

作答說明

1. 本測驗共 2 大部份，總題數共 50 題，每題 2 分。
2. 請將答案填寫在答案卷上，若未依規定填寫在答案卷上，一律不計分。
3. 測驗完成後，答案卷需連同題目卷一併繳交。

Part 1: Cloze (Choose the best answer) (50%, 每題 2 分)

作答說明：選擇最適當的一個字詞填入空格。每題僅有一個選項最適合。

According to a research from Cornell University, it is believed that the noise in a flight will affect our taste buds. Researchers suggested that when people are surrounded by high noise levels, (1) ___ the altitude, the brain will send a message and (2) ___ them to try more savory flavors, such as cheese or meat. Since the noise in a jetliner is always higher than (3) ___ of an average room, people's tastes are (4) ___. Scientists claimed that nerves are stimulated through loud noises, and thus activate our tastes. (5) ___, the ability of tasting something sweet will be diminished when flying high.

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|------------------|----------------|-----------------|----------------|
| 1. (A) let alone | (B) instead of | (C) in place of | (D) aside from |
| 2. (A) charge | (B) promote | (C) operate | (D) urge |
| 3. (A) how | (B) which | (C) these | (D) that |
| 4. (A) enhanced | (B) raised | (C) promoted | (D) advanced |
| 5. (A) However | (B) Therefore | (C) Hence | (D) Besides |

With at least 15 deaths and more than 4,500 who may have been exposed, Korea is experiencing an outbreak of MERS second in size to that in Saudi Arabia, (6) ___ it appeared in 2012. (7) ___ the attack of the disease, Jangdeok is under one of the most extreme quarantines. This tiny Korean village is becoming the focus of MERS. The city center is guarded (8) ___ teams of soldiers to prevent the passage of unauthorized persons. Moreover, roads are blocked so that anyone thinking of (9) ___ this place is impossible. Villagers are instructed to self-isolate for observation until the end of June if nobody else tests (10) ___ before then. No one can leave Jangdeok.

- | | | | |
|------------------|-----------------|--------------------|-------------------|
| 6. (A) which | (B) where | (C) when | (D) that |
| 7. (A) Due to | (B) In spite of | (C) In addition to | (D) Except for |
| 8. (A) with | (B) for | (C) at | (D) in |
| 9. (A) escape | (B) as escaping | (C) escaping | (D) being escaped |
| 10. (A) definite | (B) effective | (C) bright | (D) positive |

The Giant Panda Protection and Research Center in China's Sichuan province recently announced the winner of their worldwide search (11) ___ panda cub caretakers. According to CNTV, Wei Cunming, a University graduate in Shanghai, faced several elimination (12) ___ including a top 500 list, top 50 list, top 10 list, and a final media event competition. He will spend a year at the Panda Base, (13) ___ he will be trained how to properly take care of pandas. His work has only one mission: spending 365 days (14) ___ the pandas and sharing in their joys and (15) ___.

- | | | | |
|-----------------|-------------|----------------|--------------|
| 11. (A) from | (B) with | (C) for | (D) between |
| 12. (A) turns | (B) rounds | (C) rings | (D) chances |
| 13. (A) what | (B) that | (C) which | (D) where |
| 14. (A) of | (B) for | (C) with | (D) besides |
| 15. (A) sorrows | (B) efforts | (C) isolations | (D) cautions |

Anxiety has surpassed depression as the most common mental health diagnosis among college students. Nearly one in six college students has been (16) ___ with or treated for anxiety within the last 12 months. The causes (17) ___ widely, from growing academic pressure to overprotective parents to compulsive engagement (18) ___ social media. Anxiety has always played a role in the a student's life, but now more students experience anxiety so intense and overwhelming (19) ___ they are seeking professional counseling. The (20) ___ among therapists is that treating anxiety has become an enormous challenge for campus mental health centers.

16. (A) perceived (B) anticipated (C) estimated (D) diagnosed
 17. (A) divide (B) range (C) collect (D) cover
 18. (A) for (B) towards (C) with (D) near
 19. (A) that (B) which (C) where (D) what
 20. (A) permission (B) approval (C) consensus (D) compromise

Experts predict that nearly half of all jobs in the United States could be replaced by computers over the next two decades. Experts also predict that high-salary jobs would remain for those equipped (21) ___. We do not know in which areas human beings outperform machines. That means we cannot prepare (23) ___ the changes. Some researchers disagree. They argue that smart machines should (24) ___ employment. Smart machines would help create 20 percent new white-collar jobs because they (25) ___ the economy. That's comparative advantage.

