

English Test for Entrance Examination of Postgraduate Institute:(2 points for each question)

I. Please choose the fittest answer to complete the sentence in each question.

- ___1. The student raced out of the classroom and bumped ___ a teacher who was carrying a cup of coffee.
(A) into (B) at (C) to (D) on
- ___2. Ann says the party will be ____, so I suggest you wear a nice dress.
(A) familiar (B) formal (C) fluent (D) funny
- ___3. Nancy gained four kilograms during the holidays, so she decided to go ___ a diet.
(A) on (B) to (C) in (D) up
- ___4. Don't follow that car too ____. If it stops quickly, there could be an accident.
(A) directly (B) exactly (C) nearly (D) closely
- ___5. After we ate the fried chicken, our fingers were oily, so we asked the waitress for more
(A) napkins (B) packages (C) orders (D) menus
- ___6. The sea ___ seventy-five percent of the surface of our world.
(A) making up (B) makes up (C) make up what is (D) which makes up
- ___7. A laser beam ___ a concentration of pure light.
(A) consists of (B) which consists of (C) exhibiting (D) exhibit
- ___8. The universe ___ we know it might have begun with a great explosion.
(A) as (B) that (C) and which (D) and
- ___9. The bus was full, but Judy saw an empty seat next to an old woman. "___ I sit here?" she asked her.
(A) Should (B) Would (C) May (D) Will
- ___10. Mr. Li teaches mathematics at a public high school in Kaohsiung. He ___ there since 1995.
(A) is (B) was (C) will be (D) has been
- ___11. Being a newcomer, Alice is ___ with the area.
(A) informative (B) unfamiliar (C) aware (D) confident
- ___12. Cars and motorcycles are ___ in this area; people can only walk around here.
(A) permitted (B) promoted (C) banned (D) favored
- ___13. From the window, we got a(n) ___ view of the mountains.
(A) breathtaking (B) chilly (C) excited (D) moral
- ___14. Despite losing the use of his legs and some use of his arms, the ___ boy managed to ski with the help of a special device.
(A) shy (B) scared (C) disabled (D) elegant
- ___15. Jeff's English had improved so ___ that everyone was surprised.
(A) gradually (B) critically (C) bitterly (D) dramatically
- ___16. The violent storm almost destroyed the area. People living there really ___ an ordeal.
(A) scored (B) dragged (C) resisted (D) underwent
- ___17. ___ computer use may not cause wrist injuries, it can still give you a headache or make your eyes dry.
(A) Once (B) When (C) While (D) Despite
- ___18. ___ he restrained himself from blurting out those hurtful words, his girlfriend would not have left.
(A) Because (B) Had (C) Should (D) When
- ___19. Einstein was Jewish, and in 1933 the Nazi government ___ his property and German citizenship.
(A) taken away (B) took away (C) has taken away (D) was taken away

20. The trash can, ___ with rejected term paper, sat in the corner of the dorm room.
(A) fill (B) to fill (C) filling (D) filled
21. Sleep and exercise are ___ health.
(A) in essence (B) essentially (C) essential to (D) essential for
22. He not only read the copy, but ___ on it.
(A) reported (B) apologized (C) regretted (D) commented
23. Mr. Anderson says that in many ways he ___ his success to his wife's support.
(A) owes (B) distributes (C) deceives (D) betrays
24. The spread of knowledge could be ___ by means of books.
(A) accomplished (B) defined (C) claimed (D) exported
25. If you abide by your promise, you will keep your promise _____.
(A) temporarily (B) periodically (C) permanently (D) unwillingly

