

國立中興大學97學年度碩士班招生考試試題

科目：人體生理學

所別：食品暨應用生物科技學系丙組

本科目試題共4頁

單選題（每題1分，共30分）

1. 在肝臟完全切除後，血液中的何種物質濃度將會上升？A) estrogen；B) conjugated bilirubin；C) fibrinogen；D) glucose。
2. 下列胃腸液之 pH 值何者最高？A) 唾液；B) 胃液；C) 膽囊內膽汁；D) 胰液。
3. 神經系統中控制人體內臟活動的部門為 A) 中樞神經系統；B) 自主神經系統；C) 體神經系統；D) 以上皆非。
4. 自主神經系統的最高控制中樞為 A) 大腦皮質；B) 延腦；C) 下視丘；D) 中腦。
5. 下列哪一種神經末梢可分泌 norepinephrine (NE)？A) 交感節前神經；B) 副交感節後神經；C) 副交感節前神經；D) 交感節後神經。
6. 可形成 blood brain barrier (BBB) 的神經膠細胞為 A) 許旺氏細胞；B) 星形膠細胞；C) 微小膠細胞；D) 寡突膠細胞。
7. 人類在慢波睡眠 (slow wave sleep) 時，所記錄到的 EEG 波型為 A) α 波；B) β 波；C) δ 波；D) θ 波。
8. 人類的 Broca 氏區 (Broca's area) 受損時，會出現 A) 失語症 (aphasia)；B) 厭食症 (anorexia)；C) 失憶症 (amnesia)；D) 失眠症 (insomnia)。
9. 下列有關 Myelinated nerve fiber 的敘述何者為正確？A) 其上之鈉離子分佈不平均，多集中在蘭氏結，而在 internode 區則很少；B) 其直徑一般而言較 unmyelinated nerve fiber 為大；C) 若因病變而受傷或變薄時，依生理原則推斷，神經傳導的速度可能會變慢，甚至不能傳導。
10. 下列疾病中何者會加速紅血球之破壞？A) Sickle-cell disease；B) Hemolytic anemia；C) Pernicious anemia；D) Aplastic anemia。
11. 血液中含量最多的蛋白質是 A) C-reactive protein；B) albumin；C) fibrinogen；D) antibody。
12. 下列哪一種血球可製造抗體？A) 淋巴球；B) 血小板；C) 所有白血球；D) 紅血球。
13. 老化紅血球在何處被破壞？A) 腎臟；B) 脾臟；C) 心臟；D) 中央淋巴器官。
14. O 型的人血清中含有：A) A 抗原；B) B 抗原；C) 抗 A 與抗 B 抗體；D) A 抗原與 B 抗原。
15. 血液和組織之間的營養與細胞排泄物的交換，在何處進行？A) 靜脈；B) 動脈；C) 微血管；D) 淋巴管。
16. 血液凝集時，下列何者各項描述之正確順序為何？(1) thrombin converts fibrinogen to fibrin; (2) fibrin strands form the clot; (3) prothrombin activator is formed (4) prothrombin converted to thrombin. A) 4, 1, 2, 3; B) 1, 2, 3, 4; C) 3, 4, 1, 2; D) 2, 1, 4, 3。
17. 下列何者為紅血球中的主要成分 A) globulin; B) fibrinogen; C) albumin; D) hemoglobin。
18. 血球生成過程稱為 A) hemostasis; B) hematopoiesis; C) coagulation; D) blood typing。
19. 父母血型為下列何種情況時，可能導致新生兒之溶血疾病？A) mother Rh⁻, father Rh⁺; B) mother Rh⁺, father Rh⁻; C) mother Rh⁻, father Rh⁻; D) mother Rh⁺, father Rh⁺。
20. ADH (antidiuretic hormone) 是 A) 由 posterior pituitary gland 分泌；B) 有助於幫助保持血液體積；C) 助於調節水分之再吸收作用；D) 以上皆是。
21. 下列消化道分泌的激素中，何者與其作用正確配合？A) gastrin – release of alkaline secretions from the pancreas; B) secretin – release of hydrochloric acid; C) cholecystikinin (CCK) – release of alkaline pancreatic juices and bile; D) GIP – decreased release of bile。