21. (A) of (B) for (C) as (D) with
 22. (A) vanish (B) dismiss (C) withdraw (D) revolve
 23. (A) between (B) from (C) for (D) beyond
 24. (A) cultivate (B) increase (C) advance (D) extend
 25. (A) distribute (B) spread (C) raise (D) expand

Part 2: Vocabulary (Choose the best word) (50%, 每題 2 分)

作答說明：選擇最適合單字，每題僅能有一個選項最適合。

26. My family ___ a café around the corner. This café has become the most popular hang-out place in town.
 (A) runs (B) throws (C) tackles (D) retains
 27. Opened in 1907 and designated an official ___, The Plaza is the most famous hotel in New York City.
 (A) headquarter (B) landmark (C) outlook (D) trademark
 28. Citizens who are over 18 years old are ___ to vote and get a driver's license in many countries.
 (A) compatible (B) accessible (C) eligible (D) invincible
 29. Our country is facing daunting challenges of natural ___ from flood, typhoon, and landslide.
 (A) disasters (B) resources (C) preservatives (D) environments
 30. We can never overlook the power of tsunamis. They can ___ highways in a blink of an eye.
 (A) drip (B) pour (C) float (D) submerge
 31. Those bad experiences in the hospital ___ Jack of the drug's harmful side effects.
 (A) announced (B) argued (C) convinced (D) converted
 32. Broadway dancers take ___ in telling the story of the play through singing and their graceful body moves.
 (A) pride (B) modesty (C) vanity (D) elite
 33. Nick is very ___ in every meeting and is not afraid to make comments to his boss.
 (A) transparent (B) aggressive (C) detached (D) benevolent
 34. Florence Nightingale is the pioneer in modern nursing, so she has become the role ___ of many nurses.
 (A) celebrity (B) model (C) icon (D) emblem
 35. While higher education institutions in China and Singapore have increasingly shone in global rankings, Japan's performance has been in ___ lately.
 (A) decay (B) failure (C) decline (D) fade

36. Experts suspect there has been big movement in the earth's crust below Japan. This movement _____ the 2011 earthquake on one hand, and has caused volcanic eruptions on the other.
(A) initiated (B) triggered (C) elicited (D) stimulated
37. Farmers nowadays are using cellular technology to share crucial information about weather, rainfall, and market ____, along with seed prices, empowering millions of them to grow more food at a time.
(A) request (B) claim (C) demand (D) fund
38. The government announced ____ to stop the spread of the virus. People who come in contact with a MERS patient will be monitored by public health staff.
(A) dealings (B) measures (C) portions (D) trials
39. Experts believe improvements in basic lectures would keep students better engaged. At present, many lose interest in their studies once they have passed the highly ____ entrance exam.
(A) deliberate (B) advantageous (C) economical (D) competitive
40. Introduction of an all-English course for international students is being considered in Taiwan in order to improve ____ to globally talented students.
(A) elevation (B) exposure (C) coverage (D) advancement
41. New technology is helping scientists to better predict when and where a tornado, which is fast and deadly, will ____ next.
(A) strike (B) violate (C) disturb (D) disrupt
42. Because of poor isolation procedures that led to the spreading of the illness, the government will take further steps based on advice from experts in ____ diseases caused by MERS.
(A) convertible (B) portable (C) transmissible (D) infectious
43. By the end of this century, there will be more than 9 billion people on the planet. Feeding that many mouths will require farmers to ____ more food in the next 75 years than has yet been produced in all of human history.
(A) acquire (B) harvest (C) assemble (D) accumulate
44. ____ is better than cure. So we have to recognize the early signs that we are ill in order to know how to take the steps to avoid disease.
(A) Anticipation (B) Prediction (C) Expectancy (D) Prevention
45. In many of the world's top coffee cities, the café is more than just a place to get a warm drink -- it is also a hub of culture and conversation for ____ who have been living in cities forever and for visitors alike.
(A) occupants (B) lodgers (C) publics (D) locals
46. A lot of college students are coming to school who don't have the resilience of previous generations. They can't ____ discomfort or having to struggle. A primary symptom is worrying, and they don't have the ability to soothe themselves.
(A) resist (B) sustain (C) suffer (D) tolerate
47. The ____ of the ground -- caused when masses of rock suddenly shift below the Earth's surface -- is called an earthquake.
(A) trembling (B) violating (C) originating (D) activating
48. Hostels are an integral part of the travel experience -- a place to meet like-minded ____ and find someone to share the next meal or beer with. A good hostel will have a decent kitchen, secure lockers, clean bathrooms and comfortable beds.
(A) adventurers (B) investors (C) clients (D) shareholders
49. The London Underground, known as the Tube, making it the oldest underground system in the world. It is also the most expensive public transportation in the world, but it does have one of the best-designed maps in ____ history.
(A) shipping (B) transmission (C) transit (D) transfer
50. With the development of ____ intelligence, computers are starting to crack human skills like information summarization and language processing.
(A) imitated (B) replicated (C) synthetic (D) artificial