II. Please choose the item that interprets best the sentence in each question.

26. Education has its fashion, and like all other fashions they come and go. This means that
(A) Education should make us fashionable
(B) Education is sometimes popular, sometimes unpopular
(C) Students study and leave school after some time
(D) Ideas on education change all the time
27. He isn't above lying when it suits his needs.
(A) He will lie when he feels it's necessary.
(B) He knows it is always necessary to tell the truth.
(C) He never lies even when it would benefit him to do so
(D) He usually lies down when he needs to rest.
28. People's interest in their health and their demand for various forms of medical care have enormously increased.
(A) People are taking more interest in their health than in medical care.
(B) People are taking more interest in their health but demanding less medical care.
(C) People are taking more interest in their health and demanding much more medical care.
(D) Medical care, drugs and hospital care grow more and more costly.
29. Primitive man was probably more concerned with fire as a source of warmth and as a means of cooking food than as a source of light.
(A) In the ancient times fire was used for getting warmth and cooking food rather than for getting light.
(B) Primitive man had nothing to do with light.
(C) In the ancient times the main use of fire was not for getting warmth and cooking food but for getting light.
(D) Primitive man regarded fire as the chief source of light.
30. A bookstore is the last place in the world I expect to meet you.
(A) I finally find you in a bookstore.
(B) If I want to meet you, I should go to a bookstore.
(C) I met you in a bookstore last time.
(D) It is impossible for us to meet in a bookstore.
31. Mr. Braun is a friend of mine whose profession is to advise or represent others in legal matters. Mr. Braun is
(A) a judge (B) a lawyer (C) a policeman (D) a guide
32. For the American masses their civilization is a canned food civilization, so that the housewives, instead of being pressed by domestic chores, have plenty of time for reading and social activities, but on the other hand, people must be content with uniform and unpalatable dishes.
(A) It seems that American housewives are pressed by the jobs of cooking and washing dishes, etc.
(B) American housewives scarcely spend time visiting old friends or doing a lot of reading.
(C) American housewives enjoy ready-made food very much.
(D) It seems that Americans can't enjoy delicious food.

33. A general feature of modern society is the gap that separates the adult from the young, and it is most painfully felt between parents and children. In this paragraph, we are talking about the gap between ____.
- (A) families (B) society (C) parents (D) generations
34. One should read the classics in winter, because then one's mind is more concentrated; read history in summer, because one has more time; read ancient philosophers in autumn, because they have such charming ideas; and read the collected works of later authors in spring, because the Nature is coming back to life. What kind of reading requires most concentration?
- (A) History (B) Modern writing. (C) The classics. (D) Philosophy.
35. It may be said that the problem in adult education seems to be not the piling up of facts but practice in thinking.
- (A) Education methods for adults and young people should differ.
(B) Adults do not seem to retain new facts.
(C) Adults seem to think more than young people
(D) Adult education should stress ability to think.

III. Please choose the most proper item for each blank in the essays.

ESSAY 1

Jane lived near the sea, and she often went down to the beach to sit on the sand. Being by the sea was like being in a different 36. In front of her was the deep blue water; it slowly moved 37 her and then moved away again. Sometimes it came up very quickly and then her feet were covered by the salty water. 38 her, soft white clouds continually floated across the pretty blue sky. Noisy white 39 were flying over her head as well. 40 they dived down suddenly to catch a fish, and then they flew right back up into the air. Jane often sat by the sea for hours to enjoy this special place.

- ___ 36. (A) way (B) part (C) lake (D) world
___ 37. (A) for (B) with (C) toward (D) from
___ 38. (A) Above (B) Ahead (C) Besides (D) Next
___ 39. (A) sands (B) birds (C) clouds (D) ships
___ 40. (A) Sometimes (B) Although (C) When (D) If

ESSAY 2

Champ is a young male chimpanzee. Recently, he did something that surprised scientists. The scientists had 41 some grapefruit in the sand, and only Champ knew where the grapefruit was. When the other chimps were in the area, however, Champ 42 that he did not know where the grapefruit was. Later, when the other chimps 43 Champ went right to the spot 44 the grapefruit was hidden, dug it up, and ate it. 45, Champ was able to make plans and trick his friends.

- ___ 41. (A) buried (B) eaten (C) grown (D) dug
___ 42. (A) realized (B) pretended (C) wondered (D) admitted
___ 43. (A) fell asleep (B) fall asleep (C) will fall asleep (D) are going to fall asleep
___ 44. (A) which (B) there (C) what (D) where
___ 45. (A) To the scientists' relief (B) Amazingly (C) To make matters worse (D) However

ESSAY 3

"Culture shock," according to specialists in intercultural studies, refers to the feelings which people 46 when they come into a new environment. 47 their studies, scientists have found that there are three stages of culture shock. In the first stage, the newcomers like their environment. Then, when the novelty 48, they begin to hate the people, the apartment, and everything 49 in their new environment. In the final stage of culture shock, the newcomers 50 their surroundings and, as a result, enjoy their life there.

