

I. Multiple Choice Questions: Choose only one correct answer to each question 60%

Part A. Vocabulary 20%

- ____ 1. Taiwan today is a _____ democracy with a highly competitive market-oriented economy.
(A) hulking (B) humpy (C) hurly-burly (D) hole-and-corner
- ____ 2. CD sales have been declining year-on-year with the introduction of CD _____ and MP3 files.
(A) burners (B) collectors (C) composers (D) lovers
- ____ 3. We're always in search of _____ in technology development.
(A) trespass (B) straightness (C) crackdown (D) breakthroughs
- ____ 4. Although youthful, vigorous and prosperous, the Taiwanese have become victims of an education system that seeks to produce _____ earners rather than original thinkers.
(A) wholesome (B) high-wage (C) weary (D) high-handed
- ____ 5. John's _____ is bothering him because he lied to his colleagues.
(A) consensus (B) conscience (C) consciousness (D) consentience
- ____ 6. Mary is very _____. She says exactly what she's thinking even if it hurts.
(A) questionable (B) befuddled (C) bashful (D) blunt
- ____ 7. This gourmet restaurant has a most _____ group of patrons, including Catholics, Moslems, Buddhists and Hindus.
(A) elated (B) elective (C) eclectic (D) elastic
- ____ 8. Investors have become more _____ after the recent stock market crash.
(A) circumspect (B) circumfluent (C) circumjacent (D) circumpolar
- ____ 9. In Chinese, there is no _____ at the end of a word to indicate the plural form.
(A) inflection (B) infliction (C) inflation (D) infraction
- ____ 10. The _____ growth in the number of users of the Internet is the most amazing phenomenon in mass communication in recent years.
(A) explorative (B) exponential (C) expiatory (D) explicable

Part B. Grammar 20%

- ____ 11. The music is becoming more diverse that young people _____ complete freedom to access and exchange information.
(A) having (B) being (C) were (D) have had
- ____ 12. Without direct access to information and resources in WHO (World Health

- Organization), Taiwan _____ to fight diseases on its own.
(A) has had (B) had being (C) has been (D) was
- _____ 13. Tina is so candid that when I'm listening to her, I feel _____ she is my trust friend.
(A) even if (B) as if (C) what if (D) that if
- _____ 14. Nowadays, the television _____ as a babysitter, with nannies particularly.
(A) was used (B) has using (C) is being used (D) is been used
- _____ 15. Susan _____ stupid all in her life.
(A) has been being (B) is been (C) has being (D) was been
- _____ 16. The agency sent us several applicants, the most qualified _____ was the first one.
(A) that (B) whose (C) in whom (D) of whom
- _____ 17. It has been suggested that each member _____ some money for the renovation of the clubhouse.
(A) contributes (B) has contributed (C) contribute (D) has been contributed
- _____ 18. It _____ by many that she had married for money.
(A) is thinking (B) thinks (C) was thought (D) thought
- _____ 19. I haven't gone to that exhibit yet, nor do I have any intention _____.
(A) x (B) to (C) in (D) of
- _____ 20. _____ every effort is being made to improve the financial condition of this company, the term of the loan will be extended.
(A) As much as (B) As well as (C) Since that (D) Inasmuch as

Part C. Cloze Test 20%

The talented Tom Hanks has played many different movie roles. Terminal is the first movie _____ 21 _____ he must speak with a European accent. He plays Viktor, a traveler _____ 22 _____ small country is destroyed by war when he takes a plane to America. Viktor cannot return home, _____ 23 _____ can he enter the U.S. Then he falls in love with a pretty flight attendant and _____ 24 _____ plan an escape!

- _____ 21. (A) in which (B) where (C) that (D) which
_____ 22. (A) that (B) whom (C) who (D) whose
_____ 23. (A) nor (B) or (C) seldom (D) even
_____ 24. (A) is (B) have (C) must (D) ought

The roommate situation is the first challenge students face. Learning to tolerate a stranger's idiosyncrasies _____ 25 _____ teach flexibility and the art _____ 26 _____ compromise. But the learning process is often painful.