一、選擇題（每題3分，30%）

1. 下列各組成語，解釋正確的是：

- A. 魚遊釜中／閒雲野鶴：形容超然、與世無爭
- B. 抱薪救火／雪中送炭：比喻救人於危難中
- C. 龍蛇混雜／薰蕕同器：指善惡、好壞相雜
- D. 視民如傷／吮癰舐痔：形容對人民極愛護

2. 李商隱詩：「此情可待成追憶，只是當時已惘然。」自己經驗過的世界，他人永遠無法完全理解。感情的傷害，別人也無法代替承受。明知鏡花水月、美人白骨，這世界從不曾為誰停止轉動，卻還是貪心的想要擁有，要的比自己想要的更多。依據上文，下列敘述正確的選項是：

- A. 關於時間與記憶，作者想要呈現的是人們對虛幻短暫物質表象的執迷和無奈
- B. 「鏡花水月、美人白骨」於本文中泛指一切恆常存在的美好
- C. 每個人生命中總有許多無法遺忘的情懷，這些深藏記憶私密角落的感受總能為大多數人理解
- D. 「此情可待成追憶，只是當時已惘然。」提醒我們應當及時行樂

3. 下列詞語中，完全沒有錯別字的是：

- A. 閒情異志／鳩佔雀巢
- B. 煮豆燃箕／荼毒生靈
- C. 欲蓋彌彰／集腋成裘
- D. 瞠目結舌／淹旗息鼓

4. 下列成語的運用，何者錯誤？

- A. 人稱李先生是人中龍鳳，今日一見，果然「名過其實」
- B. 做人一定要潔身自愛，千萬不可以「同流合污」
- C. 突然遇到這種晴天霹靂的事情，頓時讓他「手足無措」
- D. 經過多年努力，他終於可以和對手「分庭抗禮」

5. 寺廟建築的圖畫與雕刻也會利用文學的「雙關」來傳遞抽象的情感願望。以鹿港天后宮為例，牆上一幅浮雕有錦旗、彩球、兵器一戟、樂器一磬等器物；這四樣物項除了能裝飾牆面外，還由聲音雙關而構成了「祈求吉慶」之意；請問下列選項中常見的圖刻裝飾，何者的意義構成不屬於聲音雙關？

- A. 喜鵲立在梅花枝頭上，意謂「喜上眉梢」
- B. 四隻蝙蝠圍著香爐，意謂「賜福祿」
- C. 鯉魚頭搭配龍的尾部，意謂「鯉魚躍龍門」
- D. 花瓶放在桌案上，意謂「平安」

6. 佛教傳入中土後，漢語常有「梵文」譯音的語詞。下列「」的詞何者與梵文的譯音無關？

- A. 「功德」無量
- B. 救人一命，勝造七級「浮屠」
- C. 倩女幽魂的主要場景在「蘭若」寺
- D. 一連打上五十下，打得宋江一佛出世，二佛「涅槃」

7. 明·王世貞譽為「長詩之聖」，清·沈德潛稱為「古今第一長詩」，此指哪一首漢代的長篇敘事詩？

- A. 木蘭詩 B. 飲馬長城窟行 C. 孔雀東南飛 D. 陌上桑

8. 「文章是案頭之山水，山水是地上之文章」。以上的修辭手法稱為：

- A. 藏詞 B. 回文 C. 互文 D. 錯綜

9. 對人父子的尊稱，可以使用下列哪一詞語？

- A. 賢昆仲 B. 賢昆玉 C. 賢伉儷 D. 賢喬梓

10. 「台灣光復前，他到東北，對中國語文下過真功夫，民國三十四年就在北平出版《夾竹桃》。光復還鄉後，卻隱居山村，除了幾個文字交，幾乎與外界隔絕。他為病所困擾，為生活所煎熬，但他仍熱愛人生，更熱愛寫作，他只是想從血淋淋的現實世界裡點化出幾件乾乾淨淨的藝術品。」上文的「他」是指：