- ___ 46. (A) experience (B) experiencing (C) experienced (D) to experience
___ 47. (A) Of (B) Despite (C) For (D) In
___ 48. (A) takes off (B) puts off (C) wears off (D) takes over
___ 49. (A) too (B) else (C) more (D) as
___ 50. (A) live with (B) appeal to (C) adjust to (D) escape from

1. Describe the following key words: (each 4 points, 4 x 7= 28 %)
 - a. Anatomical position
 - b. Tennis elbow
 - c. Alzheimer's disease
 - d. Thyroid gland
 - e. Auditory tube
 - f. Salivary gland
 - g. Gallstones
2. Describe the structure and distribution of lymphatic vessels. (12%)
3. Describe the general structure of the vertebral column, and list its components. (12%)
4. List the muscles in the thoracic wall to provide the movements for ventilation, or breathing, and state the action of each muscle. (12%)
5. Describe the structure of the hepatic portal system. (12%)
6. Describe the structure and distribution of the mesenteries associated with the abdominal digestive organ. (12%)
7. Describe the homologous structures of the male and female reproductive systems. (12%)

選擇題，請選一答案，每題2分。

- () 1. 細胞內包器無膜？ (A) 核糖體 (B) 高爾基體 (C) 顆粒性內質網 (D) 平滑性內質網
- () 2. 未分裂細胞內細胞核中的膠狀液 (A) 染色體 (B) 染色質 (C) 核質 (D) 核仁
- () 3. 細胞內骨架何者是中空的？ (A) 微細絲 (B) 中間細絲 (C) 微小管 (D) 以上皆是
- () 4. 基本組織中何者呈現明顯極性(差異性)？ (A) 上皮 (B) 節締 (C) 肌肉 (D) 神經
- () 5. 上皮組織如基底層是方形細胞，其上是鱗形細胞則稱____上皮. (A) 複層鱗形 (B) 簡單鱗形 (C) 複層方形 (D) 簡單方形
- () 6. 心肌特有的特徵: (A) 明顯橫紋 (B) 多細胞核 (C) 中間交接盤 (D) A+B
- () 7. 神經組織中可見的細胞有 (A) 神經元 (B) 神經膠細胞 (C) 樹突 (D) A + B.
- () 8. 排列於上呼吸道的主要上皮 (A) 複層柱形 (B) 簡單柱形 (C) 複層方形 (D) 偽複層俱纖毛柱形
- () 9. 排列於微血管的上皮 (A) 簡單方形 (B) 簡單柱形 (C) 簡單扁形 (D) 偽複層柱形
- () 10. 排列於卵巢表面的上皮 (A) 簡單方形 (B) 簡單柱形 (C) 簡單扁形 (D) 偽複層柱形
11. 排列於汗腺管道的上皮 (A) 複層柱形 (B) 複層方形 (C) 複層扁形 (D) 偽複層柱形
- () 12. 最常見的軟骨 (A) 透明軟骨 (B) 彈性軟骨 (C) 纖維軟骨
- () 13. 肌肉組織中受傷後何者能分裂與再生 (A) 骨骼肌 (B) 平滑肌 (C) 心肌
- () 14. 腺體分泌後，細胞被破壞是何種分泌方式？ (A) 部分洩出的 (B) 頂端洩出的 (C) 全洩出的
15. 脾臟內主要的節締組織纖維 (A) 膠原 (B) 彈性 (C) 網狀
- () 16. 會厭主要的軟骨 (A) 透明軟骨 (B) 彈性軟骨 (C) 纖維軟骨
- () 17. 下列構造不是腎元的一部分？ (A) 直血管 (B) 亨爾氏套 (C) 近曲彎管 (D) 遠曲彎管
- () 18. 腎臟功能的基本單位？ (A) 腎被膜 (B) 腎絲球 (C) 腎元 (D) 包爾氏被膜
- () 19. 腎臟髓質如果受損會影響下列何者的功能？ (A) 腎被膜 (B) 近曲彎管 (C) 遠曲彎管 (D) 收集管
- () 20. 雖然心臟節奏性收縮 但微血管內血流穩定原因 (A) 大動脈俱彈性 (B) 所有動脈俱彈性 (C) 動脈韌帶 (D) 靜脈瓣
- () 21. 靜脈壁中最厚一層 (A) 內膜 (B) 中膜 (C) 外膜
- () 22. 構成靜脈瓣 (A) 內膜 (B) 中膜 (C) 外膜
- () 23. 製造又分泌促甲狀腺素的細胞位於？ (A) 甲狀腺 (B) 下視丘 (C) 腦下腺前葉 (D) 腎上腺皮質部
- () 24. 淋巴結聚集於下列各處唯一例外？ (A) 腦 (B) 腋部 (C) 腹股溝 (D) 頸部