___25. (A) ought (B) may (C) like (D) as

___26. (A) in (B) at (C) of (D) on

Campus officials say that communicating on the Internet or roaming the huge universe of information ___27___ the World Wide Web holds an especially powerful lure for many college students ___28___ it takes them ___29___ a vast new realm of learning and research, usually ___30___ no cost.

___27. (A) on (B) in (C) at (D) of

___28. (A) which (B) whose (C) what (D) because

___29. (A) for (B) into (C) of (D) at

___30. (A) of (B) on (C) at (D) in

II. Reading Comprehension: Choose the best one answer to each question
20%

Learning is an active, constructive process whereby the learner strategically manages the available cognitive resources to create new knowledge by extracting information from the environment and integrating it with information already stored in memory. With the rapid development of computer technology and its application in language instruction, many researchers in the past ten years have engaged in the study of this kind of active and constructive learning process in multimedia environment. Researchers have found that a multimedia learning environment provides the means to facilitate the learning process by manipulating the availability of specific information at a given moment, by controlling the duration of that availability, by varying the way information is presented, and by ensuring the ease with which it can be searched.

___31. What is the main idea of the passage?

(A) Multimedia learning environment organizes the information for learners.

(B) Multimedia learning environment differs from computer technology.

(C) Multimedia learning environment provides the availability in the learning process.

(D) Multimedia learning environment controls the duration of learning.

___32. Which one of the followings can identify the topic?

(A) Researchers have pointed out the rapid development of learning.

(B) Multimedia environment facilitates the learning process.

(C) The learner extracts information and stores in memory.

(D) Learning is an active and constructive process.

Complimenting is a kind of speech act belonging to the category of expressives.

Complimenting is a positive politeness strategy aiming to praise the addressees for a past or present action. In other words, compliments are prime examples of speech acts that notice and attend to the hearer's interests, wants, and needs. A frequent denotation is Holmes's (1988:446) definition: "A compliment is a polite speech act which explicitly or implicitly attributes credit to someone other than the speaker. Usually, the person addresses for something good which is positively valued by the speaker and hearer." She defines a compliment as a speech act that is accomplished either explicitly or implicitly to express admiration or approval for some good of the addressee. In such a situation, explicit compliments are those whose meaning is understood literally, as in a direct speech act. Similarly, implicit compliments account for indirect speech acts whose meaning can be inferred among participants.

____ 33. Which one of the followings expresses the topic of this passage?

- (A) The various categories of expressives
- (B) The direct and indirect speech acts
- (C) The positive politeness strategy of the speakers
- (D) The definition and classification of compliments

____ 34. Which one of the followings is not correct?

- (A) Compliments notice the hearer's interests and needs.
- (B) A compliment expresses admiration for something good of the addressee.
- (C) A compliment is a polite speech which is valued by the speaker.
- (D) Implicit compliments are those whose meaning is understood literally.

Traditionally, sculpture as a genre has not been as powerful of a creative phenomenon in Pacific-rim cultures like China, Japan or Korea. But it has thrived in cultures of the Aegean, like the Cycladic islands and later the mainland of Greece centering on Athens where stone sculpture reached its apogee early, attaining ease and fluidity in the round, as well as becoming a palpable conveyor of motion and emotions. To this day, Europeans walking the streets, let alone going into cathedrals or museums, are profoundly familiar with images of solid forms moving in space.

____ 35. The passage is about ____.

- (A) Aegean
- (B) space
- (C) sculpture
- (D) genre

After I had been living in Singapore for 18 months, my return to the U.K. was depressing when it came to fish dinners. Having enjoyed my sojourn in Southeast Asia and discovered Asian wet-market culture with the wonderful selection of live seafood and fresh fish including blue-fin tuna, wild sea bass, and coral grouper, going home was a shock. Of course, in the U.K. we have superb cold-water fish such as

halibut, cod, and haddock, but when you buy seafood you'll find yourself gazing in disbelief at the prices and at the sorry-looking half-frozen display of defrosting specimens that an Asian chef would reject immediately.