- A. 鍾理和 B. 葉石濤 C. 賴和 D. 朱自清

二、填充題（請將空格填入正確原文，每題4分，20%）

1. 結廬在人境，而無車馬喧。問君何能爾？。（陶淵明〈飲酒詩之五〉）
2. 關雎鳩，在河之洲。，君子好逑。（《詩經·國風·周南》）
3. 大學之道，在明明德，在親民，在。（《大學》）
4. 雕欄玉砌應猶在，。問君能有幾多愁，恰似一江春水向東流。（李煜〈虞美人〉）
5. ，卻有忘機友。點秋江白鷺沙鷗。（白樸〈沉醉東風〉）

三、重組與解釋（每題10分，20%）

1. 「晚來天欲雪/紅泥小火爐/能飲一杯無/綠螿新醅酒」，以上乃〈白居易·問劉十九〉五絕的內容，請你重新組合並解釋用括起來的詞義。
2. 「商女不知亡國恨/夜泊秦淮近酒家/煙籠寒水月籠沙/隔江猶唱後庭花」，以上乃〈杜牧·泊秦淮〉七絕的內容，請你重新組合並解釋以上用括起來的詞義。

四、作文：(30%)

近年來教育部提倡生命教育課程，鼓勵將生命教育融合於學校教育之中，但是近期台灣社會案件仍然層出不窮。你覺得生命教育對於現今學子，有什麼樣的重要意義，請以作文書寫表達你的看法。

注意：單選題共 20 題，每題 3 分；計算填充題共 10 題，每題 4 分，請依序將答案寫在答案卷選擇題作答區對應之題號 (1-30) 空格內。

一、選擇題 (每題 3 分，共 60 分)

1. 下表為 A 與 B 兩國，每天生產 1 單位 X 商品與 1 單位 Y 商品所需的勞動投入量。假設勞動是生產商品唯一的投入，根據比較利益原則，下列敘述何者最正確？

	X 商品	Y 商品
A	2	3
B	3	4

- (A) A 國出口 Y 商品；進口 X 商品。
- (B) B 國出口 Y 商品；進口 X 商品。
- (C) 兩國不會進行國際貿易。
- (D) 只有 A 國能出口 Y 商品與 X 商品，B 國進口這兩種商品。

2. 在 2005 年夏天，豪雨淹沒南部蔥田，而導致宜蘭「三星蔥」與香菜的價格大幅上漲。這表示

- (A) 南部蔥與三星蔥是互補品。
- (B) 南部蔥與香菜是替代品。
- (C) 三星蔥與香菜是互補品。
- (D) 以上 (A) 與 (B) 均正確。

3. 如果某商品的世界價格低於國內價格，則在開放貿易後，

- (A) 國內的生產量比貿易前大。
- (B) 國內的生產者剩餘比貿易前小。
- (C) 國內的消費者剩餘比貿易前小。
- (D) 國內的消費者剩餘加生產者剩餘之總和比貿易前小。

4. 下列敘述何者正確？

- (A) 如果邊際成本上升，則平均總成本也上升。
- (B) 如果邊際成本上升，則平均變動成本也上升。
- (C) 就算邊際成本固定，平均總成本也不見得固定。
- (D) 以上皆是。

