates neuron regeneration
 - c. Neuronal inhibition
 - d. Neuronal activation

4. When does degeneration of the genetic code occur?
 - a. DNA replication
 - b. RNA Transcription
 - c. Post-translational modification
 - d. Protein translation

5. Which of the following statement is true? In comparison to the intracellular fluid, the extracellular fluid has
 - a. higher $[Na^+]$, lower $[K^+]$, higher $[Cl^-]$, and lower $[PO_4^{3-}]$.
 - b. higher $[Na^+]$, higher $[K^+]$, higher $[Cl^-]$, and higher $[PO_4^{3-}]$
 - c. lower $[Na^+]$, lower $[K^+]$, lower $[Cl^-]$, and lower $[PO_4^{3-}]$
 - d. lower $[Na^+]$, higher $[K^+]$, lower $[Cl^-]$, and higher $[PO_4^{3-}]$

6. Concentration gradient of which of the following ions determines the resting potential of a myelinated nerve fiber?
 - a. Na^+
 - b. Cl^-
 - c. K^+
 - d. Mg^{++}

7. The slowest rate of conduction of the cardiac action potential occurs in
 - a. S-A node
 - b. A-V bundle fibers
 - c. His-Purkinje bundle
 - d. Atrial muscle

8. Which of the following effect on the S-A node will decrease heart rate?
 - a. Increased noradrenaline level
 - b. Increased K^+ permeability
 - c. Increased Mg^{++} permeability
 - d. Decreased ACh stimulation

9. What happens when precapillary arteriole dilates in a muscle vascular bed?
- Decrease in capillary filtration rate
 - Reduced vascular conductance
 - Diminished capillary blood flow
 - Reduced arteriolar resistance
10. Which of the following conditions would most likely result in chronic hypertension?
- Reduced aldosterone level
 - Diminished thromboxane production
 - Decrease in angiotensin II formation
 - Decreased NO biosynthesis
11. In cortical collecting tubule, K^+ secretion is reduced by
- a diuretic that decreases proximal tubule Na^+ reabsorption
 - an aldosterone antagonist
 - acute alkalosis
 - high Na^+ intake
12. Which of the following factor is most essential for determining the maximum clearance rate of a substance from the plasma?
- Renal plasma flow
 - GFR
 - Urinary excretion rate of the substance
 - Filtration ratio of the substance
13. In red blood cells, which of the following enzyme facilitates CO_2 transport?
- Haloperoxidase
 - Superoxide dismutase
 - Carbonic anhydrase
 - Glutathione reductase
14. During bacterial infections, where does transmigration of white blood cells occur?
- Arterioles
 - Venules
 - Lymphatic ducts
 - Inflamed arterioles and lymphatic ducts

15. Upper airway resistance can be increased by
- reduced lung inflation
 - increased breathing rate at low volume
 - release of histamine by mast cells
 - all of the above
16. What happens when diver dives 20 meter under water?
- The lung will shrink.
 - The arterial PO_2 increases and PCO_2 remains unchanged.
 - All blood gas partial pressures in are elevated.
 - Both fractions of inspired O_2 and inspired N_2 will increase.
17. Position sensation involves proprioceptors in
- skin
 - joint capsules only
 - lamellar corpuscles
 - muscle spindles and joint capsules
18. Which cranial nerve innervates the inferior oblique muscle?
- Abducens nerve
 - Oculomotor nerve
 - Trochlear nerve
 - All of the above
19. Which of following substance facilitate secondary gastric acid secretion?
- Cholecystokinin
 - Gastrin
 - Vasoactive intestinal peptide
 - Somatostatin
20. Which of the following statement is true?
- Antidiuretic hormone increases salt and water reabsorption in the collecting ducts.
 - Antidiuretic hormone acts oppositely on urine and plasma osmolality.
 - Antidiuretic hormone stimulates thirst.
 - Antidiuretic hormone is synthesized in the posterior pituitary gland.