-) 25. 激素可被發現於空間或液體下列何者除外? (A) 血液 (B) 組織間液 (C) 管道 (D) 微血管內
- () 26. 下視丘製造的化學物質導致腦下腺前葉分泌激素稱為? (A) 生殖腺促素 (B) 神經傳導物質 (C) 釋放激素 (D) 作用激素
- () 27. 下視丘神經元來的軸突進入? (A) 腦下腺後葉 (B) 腦下腺前葉 (C) 不進入腦下腺
-) 28. 肌細胞釋放的激素? (A) 雄性素 (B) 濾泡刺激素 (C) 心房利尿素 (D) 腎上腺素
-) 29. 角質細胞移到皮膚表面 (A) 變成多核 (B) 分裂產生細胞 (C) 逐漸脫落 (D) 進入真皮層
30. 只存在於手掌和腳底的皮膚內 (A) 基底層 (B) 棘狀層 (C) 顆粒層 (D) 透明層
- () 31. 抑制下視丘釋放激素(能促使腦下腺釋放生殖腺促素), 而延遲精子卵子成熟是下列何者? (A) 腦下腺 (B) 甲狀腺 (C) 松果腺 (D) 腎上腺
32. 下列何者釋放類固醇激素? (A) 腎上腺皮質部 (B) 腦下腺 (C) 松果腺 (D) 腎上腺髓質部
33. 皮膚內豎毛肌是 (A) 骨骼肌 (B) 平滑肌 (C) 心肌
-) 34. 脊髓中傳遞運動衝動的神經元位於 (A) 背角 (B) 中間區 (C) 腹角 (D) 側角
35. 一條神經內, 許多神經纖維集成束, 外包有 (A) 神經內膜 (B) 神經中膜 (C) 神經外膜 (D) 被囊

問答題, 每題15分

pseudounipolar neuron 與 multipolar neuron 之差別?

2. 白血球的種類與特徵?

問答題(請自下列六大題中任選五大題作答，每題二十分)

- (1) 試敘述鐵質過度沈積在人體時的病理變化。
- (2) 試敘述在慢性炎症時的相關病理變化。
- (3) 試舉列說明化學致癌物在致癌程中的機轉。
- (4) 試述肺水腫的病理變化。
- (5) 試比較細胞壞死(necrosis)及細胞凋亡(apoptosis)。
- (6) 請分別敘述:
 - (a) Mallory bodies
 - (b) Howell-Jolly bodies
 - (c) Hirano bodies
 - (d) Rice bodies
 - (e) Negri bodies