國立中正大學104學年度學士班二年級轉學生招生考試試題
學系別：經濟學系

科目：經濟學原理

第2節

第2頁，共5頁

5. 關於 Solow 成長模型所推導的「收斂假說 (convergence hypothesis)」，下列何者最正確：
- (A) 假若各國的人口成長率和期初資本存量相同，就算儲蓄率不同，最終收斂的每人所得仍相同。
 - (B) 假若各國的儲蓄率和期初資本存量相同，就算人口成長率不同，最終收斂的每人所得仍相同。
 - (C) 只要各國期初資本存量相同，則最終收斂的每人所得相同。
 - (D) 假若各國的人口成長率和儲蓄率相同，就算期初資本存量不同，最終收斂的每人所得仍相同。
6. 依照新古典經濟學 (neoclassical economics) 的看法，如果原先政府預算平衡，後來由於定額稅減少而有預算赤字，則
- (A) 利率會上升，且民間儲蓄會增加。
 - (B) 利率會上升，且國民儲蓄會增加。
 - (C) 利率會上升，且投資會減少。
 - (D) 利率不變，因為國民儲蓄不會變動。
7. 原本市場利率為 5%，大眾預期物價水準將漲為 104，事後證實物價僅為 102.5。下列敘述何者正確？
- (A) 預期中的物價緊縮對債權人有利。
 - (B) 預期中的物價緊縮對債務人有利。
 - (C) 超乎預期的物價緊縮對債權人有利。
 - (D) 超乎預期的物價緊縮對債務人有利。
8. 當一國的淨資本外流為負值時，其
- (A) 經常帳有盈餘。
 - (B) 貿易收支為赤字。
 - (C) 外匯存底累積。
 - (D) 以上皆有可能。
9. 以下何者會造成本國之實質升值？
- (A) 本國貨幣升值。
 - (B) 本國物價下跌。
 - (C) 本國消費者更喜歡購買進口品。
 - (D) 以上皆有可能。
10. 下列哪一個學派最強調總合需求的變動是短期經濟波動的主因？

- (A) 古典學派。
- (B) 理性預期學派。
- (C) 凱因斯學派。
- (D) 供給學派。

11. John has spent \$600 purchasing and repairing an old fishing boat, which he expects to sell for \$900 once the repairs are complete. John discovers that, in addition to the \$600 he has already spent, he needs to make an additional repair, which will cost another \$400, in order to make the boat worth \$900 to potential buyers. He can sell the boat as it is now for \$400. What should he do?

- (A) He should sell the boat as it is now for \$400.
- (B) He should keep the boat since it would not be rational to spend \$1,000 on repairs and then sell the boat for \$900.
- (C) He should complete the repairs and sell the boat for \$900.
- (D) It does not matter which action he takes; the outcome is the same either way.

12. For a good that is a luxury, demand

- (A) tends to be inelastic.
- (B) tends to be elastic.
- (C) has unit elasticity.
- (D) cannot be represented by a demand curve in the usual way.

13. If the government removes a binding price ceiling from a market, then the price paid by buyers will

- (A) increase, and the quantity sold in the market will increase.
- (B) increase, and the quantity sold in the market will decrease.
- (C) decrease, and the quantity sold in the market will increase.
- (D) decrease, and the quantity sold in the market will decrease.

14. Michael values a stainless steel refrigerator for his new house at \$3,500, but he succeeds in buying one for \$3,000. Michael's willingness to pay is

- (A) \$500.
- (B) \$3,000.
- (C) \$3,500.
- (D) \$6,000.

15. Mary and Cathy are roommates. Mary assigns a \$30 value to smoking cigarettes. Cathy values smoke-free air at \$45. Which of the following scenarios is a successful example of the Coase theorem?
- (A) Cathy offers Mary \$75 not to smoke. Mary accepts and does not smoke.
 - (B) Mary pays Cathy \$15 so that Mary can smoke.
 - (C) Mary pays Cathy \$45 so that Mary can smoke.
 - (D) Cathy offers Mary \$30 not to smoke. Mary accepts and does not smoke.
16. One bag of oranges is sold for \$6.00 to a company that turns them into juice which is sold to consumers for \$12.00. Another bag of oranges is purchased by a grocery store for \$6.00 who then sells it to a consumer for \$7. Taking these four transactions into account, how much is added to GDP?
- (A) \$7.
 - (B) \$19.
 - (C) \$31.
 - (D) None of the above is correct.
17. The price tag on a golf ball in 1995 read \$2, and the price tag on a golf ball in 2015 read \$20. The CPI in 1995 was 52.3, and the CPI in 2015 was 191.3. In 1995 dollars, a 1995 golf ball cost \$2 and a 2015 golf ball cost
- (A) \$5.5, so golf balls were cheaper in 1995.
 - (B) \$5.5, so golf balls were cheaper in 2015.
 - (C) \$73.2, so golf balls were cheaper in 1995.
 - (D) \$73.2, so golf balls were cheaper in 2015.
18. Imagine that someone offers you \$1,000 today or \$2,000 in 10 years. You would prefer to take the \$1,000 today if the interest rate is
- (A) 4 percent.
 - (B) 6 percent.
 - (C) 8 percent.
 - (D) All of the above are correct.
19. Which of the following will cause the money multiplier to increase?
- (A) A higher required reserve ratio.
 - (B) A lower currency to deposit ratio.
 - (C) An increase in the monetary base.