第1頁

背面有題，請繼續作答。

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22. 消化道組織從外到內的構造，下列哪種順序為正確？ A) muscularis, mucosa, submucosa, serosa; B) serosa, muscularis, submucosa, mucosa; C) mucosa, submucosa, muscularis, serosa; D) submucosa, mucosa, muscularis, serosa.
23. The brain is in which region? A) Pectoral; B) Lumbar; C) Brachial; D) Cephalic.
24. The diaphragm separates which two cavities of the body? A) Abdominal and pelvic; B) Thoracic and abdominal; C) Cranial and spinal; D) Dorsal and ventral.
25. John Doe is recently diagnosed as "tumor in the dorsal cavity", where might you expect to find the cancer tissue? A) Abdominal or pelvic cavities; B) Superior or inferior cavities; C) Thoracic or abdominal cavities; D) Cranial or spinal cavities.
26. Healthy carriers for a recessive disease are A) homozygous dominant; B) heterozygous; C) homozygous recessive; D) either heterozygous or homozygous recessive.
27. A child was born with a genetic disease X, but both of his parents are free of this disease. Therefore, A) the disease X gene is dominant and the parents are heterozygous; B) the disease X gene is recessive and the parents are heterozygous; C) the disease X gene is either dominant or recessive; D) it is not possible.
28. If one parent has only dominant genes and the other has only recessive genes for a particular dominant genetic disorder, how many of their children should be affected by the disorder? A) All of the children; B) None of them; C) 50% of the children D) 75% of the children.
29. Which organ systems involved in providing oxygen to cells and removing carbon dioxide from cells? A) integumentary, respiratory, and nervous systems; B) respiratory and digestive systems; C) respiratory, integumentary and muscular systems; D) cardiovascular and respiratory systems.
30. Which of the following is NOT a sex-linked inherited disorder? A) Color blindness; B) Thalassemia; C) Hemophilia; D) Muscular dystrophy.

複選題（每題 2 分，共 46 分）

1. 下列何者被切斷時，左右大腦半球就無法互通訊息？ A) corpus callosum; B) angular gyrus; C) medial forebrain bundle; D) anterior commissure.
2. 自主神經所使用的神經傳導素包括 A) dopamine; B) epinephrine; C) acetylcholine; D) serotonin.
3. 下視丘所調節的生理功能包括 A) 荷爾蒙分泌；B) 飢餓；C) 體溫；D) 血壓。
4. 下列何者是合成甲狀腺素的原料？ A) tyrosine；B) iodine；C) alanine；D) melanin.
5. 下列白血球中，何種細胞內具有顆粒可釋放 histamine? A) neutrophil; B) mast cell; C) basophile; D) lymphocyte.
6. 下列各種消化道酵素中，何種可水解蛋白質？ A) pepsin; B) trypsin; C) chymotrypsin；D) amylase.
7. 當心室收縮時，下列哪些瓣膜是關閉的？ A) 三尖瓣；B) 二尖瓣；C) 半月瓣；D) 主動脈瓣。
8. 下列關於胃腺 (gastric glands) 之描述，何者為正確？ A) 存在胃中；B) 其分泌液中含有鹽酸；C) 其分泌液中含有可水解醣類的酵素；D) 其中的壁細胞(parietal cell)可分泌鹽酸及內在因子。