1. 試述 *Cryptosporidium parvum* 的生活史及感染人體後引起的病害。(20%)
2. 人體感染 *Wuchereria bancrofti* 後，因個體免疫反應及居住地區的不同，可能引起不同型態的病害，試述之，同時請說明如何鑑別診斷。(20%)
3. 請舉出 2 種感染人體後會引起自體感染(autoinfection)條蟲，請說明其生活史及如何鑑別診斷。(20%)
4. 請寫出 4 種寄生在人體肝膽的吸蟲，並說明傳染之媒介，引起的共同病害及致病機轉。(20%)
5. 在臨床鏡檢的專業知識如何做下列寄生蟲病人的鑑別診斷？
例：*Ascaris lumbricoides*：採集糞便以濃縮集卵法處理，
鏡檢大小約 $45 * 55\mu\text{m}$ ，見波浪狀蛋白膜金黃色的蟲卵。
 - ① *Plasmodium falciparum*
 - ② *Wuchereria bancrofti*
 - ③ *Angiostrongylus cantonensis*
 - ④ *Entamoeba histolytica* 的(cyst form)
 - ⑤ *Hymenolepis nana*

* 注意：請於答案卷上依序作答，並標明各大題與題號

第一部份：配合題 (30 points)

請自右邊選項選出最配合左邊的答案 (答案請寫在答案卷上)

1. antibiotics 的作用機制：(7.5 points)

- | | |
|--------------------|--|
| (1). Cephalosporin | A. Prevents polypeptide elongation at 50S ribosome |
| (2). Tetracycline | B. Prevents polypeptide elongation at 30S ribosome |
| (3). Quinolone | C. Inhibits dihydropteroate synthase |
| (4). Sulfonamides | D. Inhibits cross-linkage of peptidoglycan layers |
| (5). Vancomycin | E. Inhibits mycolic acid synthesis |
| | F. Binds penicillin-binding proteins and enzymes responsible for peptidoglycan synthesis |
| | G. Binds α subunit of DNA gyrase |

2. 肝炎病毒與其相關描述：(7.5 points)

- | | |
|----------|------------------------------------|
| (1). HAV | A. DNA virus |
| (2). HBV | B. Enteric, non-A, non-B hepatitis |
| (3). HCV | C. Coinfection with HBV |
| (4). HDV | D. Picornavirus |
| (5). HEV | E. Flavivirus |

3. 補體活化過程中各分子之功能：(6 points)

- | | |
|--|------------------------------|
| (1) Membrane attack complex | A. C1q, r, s and C2, C4, C3 |
| (2) Mediate opsonization | B. C3, factor B and factor D |
| (3) Early component of Classical pathway | C. C5b, C6, C7 and C8 |
| (4) anaphylatoxin | D. C3b |
| | E. C3a, C4a and C5a |
| | F. C9 |

4. Class I 與 Class II pathway 的比較：(9 points)

- | | | | |
|-------------------------------------|----------------|----------------|--------------------|
| | Class I | Class II | A. Exogenous |
| The mode of antigen entry into cell | <u>(1)</u> | <u>(2)</u> | B. Endogenous |
| The molecules involved in pathway | <u>(3) (4)</u> | <u>(5) (6)</u> | C. HLA-DM |
| | | | D. Proteasome |
| | | | E. Ii chain |
| | | | F. TAP-1 and TAP-2 |

第二部分：解釋名詞 (12 points)

1. prion
2. LD₅₀
3. Antibody-dependent cell-mediated cytotoxicity
4. Allelic exclusion
5. Superantigen
6. Molecular mimicry

第三部分 問答題 (58 points)

請回答下列有關 HIV 病毒的相關問題：(11 points)

- (1). 請寫出四種 HIV 的基因，並分別說明其功能。(6 points)
 - (2). HIV 病毒藉由何種分子進入細胞內？(2 points)
 - (3). 目前臨床上所使用的藥物之作用機轉有哪些？(3 points)
2. 試寫出二種偵測 T 細胞功能（活性）的免疫學方法，並分別說明其原理。(6 points)
3. 請寫出維持 T 細胞免疫耐受性（immune tolerance or self-tolerance）的作用機制，並分別說明其原理。(10 points)
4. 請說明 sterilization 與 disinfection 有何不同？並分別列出二種滅菌方式。(6 points)
- Innate immunity 用所謂的 pattern-recognition receptor 來辨認微生物，而 adaptive immunity 則用 BCR or TCR 來區分自體與外來抗原，請比較這二種 receptor 的特徵有何不同（例如：特異性基因組成……等），並藉以解釋 innate 與 adaptive immunity 的不同？(10 points)
6. 請說明 Innate immunity 與 adaptive immunity 分別如何對抗病毒感染，而何種免疫細胞可以居中當作 innate 及 adaptive immunity 的橋樑，並說明這種免疫細胞之特色。(10 points)
7. 請比較 Gram-positive 及 Gram-negative 細菌細胞壁組成成分有何不同？(5 points)

