

題號： 365

國立臺灣大學 111 學年度碩士班招生考試試題

科目： 生理學(B)

題號： 365

節次： 1

共 2 頁之第 1 頁

壹、單選題 (每題 3%) ※ 注意：請於試卷內之「選擇題作答區」依序作答。

1. Which of the following ions essentially contributes to the overshoot depolarization of an action potential? (A) Na<sup>+</sup> (B) K<sup>+</sup> (C) Cl<sup>-</sup> (D) none of the above
2. The conduction of which of the following fibers is blocked first when a local anesthetic was applied? (A) C-fiber (B) B-fiber (C) A-fiber (D) none of the above
3. Which of the following is an excitatory neurotransmitter for synaptic transmission in the neuromuscular junction? (A) acetylcholine (B) gamma amino butyric acid (C) 1,25 dihydroxycholecalciferol (D) none of the above
4. Which of the following is defined as the 'oxygen debt' during the anaerobic metabolism of skeletal muscle fibers? (A) carbon dioxide (B) water (C) lactate (D) phosphocreatine
5. Which of the following components is the calcium store in skeletal muscle fibers? (A) sarcolemma (B) T-tubule (C) sarcoplasmic reticulum (D) actin
6. Which of the following is the nervous system mediating the "Fight or Flight" reaction? (A) the central nervous system (B) the peripheral nervous system (C) the somatic nervous system (D) the sympathetic nervous system
7. Which of the following Brodman's area is recognized as the primary auditory cortex? (A) area 41 (B) area 42 (C) area 17 (D) area 18
8. Which of the following Brodman's area is recognized as the primary visual cortex? (A) area 41 (B) area 42 (C) area 17 (D) area 18
9. Which of the following catalyzes thrombus lysis? (A) plasmin (B) histamine (C) cystine (D) serotonin
10. Which of the following conduction system has the lowest conduction velocity? (A) sinoatrial node (B) atrioventricular node (C) the right bundle branch (D) Purkinje fiber
11. Which of the following segments exchanges plasma with interstitial fluid? (A) aorta (B) arteriole (C) capillary (D) venule
12. Which of the following is clinically used for measuring the renal function? (A) Clearance of urea (B) Clearance of glucose (C) Clearance of creatinine (D) Clearance of spironolactone
13. Which of the following is the way that glucose can be reabsorbed by the renal epithelium? (A) facilitated diffusion (B) primary active transportation (C) secondary active transportation (D) phagocytosis
14. Which of the following is the most important buffer system in the plasma? (A) bicarbonate system (B) protein system (C) phosphate system (D) nitroglyceride
15. Which of the following is a hormone secreted by the stomach? (A) angiotensin II (B) pepsinogen (C) gastrin (D) cholecystokinin
16. Which of the following is a motility in the colon? (A) haustration (B) pendular movement (C) segmentation (D) chewing

見背面

題號： 365  
科目： 生理學(B)  
節次： 1

國立臺灣大學 111 學年度碩士班招生考試試題

題號： 365

共 2 頁之第 2 頁

17. Which of the following is found in the arterial blood gas (ABG) analysis of a perfusion-limited condition?  
(A) decreased PO<sub>2</sub> and decreased PCO<sub>2</sub> (B) decreased PO<sub>2</sub> but increased PCO<sub>2</sub> (C) increased PO<sub>2</sub> and decreased PCO<sub>2</sub> (D) increased PO<sub>2</sub> and increased PCO<sub>2</sub>
18. Which of the following is characterized by a reduced FEV<sub>1</sub>/VC (the forced expiratory volume at the first second/vital capacity) but normal vital capacity? (A) obstructive pulmonary disease (B) restrictive pulmonary disease (C) perfusion limited disease (D) anemic disease
19. Which of the following is a neuroendocrine substance of the hypothalamus? (A) thyroid stimulating hormone (B) thyrotropin releasing hormone (C) thyroid hormone (D) insulin-like growth hormone
20. Which of the following is the cell that thyroid hormone synthesis? (A) follicular cell (B) parafollicular cell (C) chief cell (D) pacemaker cell

貳、問答題 ( 每題 10% )

1. Please give a diagram illustrating the pressure-volume relationship of the left ventricle during a cardiac cycle, and specify each stage in this cycle. (10%)
2. Explain how the renin-angiotensin II-aldosterone system affects the blood pressure, please. (10%)
3. Explain the physiological, anatomical, and alveolar dead spaces of the lung, please. (10%)
4. Please explain how the glomerular filtration rate can be measured using inulin, please. (10%)

試題隨卷繳回