- ____ 36. Which one of the followings is not listed in the passage?
(A) geographic region (B) restaurants (C) delicious dishes
(D) markets
- ____ 37. What might be a good title for this passage?
(A) Prices of Fish (B) Defrosting Specimens (C) Southeast Asia
(D) Wet-market Culture

If you are a frequent patron of fast-food restaurant in Taipei, you may have discovered that most stores have added some new dishes to their menus. For the first time since it set up shops in Taiwan 19 years ago, KFC has introduced a pork burger. McDonald has also added a pork burger to its offerings, and Japanese-owned Mos Burger has started to serve a shrimp burger and seafood meals.

All of the changes were adopted to make up for declining sales of chicken and beef following the spread of avian influenza across 10 countries in Asia since mad cow disease discovered on December 23, 2003 in Washington State in the United States. Although the bird flu has appeared in Taiwan located as the weaker strain this year, the government's Council of Agriculture reports that at least affected 371,000 chickens and ducks had been put to death in the end of February. With regard to the mad cow disease, the government stipulated that any beef containers packaged after December 24, 2003 would not be allowed to enter Taiwan.

- ____ 38. Which one of the followings is not correct?
(A) The avian flu and mad cow disease have caused consumers to promote seafood.
(B) The bird flu has appeared in Taiwan located as the weaker strain.
(C) The government stipulated a ban on beef imports.
(D) Fast-food restaurants set up in Taiwan nineteen years ago.
- ____ 39. The main idea of this passage is that _____.
(A) fast-food restaurants have added new dishes for consumers.
(B) the spread of avian influenza comes across ten countries in Asia.
(C) the owners of the fast-food restaurants acknowledge the great impact on the diseases.
(D) mad cow disease has been discovered in Washington State in the United States.
- ____ 40. It can be inferred from this passage that _____.
(A) fast-food restaurant owners welcome beef imports from mad-cow-

disease-free countries.

- (B) fast-food restaurants have to revise their menus or sources of supply.
- (C) the wave of international epidemics has triggered considerable anxiety among government workers.
- (D) the sales of chicken and beef have been changed to well-cooked rice.

III. Writing an Essay 20%

Topic: Art is engendered in the genuine creativity and inspiring originality. Some say that genius is liberated only when the artist remains deaf to outside noises, deeply fascinated by, and more than satisfied with, the ever-expanding horizons within. What are your viewpoints and expectations about genius?

I. 選擇題 (單選, 每題 2 分, 共 70 分, 請於答案卷上作答)

1. Which of the following statements regarding peptide bond is incorrect?
(A) The peptide bond is a planar structure
(B) The -CN- bond has a partial double-bond character which makes rotation about the bond axis
(C) Small peptides are common and often have important biological roles
(D) *Linus Pauling* is the first scientist in discovery of regular polypeptide structure

2. Amino acids found in collagen that are formed by post-translational modification of two of the common amino acids including which of the following?
(A) Arg, Lys
(B) Pro, Lys
(C) Thr, Pro
(D) Pro, Tyr

3. Which of the following statements regarding peptide hydrolysis by proteolytic enzymes or chemical reagent is incorrect?
(A) Trypsin with specific cutting sites on C-terminal of basic amino acids
(B) Chymotrypsin with specific cutting sites on C-terminal of some non-polar amino acids
(C) CNBr with specific cutting site on Cys
(D) Bacteria cell wall containing d-form amino acid may avoid from proteolytic hydrolysis

4. Regarding a serial steps of purification for identifying protein function, which of the following methods are properly applied in order? 1. determine purity 2. fractionate the crude extract 3. affinity chromatography 4. develop an assay to identify and quantify the desired protein
(A) 1 2 3 4
(B) 2 3 4 1
(C) 3 4 1 2
(D) 4 2 3 1

5. Which of the following statements concerning protein structure and function is incorrect?
(A) A given domain type can sometimes be recognized in several differently proteins.
(B) Multiple domains are common in the larger globular proteins.
(C) Herpesvirus is composed of icosahedral symmetry structure under electron micrographic observation
(D) "Domain" is a compact, locally folded region of secondary structure of protein.