(D) Both (B) and (C) are correct.

20. In the context of the aggregate-demand curve, the interest-rate effect refers to the idea that, when the price level increases,

- (A) the real value of money decreases; in turn, the real value of the dollar increases in foreign exchange markets, which decreases foreign investment.
- (B) the real value of money decreases; in turn, interest rates increase, which decreases capital outflows.
- (C) households increase their holdings of money; in turn, interest rates decrease, which reduces spending on consumption goods.
- (D) households increase their holdings of money; in turn, interest rates increase, which reduces spending on investment goods.

二、計算填充題 (如非整除，請四捨五入到小數點第一位；每題 4 分，共 40 分)

1. 理想國民將可支配所得之八成拿去消費，假設政府之稅收公式為“ $-1,000+0.25\times$ 所得”，即所得稅率為 0.25，而免稅額為 1,000 元。問

(1) 政府支出提高 1,000 元，可以增加總需求多少元？(21)

(2) 政府將民眾免稅額提高成 2,000 元，總需求會變動多少元？(22)

今理想國開放國際貿易，其國民將消費支出一半買本國商品，一半買進口商品。其他條件不變下，

(3) 本題之支出乘數是多少？(23)

(4) 政府支出提高 1,000 元，可以增加總需求多少元？(24)

(5) 政府將民眾免稅額提高成 2,000 元，總需求會變動多少元？(25)

2. 天堂島的電影市場中有一般民眾與學生兩類消費者：一般民眾消費者有 20 位，每位消費者的個人需求曲線為： $q = 16 - P$ ；學生消費者有 50 位，每位的個人需求曲線為： $q = 24 - 2P$ ，其中 P 為價格， q 為個人消費數。問

(1) 若 Q 為市場消費數量，全部消費者的需求曲線： $Q = a - bP$ ，式中 a 與 b 分別為 (26) 與 (27)。

該市場由一個獨占廠商來供給，假設該獨占廠商生產的固定成本為 5000 元，每多播一次電影的單位成本都要 4 元

(2) 試分別求出該獨占廠商的最適定價 (28) 與供應量 (29)，及其利潤 (30)。

Note: Write down your answers without any calculations in problems 1-12.

Part I: True-False Questions

1. If $f(x)$ is not continuous at $x = c$, then $\lim_{x \rightarrow c} f(x)$ does not exist. (7 pts.)
2. If $f(x)$ is differentiable at $x = c$, then $f(x)$ is continuous at $x = c$. (7 pts.)
3. Suppose that $f'(c) = 0$ and $f''(c) = 0$. Then $f(x)$ does not have a relative maximum or a relative minimum at $x = c$. (7 pts.)
4. Let $f(x)$ and $g(x)$ be two continuous functions. Suppose that $f(x) \geq g(x)$ for $x \in [a, b]$. Then the area of the region bounded by $y = f(x)$ and $y = g(x)$ between $x = a$ and $x = b$ is $\int_a^b [f(x) - g(x)] dx$. (7 pts.)
5. Let $f(x)$ be a continuous function. Suppose that $f(x) > 0$ for $x \in [0, 1]$. Then $\int_0^1 xf(x) dx > 0$. (7 pts.)

Part II: Fill in the Blank Questions

6. $\lim_{x \rightarrow \infty} x^{1/x} = \underline{\hspace{2cm}}$. (7 pts.)
7. $\lim_{n \rightarrow \infty} \sum_{i=1}^n \frac{2}{5^i} = \underline{\hspace{2cm}}$. (7 pts.)
8. Let $f(x) = 1 - e^{-x^2}$. Then $f'(x) = \underline{\hspace{2cm}}$. (7 pts.)
9. Let $dy/dx = yx^2$. Then $y = \underline{\hspace{2cm}}$. (7 pts.)
10. $\int_1^e (\ln x)^4 x^{-1} dx = \underline{\hspace{2cm}}$. (7 pts.)
11. $\int_0^{\infty} \pi x^2 e^{-\pi x} dx = \underline{\hspace{2cm}}$. (7 pts.)
12. Let $f(x) = 1/x$ and a be the average value of $f(x)$ over the interval $[1, e]$. Then $a = \underline{\hspace{2cm}}$. (7 pts.)

Part III: Analytical Question

13. Prove or disprove that

$$e^x = \sum_{n=0}^{\infty} \frac{x^n}{n!}. \quad (16 \text{ pts.})$$