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9. 下列關於淋巴系統之描述，何者為非？ A) 全身最大的淋巴管為胸管 (thoracic duct)；B) 胸腺 (thymus) 及骨髓 (bone marrow) 稱為中央淋巴器官；C) T淋巴球在胸腺 (thymus) 產生，所以稱為T細胞；D) 淋巴液組成與血液相近。
10. 下列關於腎臟之描述，何者為正確？ A) 腎元 (nephron) 為腎臟功能之基本構造單位；B) 每顆腎臟有一百多個腎元；C) 近曲小管是葡萄糖、養分、水及離子等物質回收的主要地方；D) 近曲小管頂端細胞膜特化成微絨毛，稱為刷狀緣 (brush border)，有助於吸收及分泌功能。
11. 下列描述，何者為正確？ A) 抗體又稱為免疫球蛋白；B) IgM常形成雙聚體；C) IgA常形成五聚體；D) 紅斑性狼瘡 (systemic lupus erythematosus) 屬於自體免疫疾病 (autoimmune disease)。
12. 下列何者具有瓣膜構造？ A) 心臟；B) 四肢靜脈；C) 淋巴管；D) 微血管。
13. 下列何者為血液具有之功能？ A) 輸送養分；B) 調節體溫；C) 製造血球；D) 運送內分泌之荷爾蒙。
14. 下列描述，何者為正確？ A) 膽汁為肝臟細胞所製造；B) 肝臟具有貯存營養素的作用；C) 胰臟的 α 細胞分泌胰島素；D) 膽囊收縮素 (cholecystokinin) 抑制胃排空。
15. Which of the following statements are TRUE? A) The membrane lining the abdominal cavity wall is visceral peritoneum; B) The membrane attached to the surface of a lung is visceral pleura; C) The membrane lining the abdominal cavity wall is parietal pericardium; D) The membrane attached to the surface of intestine is visceral peritoneum; E) The membrane attached to the surface of intestine is visceral pericardium.
16. Which of the following statements are TRUE? A) Transverse plane divides body into right and left portions; B) Sagittal plane divides body into anterior and posterior portions; C) Sagittal plane divides body into right and left portions; D) Transverse plane divides body into anterior and posterior portions; E) Frontal plane divides body into anterior and posterior portions.
17. Which of the following statements are TRUE? A) Thoracic cavity contains thymus gland, trachea, esophagus; B) Liver, spleen, gallbladder are in the Inferior portion of the abdominopelvic cavity; C) Liver, spleen, gallbladder are in the anterior portion of the abdominopelvic cavity; D) when a pregnant woman is delivering a baby, the effects of oxytocin during labor is via positive feedback; E) when a pregnant woman is delivering a baby, the effects of oxytocin during labor is via negative feedback.
18. Which of the following statements are TRUE regarding to the Golgi apparatus in a cell? A) it can receive protein and/or lipid-filled vesicles from ER; B) it contains enzymes that modify proteins and lipids; C) it may produce lysosomes; D) it can processes, packages, and secretes various substances; E) it undergoes cellular respiration and generates ATP.
19. Which of the following statements are TRUE? A) in a hypotonic solution a cell may shrink or crenate; B) in a hypertonic solution a cell may shrink or crenate; C) hypertonic means lower concentration of solutes outside cell; D) hypertonic means higher concentration of solutes outside cell; E) in a hypertonic solution water enters the cell resulting it to swell and probably burst.

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20. Which of the following statements are TRUE? A) Cytokinesis occurs during telophase; B) Spindle is fully formed and chromosomes are aligned at the equator in anaphase; C) DNA is replicated in G1 phase; D) The process of cell division involves interphase and cytokinesis; E) The process of cell division involves mitosis and cytokinesis.
21. Which of the following statements are TRUE? A) epithelial tissue readily divides to produce new cells; B) epithelial tissue has a basement membrane to connect to underlying tissue; C) epithelial tissue has many blood vessels to support its nutrient needs; D) Schwann cells are phagocytotic that can engulf bacteria; E) Exocrine glands are ductless and secrete their product internally to be transported by the bloodstream.
22. Which of the following statements are TRUE? A) tRNA carries amino acids; B) rRNA is the site of protein synthesis; C) tRNA contains the code to make a polypeptide; D) mRNA contains the code to make a polypeptide; E) rRNA carries amino acid.
23. Which of the following statements are TRUE? A) squamous epithelium lines the small intestine; B) simple squamous epithelium is found where simple diffusion occurs; C) simple columnar epithelium lines the small intestine; D) simple cuboidal epithelium lines the small intestine; E) adipose tissue is a type of loose connective tissue.

英翻中（每題一分，共 20 分，翻譯的意思正確可給分，但不可有錯字）

<u>Decubitus ulcers</u>	<u>Epidermis</u>
<u>Angiotensin-converting enzyme</u>	<u>Inflammation</u>
<u>Meninges</u>	<u>Cerebral spinal fluid</u>
<u>Norepinephrine</u>	<u>Pluripotent stem cell</u>
<u>Oxytocin</u>	<u>Diabetes mellitus</u>
<u>Adrenal glands</u>	<u>Telomerase</u>
<u>Albinism</u>	<u>Glomerulus</u>
<u>Apoptosis</u>	<u>Metastasis</u>
<u>Karyotyping</u>	<u>Amniocentesis</u>
<u>Goblet cells</u>	<u>Phenotype</u>

簡答: (4%)

2007 年的諾貝爾醫學獎是由美國科學家卡佩基和史密斯，以及英國科學家埃文斯奪得。簡述他們獲得諾貝爾獎的重大的發現或發明 (2 分) 以及其在生醫領域上的應用 (2 分)。