一、解釋名詞 (30 分)

1. Nitroblue tetrazolium test
2. Sensitivity & Specificity
3. Activated Partial Prothrombin Time
4. Normal flora & pathogen
5. Facultative anaerobes
6. Aerotolerant test

二、問答題

1. 簡述各種引起檢驗誤差之來源 (10 分)
2. 詳述病毒性肝炎之實驗診斷法 (15 分)
3. 各舉例一血液疾病與感染症說明其分子診斷法 (20 分)
4. 試述病毒、細菌、黴菌之異同及特性 (10 分)
5. 詳述急性腎衰竭與猛爆性肝炎之生化檢查 (15 分)

每題 20 分

1. Explain genomic medicine and its clinical application
2. Explain the inheritance patterns of human and give examples
3. Describe the relationship of genetics and cancer and give examples
4. Describe genetic counseling
5. Describe the treatment of genetic disease

1. 試舉例說明一個細胞更替性(constant replacement)組織或器官如何維持結構與功能的恆定(10%)
2. 胰島素受體基因剔除會導致小鼠嚴重生長遲滯且出生不久後死亡，若剔除 IRS-1 (insulin receptor substrate-1)基因則引起輕微生長遲緩及胰島素抗性 (insulin resistance). 由此你認為胰島素之作用機制為何? (10%)
3. 何謂運動單位(motor unit)? 並請敘述運動神經原興奮如何引起骨骼肌纖維收縮之機制。(10%)
4. 試舉例說明 ligand-gated ion channel 之活化與功能 (10%)
5. 試舉例說明印證 A 因素影響 C 功能是經由 B 事件的方法 (10%)

簡答題 (每題 5 分, 共 50 分)

說明 gluconeogenesis 的生理角色及其所使用的材料 (5%)

2. 寫出與下列各項相關之一種或一種以上之 amino acids (5%):

- 1) Histone 中含量最高
- 2) Protein kinase-phosphorylated
- 3) Collagen 中含量最高
- 4) 妨礙 α -helix 形成
- 5) 決定 protein 在 280 nm 波長之吸光度

3. 說明 cyclic GMP 在 signal transduction 的角色 (5%)

4. 寫出合成下列物質之先驅物 (5%):

- 1) Dopamine
- 2) Norepinephrine
- 3) γ -aminobutyrate
- 4) Histamine
- 5) Serotonin

5. 說明 HDL 如何參與 cholesterol 之運送及代謝 (5%)

6. 說明 leptin 在調節 triacylglycerol 之角色 (5%)

7. 說明 ubiquitin 如何參與 protein degradation (5%)

8. 簡述 mRNA splicing 之分子機轉 (5%)

9. 寫出所有參與原核細胞 DNA replication 之酵素 (5%)

10. 寫出下列技術之用途 (5%)

- 1) Northern blot
- 2) Site directed mutagenesis
- 3) PCR
- 4) FISH
- 5) DNA microarray

請依序回答下列各問題:

1. 請說明環境危害物質包括那些? 如何因應我們的環境衛生問題? (20%)
2. 請說明心理健康的意義與影響因素? (10%)
3. 請說明學校衛生之工作內容與健康促進之關係? (10%) .
4. 請說明醫療品質的定義及醫療品質管理的內涵? (10%)
5. 以糖尿病為例, 說明其疾病自然史與公共衛生三段五級之預防策略? (15%)
6. 以公共衛生傳染病之防治原則, 闡述目前台灣登革熱之可行防治策略? (10%)
7. 請說明食物中毒之分類及其預防方法? (10%)
8. 請說明天災的發生(例如大海嘯或大地震)會帶來多少公共衛生的問題?(15%)