

請務必於試卷紙上作答，違者該科不於計分。

**I. Vocabulary: Choose the answer that best completes the sentence. (20%)**

1. Having beautiful hair is such a sign of health and attractiveness, particularly for white women, because their hair tends to be very \_\_\_\_\_, and it needs extra care.  
a. cybernetic                      b. wasted                      c. fragile                      d. sober
2. Three Americans are among those killed in a deadly \_\_\_\_\_ last week in Algeria to rescue hostages taken when Islamic militants overtook a gas facility.  
a. raid                      b. inaugural                      c. coverage                      d. hug
3. Nehemiah Griego, who is 15, said he had \_\_\_\_\_ and suicidal thoughts before he grabbed a rifle from his parents' closet and shot his mother in her head.  
a. responsible                      b. surgical                      c. homewards                      d. homicidal
4. Priests \_\_\_\_\_ of abuse were sent away for treatment, but often only after long delays, and many cases slipped under the radar.  
a. suspected                      b. limited                      c. struck                      d. permitted
5. The number of kids \_\_\_\_\_ with attention deficit hyperactivity disorder (ADHD) rose 24 percent between 2001 and 2010.  
a. riddled                      b. diagnosed                      c. forced                      d. regarded
6. \_\_\_\_\_ by the Kaiser Permanente Southern California Institute, the study differs from previous ones in that it offered a comprehensive look at medical records.  
a. Caused                      b. Remained                      c. tolerated                      d. Conducted
7. "If there are people trying to do bad stuff to our guys, then we'll take them out of the game, I suppose," he said in one of several interviews \_\_\_\_\_ to the media.  
a. petitioned                      b. emphasized                      c. released                      d. initiated
8. Two additional attackers, armed with automatic rifles, stormed the area and fought with security forces for nearly eight hours. The \_\_\_\_\_ killed three police officers and all five attackers.  
a. election                      b. assault                      c. regulation                      d. display
9. British designer Mary Katrantzou is known for her \_\_\_\_\_ prints. Now an artist has reimagined them into vivid photographs.  
a. reasonable                      b. merciful                      c. brutal                      d. extravagant
10. While many people appeared \_\_\_\_\_ last week by the news that the Los Angeles Lakers star and his wife had dropped their divorce action, those close to the couple say this was always the inevitable end for the two.  
a. stunned                      b. charged                      c. instant                      d. gained

**II. Sentence Completion: Choose the word that best completes the sentence (10%)**

11. Hard work can make \_\_\_\_\_ for a lack of intelligence.  
a. down                      b. in                      c. up                      d. out
12. A number of questions came \_\_\_\_\_ at the meeting.  
a. of                      b. X                      c. for                      d. up
13. The drowning man called \_\_\_\_\_ vain for help.  
a. in                      b. X                      c. at                      d. for
14. In \_\_\_\_\_ of his youth, the police have decided not to continue with the case against him.  
a. find                      b. view                      c. note                      d. think
15. Guess who I bumped \_\_\_\_\_ today? It was Michael!  
a. on                      b. into                      c. at                      d. for

**III. Cloze Test: Choose the best answer for each missing word or phrase in the following passages (20%)**

The Holkham Hebrew Bible, in a show of Jewish books and documents from the Bodleian Library in Oxford, now on view at the Jewish Museum in New York. The book was printed in Naples in 1491/2, by one Joshua Solomon Soncino. Not only is it \_\_\_\_\_ 16 \_\_\_\_\_, but it's poignant as well. The hand-colored decoration shows how fully its maker \_\_\_\_\_ 17 \_\_\_\_\_, and appreciative of, the Christian culture of the Italian Renaissance. (Identical decoration was used on a chivalric romance.) Yet at

this same time, Jews \_\_\_\_\_18\_\_\_\_\_ in vast numbers from Spain and were confined to ghettos in Italy. The \_\_\_\_\_19\_\_\_\_\_ and segregation made no cultural sense, but that didn't stop it \_\_\_\_\_20\_\_\_\_\_.

16. a. gorilline                      b. gorger                      c. gorgeously                      d. gorgeous  
17. a. was immersing                      b. immersing                      c. was immersed in                      d. immerse  
18. a. were being expelled                      b. expel                      c. was expelled                      d. was expelling  
19. a. persecute to                      b. persecution                      c. persecute                      d. persecuting  
20. a. from happening                      b. happen                      c. happened                      d. on happening

The foursome \_\_\_\_\_21\_\_\_\_\_ a fishing expedition over the holidays and were headed back to Italy to start the new year.