(背面有試題)

6. Amino acids considered nonessential for humans are:
- (A) those not incorporated into protein.
 - (B) not necessary in the diet if sufficient amounts of precursors are present.
 - (C) the same for adults as for children.
 - (D) the ones made in specific proteins by post-translational modifications.
 - (E) generally not provided by the ordinary diet.
7. Pyruvate and alanine are components of a shuttle that involves:
- (A) hepatic and renal gluconeogenesis.
 - (B) hepatic gluconeogenesis and transport of muscle nitrogen to liver as alanine.
 - (C) transport of alanine to muscle to supply pyruvate.
 - (D) the production of alanine for use in protein synthesis in most peripheral tissues.
 - (E) transport of alanine between cytosol and mitochondria of liver.
8. Which of the following essential dietary factors is a precursor for a compound that can act as a carrier of one-carbon fragments at different levels of oxidation?
- (A) Methionine
 - (B) Thiamine
 - (C) Folic acid
 - (D) Biotin
 - (E) Pyridoxine
9. Which of the followings is not used in biosynthesis of purine?
- (A) Glutamate
 - (B) CO₂
 - (C) Aspartate
 - (D) Glycine
10. The biologic effects of phorbol esters may be traced to their effects on
- (A) Adenylate cyclase
 - (B) Protein kinase A
 - (C) Protein kinase C
 - (D) Phospholipase C
11. A single base change in an mRNA may result in:
- (A) No observable mutation
 - (B) A missense mutation
 - (C) A nonsense mutation
 - (D) All of the above
 - (E) None of the above

12. In what condition, enzyme can reach the maximum rate

- (A) $[S] \ll K_m$
- (B) $[S] = K_m$
- (C) all the enzyme is bound with the substrate
- (D) temperature reaches to 100°C .

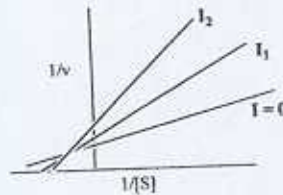
$V = \frac{V_{max}[S]}{K_m + [S]}$

13. What is the functional role of the oxyanion hole in serine protease catalyzed reaction?

- (A) general base catalysis
- (B) metal ion binding
- (C) proximity and orientation
- (D) transition state stability

14. The steady-state kinetic pattern of enzyme with substrate (S) in the varied concentration of inhibitor (I) was shown in the following figures. The concentration of inhibitor $I_2 > I_1 > I_0$. What kind of inhibitor is it?

- (A) competitive inhibition
- (B) noncompetitive inhibition
- (C) uncompetitive inhibition
- (D) irreversible inhibition



15. L. Pauling suggested that enzymes should have a much higher affinity for the transition state than for the ground state (reactant). It indicates the enzyme catalyzed reaction through

- (A) lower the reactant free energy
- (B) lower the energy barrier of a reaction
- (C) lower the equilibrium constant
- (D) lower the entropy.

16. Fumarase catalyzes the conversion of fumarate to malate and is described as a proficient enzyme or perfect enzyme. In what condition, an enzyme can be called a perfect enzyme.

- (A) The reaction is diffusion-limited.
- (B) It is an enzyme-substrate complex.
- (C) An enzyme has a K_M less than $1 \mu\text{M}$.
- (D) k_{cat} is a rate-limiting step.

17. An inhibitor which covalently binds with enzyme is classified as

- (A) competitive inhibitor
- (B) noncompetitive inhibitor
- (C) uncompetitive inhibitor
- (D) irreversible inhibitors.

