

**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 house wives, 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. Standardized rate. (Note: Answer this question in English; If not, it will not be graded)
  - a). What does the “standardized” mean? (6 pt)
  - b). Please provide examples of the “standards” used for the calculation of standardized rate? (6 pt)
2. Please describe and provide an example of selection bias in case-control study. (12 pt)
3. What is the effect of non-differential error or misclassification on the study of disease causation? (4 pt) Please elaborate. (6 pt)
4. In clinical reasoning or screening testing, physicians often apply simple and safe test to suggest the presence of disease or rule out the disease, then employ expensive and somewhat risky test to confirm the initial finding or rule in the disease. What is the logic in doing so? Please answer the question in terms of the properties or performance of a test and the most clinical relevant value of a test. (12 pt)
5. What are the values of matching in conducting a case-control study? (12 pt)
6. Please describe the following terms:
  - a). Shoe Leather epidemiology (4 pt)
  - b). Incident case (4 pt)
  - c). Paired sampling (4 pt)
  - d). Odds (4 pt)
  - e). Effect modification (4 pt)
7. In order to demonstrate the quality of data collected and assess the likelihood of error and bias in observed data, we can first assess the consistency of information and then to evaluate the accuracy of information.
  - a). What does the “consistency” mean? (4 pt)
  - b). How can we assess the consistency of information **quantitatively**? (6 pt)
8. Case-control study. What are the advantages in choosing visitors to hospital patients as controls? (6 pt) What are the disadvantages in selecting healthy individuals attending cancer screening clinics as controls? (6 pt)

一、解釋名詞 (40%，每題 8 分)

- a. Green Tax Reform
- b. ABC (Atmosphere Brown Cloud)
- c. Roentgen
- d. Heavy Metal
- e. ODP (Ozone Depletion Potential)

二、環保署一月份訂定低頻噪音管制標準，此為世界首創強制性管制方式。簡述何謂低頻噪音？(4%) 對人體的影響？(4%) 其管制值為何？(4%)

三、環保署目前針對塑膠材質容器中的PVC瓶及PVC材質的容器標籤，採取「差別費率」的經濟誘因手段，引導飲料業者改用其他替代塑膠材質。簡述何謂PVC？(4%) 逐步管制的原因？(4%) 何謂差別費率？(4%)

四、說明飲用水水質標準訂定流程。(12%)

五、簡述飲用水水源水質標準分類。(6%) 說明分類原因。(6%)

六、何謂毒性化學物質？(4%)簡述其源運作管理模式。(4%)何謂正面表列。(4%)

本科目得使用電子計算機

壹、生物統計應用題(每題 16 分，共計 64 分)

一、某生物統計學教授負責 A 與 B 二學系之生物統計學課程，學期結束後想針對二班之統計學成績來評量學習成果，兩班成績如下表，請回答以下問題： $(\alpha=0.05)$ 。[ $T_{(0.95,125)}=1.65$ ， $F_{(0.95,59,66)}=1.48$ ]

A班生物統計學成績		B班生物統計學成績	
生統成績		生統成績	
N	60	N	67
Mean	77.1000	Mean	77.4179
Median	79.5000	Median	77.0000
Mode	86.00	Mode	76.00
Std. Deviation	11.87891	Std. Deviation	8.35962
Variance	141.10847	Variance	69.88331
Skewness	-1.033	Skewness	-.410
Kurtosis	.883	Kurtosis	-.737
Minimum	42.00	Minimum	60.00
Maximum	96.00	Maximum	90.00

Tests of Normality				Tests of Normality			
	Kolmogorov-Smirnov				Kolmogorov-Smirnov		
	Statistic	df	Sig.		Statistic	df	Sig.
生統成績	.136	60	.008	生統成績	.098	67	.184

請善用以上資料，來回答下列問題：

- (1). A與B兩班之統計學成績分佈是否有常態性？若否，又屬於何種分佈？
- (2). 兩班之平均成績為77.1及77.4是否可推論兩班統計學成績相近？說明理由？