Missoni was expected to attend men's fashion week in Milan this week, but his plane disappeared from radar shortly \_\_\_\_\_22\_\_\_\_\_ from the island. At first glance, the \_\_\_\_\_23\_\_\_\_\_ seems like a standard air-to-sea accident, but the Missoni family is not yet ready to give up hope. "A plane \_\_\_\_\_24\_\_\_\_\_ in this way, on a short route, without leaving any trace," Missoni's 28-year-old son Ottavio told an Italian newspaper last week. "I \_\_\_\_\_25\_\_\_\_\_ that the least plausible reason is that they crashed into the water."

21. a. have                      b. had been on                      c. had been                      d. have been on  
22. a. of taking                      b. after taking                      c. after take off                      d. after taking off  
23. a. disappeared                      b. disappears                      c. disappearance                      d. disappear  
24. a. cannot vanish                      b. is to vanish                      c. should vanish                      d. could be vanished  
25. a. remain convinced                      b. convinced                      c. cannot convince                      d. am convince

**IV. Written Expression: Identify the underlined word or phrase that must be changed in order for the sentence to be correct (14%).**

26. a) The Los Angeles City Council voted b) unanimous last fall to c) build a new football stadium d) in the heart of downtown.  
27. Experts say a) sports teams rarely b) regulate cities the economic growth c) that is initially d) expected.  
28. 2012 has been a) an 'awful' year b) for c) major Wall Street companies, so what should we d) impact in 2013?  
29. a) Bonus and salaries b) have been cut at c) all of the big Wall Street d) firms.  
30. a) Instead just b) searching for content that already has its own page c) on Facebook—think fan pages, groups, or events—Graph Search will d) allow users to make much more specific searches.  
31. Google's a) big shift in search has been to move away from b) display links and letting users c) go on their way and answer more questions d) directly through information in the Google universe.  
32. a) It was an b) audaciously political speech, a statement of personal and c) partisan principle, d) rather the expected broad bipartisan outreach.

**V. Reading Comprehension: Choose the best answers to the following questions (36%)**

The word *euthanasia* is of Greek origin and literally means "a good death." The American Heritage Dictionary defines it as "the act of killing a person painlessly for reasons of mercy." Such killing can be done through active means, such as administering a lethal injection, or by passive means, such as withholding medical care or food and water.

In recent years in the United States, there have been numerous cases of active euthanasia in the news. They usually involve the deliberate killing of ill or incapacitated persons by relatives or friends who plead that they can no longer bear to see their loved ones suffer. Although such killings are a crime, the perpetrators are often dealt with leniently by our legal system, and the media usually portrays them as compassionate heroes who take personal risks to save another from unbearable suffering.

The seeming acceptance of active forms of euthanasia is alarming, but we face a bigger, more insidious threat from passive forms of euthanasia. Every year, in hospitals and nursing homes around the country, there are growing numbers of documented deaths caused by caregivers withholding life-sustaining care, including food and water, from vulnerable patients who cannot speak for themselves.

While it is illegal to kill someone directly, for example with a gun or knife, in many cases the law has put its stamp of approval on causing death by omitting needed care. Further, many states have "living will" laws designed to protect those who withhold treatment, and there have been numerous court rulings which have approved of patients being denied care and even starved and dehydrated to death.

Because such deaths occur quietly within the confines of hospitals and nursing homes, they can be kept hidden from the public. Most euthanasia victims are old or very ill, so their deaths might be attributed to a cause other than the denial of care that really killed them. Further, it is often relatives of the patient who request that care be withheld. In one court case, the court held that decisions to withhold life-sustaining care may be made not only by close family members but also by a number of

third parties, and that such decisions need not be reviewed by the judicial system if there is no disagreement between decision makers and medical staff. The court rules that a nursing home may not refuse to participate in the fatal withdrawal of food and water from an incompetent patient.

33. As used in paragraph 1, which is the best definition of “**lethal**”?

- a. proceeding in a gradual, subtle way
- b. referring to the effect or influence of one person, thing, or action
- c. sufficient to cause death
- d. referring to promptness or speed in doing something

34. As mentioned in paragraph 2, “the perpetrators are often dealt with leniently by our legal system” because

- a. the perpetrators are committing a crime
- b. the perpetrators are willing to stop their loved ones’ pain and bear the risk of being charged with killing
- c. the perpetrators are heroes who are filled with compassion and portrayed by the media
- d. the perpetrators involve the deliberate killing of ill or incapacitated persons

35. In paragraph 3, one faces “a bigger, more insidious threat from passive forms of euthanasia” since

- a. caregivers use active forms of euthanasia
- b. that caregivers withholding life-sustaining care is easier than using active forms of euthanasia
- c. food and water can involve in the deliberate killing of ill
- d. vulnerable patients accepts passive forms of euthanasia

36. In paragraph 4, “put its stamp of approval on” can be rewritten as

- a. have or express an unfavorable opinion about something
- b. have the same characteristics or qualities as
- c. be grateful for something
- d. officially agree to or accept as satisfactory

37. The author maintains that death by withholding care is

- A. largely confined to hospitals
- B. difficult to prove if prosecuted
- C. often requested by family members
- D. approved by living wills

38. The attitude of the author can best be described as

- a. objective
- b. partial
- c. passionate
- d. macaber

39. To conclude, euthanasia is a kind of

- a. Greek death
- b. dehydrated death
- c. merciful death
- d. unbearable suffering

In his thought-provoking work, *Philosophical Investigations*, Ludwig Wittgenstein uses an easily conceptualized scenario in an attempt to clarify some of the problems involved in thinking about the mind as something over and above the behaviors that it produces. Imagine, he says, that everyone has a small box in which they keep a beetle. No one is allowed to look in anyone else’s box, only in their own. Over time, people talk about what is in their boxes and the word “beetle” comes to stand for what is in everyone’s box.

Through this curious example, Wittgenstein attempts to point out that the beetle is very much like an individual’s mind; no one can know exactly what it is like to be another person or experience things from another’s perspective—look in someone else’s “box”—but it is generally assumed that the mental workings of other people’s minds are very similar to that of our own (everyone has a “beetle” which is more or less similar to everyone else’s). However, it does not really matter—he argues—what is in the box or whether everyone indeed has a beetle, since there is no way of checking or comparing. In a sense, the word “beetle”—if it is to have any sense or meaning—simply means “what is in the box”. From this point of view, the mind is simply “what is in the box”, or rather “what is in your head”.

Wittgenstein argues that although we cannot know what it is like to be someone else, to say that there must be a special mental entity called a mind that makes our experiences private, is wrong. His rationale is that he considers language to have meaning because of public usage. In other words, when we talk of having a mind—or a beetle—we are using a term that we have learned through conversation and public discourse (rooted in natural language). The word might be perceived differently in each of our minds, but we all agree that it signifies something; this allows us to develop language for talking about conceptualizations like color, mood, size and shape. Therefore, the word “mind” cannot be used to refer specifically to some entity outside of our individualized conception, since we cannot see into other people’s boxes.

40. According to the last paragraph, “the word “mind” cannot be used to refer specifically to some entity outside of our individualized conception” because

- a. there is no way of checking or comparing what is going on in another person’s mind
- b. Wittgenstein’s rationale is that a mind makes our experiences private
- c. one often looks in someone else’s “box”

- d. the word “mind” is an easily conceptualized scenario
41. Wittgenstein would most likely disagree with which of the following statements?
- A. It is impossible to know another person’s thoughts.  
 B. The mind is a special mental substance.  
 C. The color green may actually look different to everybody.  
 D. Words do not always accurately represent the things they symbolize.
42. As used in paragraph 3, which is the best definition or synonym for **discourse**?
- A. information given via the senses of sight or hearing  
 B. engagement  
 C. announcement  
 D. written or spoken communication
43. In paragraph 3, since a “word might be perceived differently in each of our minds”
- a. it is impossible for us to communicate  
 b. one develops conceptualizations of various objects  
 c. one has to study philosophy  
 d. imagination is important in regard to thinking
44. In the first paragraph, “thought-provoking” means
- a. inspiring                      b. frustrating                      c. puzzling                      d. applicable
45. “Beetle” refers to
- a. things that are put in boxes  
 b. everyone indeed has an insect in his head  
 c. the mind that is comparable to a box  
 d. Wittgenstein’s attempt to communication

SOME sage once quipped that writing about music is about as edifying—and evocative—as dancing about architecture. Certainly most music criticism has a lifeless quality, packed with adjectives yet tuneless on the page. Yet Alex Ross, a music critic for the *New Yorker*, manages to stand out. His gifts as a writer are all the more impressive given that his subject tends to be the most difficult music composed in the last century, from Gustav Mahler to Steve Reich.