二、目前職業醫學認定，因工作環境的暴露所造成職業氣喘約佔所有成人氣喘約 15%。某焊接工廠共有 200 位工人，經調查後發現其中 10 位有氣喘病史。請回答下列問題：

- (1). 此 10 位氣喘工人其中恰好有 3 位是因為職業暴露所造成的機率為何？
- (2). 此 10 位氣喘工人其中至少有 3 位是因為職業暴露所造成的機率為何？

三、某研究以複邏輯回歸方程式(multiple logistic regression model)，分析年齡與抽菸對肝癌的影響。其中  $x_1$ ：年齡(歲)、 $x_2$ ：抽煙(有/無)、 $y$ ：肝癌(有/無)；

- (1) 請計算抽煙者比不抽煙者得到肝癌之調整化危險對比值(adjusted odds ratio)及 95%信賴區間？
- (2) 解釋此調整化危險對比值的意義？

危險因子	回歸係數(b)	回歸係數標準差 se(b)	Z 值
常數項(constant)	0.12		
年齡	0.25	0.10	2.50
抽煙	1.38	0.45	3.07

四、皮膚科醫師進行一臨床試驗，想得知目前開發的新藥比起傳統舊藥對於異位性皮膚炎治療效果是否不同，針對二組病人配對了相同的年齡、性別、疾病嚴重度，所需治療之平均天數如下表，新舊藥治療天數差值的樣本標準差(Sd)為3.5 ( $\alpha=0.05$ )。請推論新藥與舊藥對於異位性皮膚炎治療效果是否不同？ $[T_{(0.975, 48)}=2.01, T_{(0.975, 20)}=2.06]$

組別	樣本數	平均治療天數	標準差
新藥	25	10 天	5
舊藥	25	15 天	7

- (1). 應選擇何種統計方法，為什麼？
- (2). 請加以計算並推論之？
- (3). 有無證據說新藥比舊藥治癒所需治療天數顯著減少5天？如何判斷定？
- (4). 在第(1)小題你所選擇的統計方法，新舊藥治療天數差值需要符合何種分佈？
- (5). 若在第(1)小題的假設不符合，你會使用何種方法檢定之？

### 貳、統計學概念題(每題 12 分，共計 36 分)

一、某研究調查 1 到 18 歲男孩的血壓平均值，其結果如下：以年齡為自變項： $X_i$ ，以

血壓值為應變項： $Y_i$ 。所得之回歸方程式為  $\hat{Y}_i = 62 + 0.45X_i$ ，請回答以下問題：

- (1). 請問可否由此回歸方程式求得 60 歲男子之血壓值？
- (2). 若將自變項與應變項反置(將血壓當作自變項，年齡當作應變項)，則得到之迴歸係數及相關係數大小不變，此說法是否正確？

二、某學者進行研究來調查喝酒對於肝功能的影響，請回答以下三個問題：

- (1). 學者將喝酒分成兩組，探討肝功能平均值是否相同。若想進行 t 檢定，要注意哪些條件？若不符合條件，則要改用何種統計方法？
- (2). 學者將喝酒分成兩組，肝功能也分成正常與異常兩組。若想進行卡方檢定，要注意哪些條件？若不符合條件，則要改用何種統計方法？
- (3). 若將喝酒分成不喝、每天一瓶、每天一至六瓶以及六瓶以上四組，進一步想得知肝功能異常率會不會隨喝酒量增加之劑量效應關係，則要用何種統計方法？

三、某研究以四種藥物對 55 位高血脂患者進行治療，若以 one way-ANOVA 進行檢定，得組內平方和 973，組間平方和 641.5；( $\alpha=0.05$ )

- (1). 若成功推翻虛無假說，是否代表四種藥物之間效果都不同？
- (2). 血脂肪的改善有多少百分比是因藥物所產生？
- (3). 請問以兩兩 t-test 來進行檢定，可能產生何種錯誤？以 Scheffe's 事後檢定，有何優點(不必計算，只說明原因)？