“The Rest is Noise”, his best-selling 2007 book on the history of the 20th century through its music, is now being re-worked as a year-long music festival at the Southbank centre in London. Although Mr Ross was not involved in organising the festival, he will be giving four lectures on the history of 20th-century music.

Mr Ross spoke to *The Economist* about why he wrote this book in the first place, and why it is particularly hard to get contemporary audiences excited about modern music.

“It took you ten years to write “The Rest is Noise”. What was your motivation?”

“It emerged really from an obsession that I had with 20th-century music going back to my teenage years. At university I immersed myself in it very heavily with a radio show that I had. I was also studying literature and history—especially late-19th century and early-20th century period—so it all coalesced.”

“I grew up listening to classical music in the traditional sense, from Bach to Brahms. That was the world I was completely absorbed in. I really didn’t listen to any other kind of music aside from this repertory. So it was something of a shock to slowly realise that there was more to the story, and I was shocked and fascinated when my piano teacher in high school played works by Schoenberg, Berg and Bartok. I started making my way through them at the piano, and after an initial struggle, I really fell in love with the music. I was fascinated by the music itself, by the surrounding cultural and historical context, and wanted to figure out how it all fit together. So it seemed inevitable that this would be the subject.”

46. In the last paragraph, “coalesced” means
- a. merge                      b. distribute                      c. confuse                      d. discriminate
47. Most people think that music criticism is
- a. contributive                      b. useless                      c. harmful                      d. vivid
48. Alex Ross
- a. stands out playing music in a year-long music festival  
 b. organize music festival related to Mahler and Reich  
 c. gives lectures concerning the history of a certain period of music

d. studies literature and becomes a writer of novels

49. The **best** synonym for “immersed” is

a. fascinated            b. persuaded            c. extended            d. absorbed

50. According to Ross, music

a. is an independent subject that does not involve its context

b. usually has a great story

c. always brings one struggle when one tries to play the piano

d. is deeply related to culture and history

請務必於試卷紙上作答，違者該科不於計分。

問答題：請由下列 15 個題目中任選 5 題作答，每題 20 分

1. The PCR (polymerase chain reaction) protocol that is currently used in laboratories was facilitated by the discovery of a bacterium called *Thermus aquaticus* in a hot spring inside Yellowstone National Park, in Wyoming. This organism contains a heat-stable form of DNA polymerase known as *Taq* polymerase, which continues to function even after it has been heated to 95°C. Why would such a heat-stable polymerase be beneficial in PCR?
2. Assume that you have cut DNA with the restriction enzyme *HindIII*. You separate the fragments on an agarose gel and stain the DNA with ethidium bromide. You notice that the intensity of the stain is less in the bands that have migrated closer to the "+" pole. Give an explanation for this finding.
3. In the context of recombinant DNA technology, what is meant by the term *vector*?
4. What is RNAi?
5. Generally, vaccines are used to stimulate the immune system by providing antigens of potential pathogens. What is the typical composition of a vaccine?
6. 生物多樣性常隨緯度之升高而下降，如北半球從赤道往北極方向遞減，請舉出三項影響此趨勢的因素及其作用。
7. 請問生物多樣性指標中，Shannon index 與 Simpson index 的主要差異為何？兩者有什麼數學上的關係嗎？
8. 請敘述台灣生物多樣性的特色。
9. Biodiversity hot spots 是以哪一類物種為認定標的，為何台灣未被列入其中？
10. 請就生物多樣性的意義闡述一棵草與一隻大象的異同？
11. Describe the types of bonds/interactions that hold together or stabilize the primary, secondary, tertiary, and quaternary structures of proteins.
12. A double-stranded piece of DNA containing the sequence GCATGGCCACTACCG has a higher  $T_m$  than one containing the sequence GAATGGTAACAACCTG. Describe the properties of DNA that cause such difference.
13. A solution of 8 M urea is sometimes used in the purification of protein molecules. When the solution is prepared by dissolving urea in water at room temperature, it becomes cold. Based on this, explain why urea is less soluble at a cold room? (hint:  $\Delta G = \Delta H - T\Delta S$ )
14. Please name three major domains in a typical transmembrane protein. Based on your knowledge, which of the following polypeptide chains is most likely embedded in the membrane? And why?
  - a. MNNSTNSSNNSLALTSPYKTFEV
  - b. RASKSRIKKDKK
  - c. FLFSLACADLIIGVFSMNLYTLYTV
15. Please describe the central dogma in molecular biology. Protein expression of human genes in *E.coli* system basically implements the central dogma. However, sometimes these protein products lose their functions when brought back into human cells. Why?