$E + S \rightleftharpoons ES$

(前面有公式)

18. In the hepatic metabolism of ethanol, which one of the following is false?
- (A) β -oxidation of fatty acid is increased
 - (B) the NADH / NAD⁺ ratio is increased
 - (C) hepatic oxidation of lactate is inhibited
 - (D) gluconeogenesis is impaired
19. Which of the following cannot take place in the human body?
- (A) transformation of acetoacetate into glucose
 - (B) transformation of glycerol into glucose
 - (C) transformation of alanine into pyruvate
 - (D) transformation of acetate into glucose
 - (E) transformation of glucose to fatty acid
20. Which of the following fatty acids would yield gluconeogenic precursors ?
- (A) palmitic acid (C16:0)
 - (B) heptadecanoic acid (C17:0)
 - (C) linolic acid (C18:2)
 - (D) arachidonic acid (C20:5)
21. The role of the citrate in fatty acid biosynthesis and glucose metabolism is :
- (A) to act as a precursor for addition of carbon
 - (B) to activate fatty acid synthetase
 - (C) to activate acetyl-CoA carboxylase
 - (D) to activate phosphofructokinase-1
 - (E) to activate pyruvate dehydrogenase
22. All of the following are true of the TCA cycle except which one?
- (A) It begins with the condensation of acetyl-CoA and oxaloacetate
 - (B) The cycle is involved in both catabolic and anabolic pathways
 - (C) The cycle directly requires molecular oxygen in one of its enzymatic reaction
 - (D) GTP is produced by a substrate-level phosphorylation in the cycle
 - (E) The cycle participates in the synthesis of glucose from pyruvate
23. During the first week of diet of 1500 calories per day, the oxidation of glucose via glycolysis in the liver of a normal 59-kg (130-lb) woman is inhibited. What is the major mechanism for inhibition of glycolysis in liver during gluconeogenesis?
- (A) glucokinase is inhibited by the high concentration of glucose-6-phosphate
 - (B) Phosphorylation of phosphofructokinase-2/fructose-2,6-bisphosphatase leads to decreased levels of fructose-2,6-bisphosphate, which is an allosteric activator of phosphofructokinase-1
 - (C) Increased hepatic acetyl-CoA inhibits the activity of pyruvate dehydrogenase
 - (D) Hydrolysis of glucose-6-phosphate to glucose decreases the availability of glucose-6-phosphate for glycolysis

24. After a well-rounded breakfast, which of the following would be expected to occur?
- (A) increased activity of phosphorylase kinase
 - (B) increased activity of phosphoenolpyruvate carboxykinase
 - (C) decreased rate of glycogenesis
 - (D) increased activity of pyruvate dehydrogenase
 - (E) decreased activity of acetyl CoA carboxylase
 - (F) increased activity of pyruvate carboxylase
25. Which of the following metabolites is involved in glycogenolysis, glycolysis, and gluconeogenesis
- (A) galactose-1-phosphate
 - (B) glucose-6-phosphate
 - (C) UDP-glucose
 - (D) fructose-6-phosphate
 - (E) glucose-1-phosphate
26. The key regulatory enzyme of the pentose phosphate pathway is positively regulated by
- (A) reduced nicotinamide dinucleotide (NADH)
 - (B) adenosine diphosphate (ADP)
 - (C) guanosine triphosphate (GTP)
 - (D) nicotinamide dinucleotide phosphate (NADP⁺)
 - (E) reduced flavine adenine dinucleotide (FADH)
27. A child has ingested cyanide from her parents' garage and is rushed to the emergency room. Which of the following components of the citric acid cycle will be depleted first in the child?
- (A) NAD⁺
 - (B) oxaloacetate
 - (C) succinate CoA
 - (D) citrate
28. A comatose laboratory technician is rushed into the emergency room. She dies while you examining her. Her most dramatic symptom is that her body is literally hot to your touch, indicating an extremely high fever. You learn that her lab has been working on metabolic inhibitors and that there is a high likelihood that she accidentally ingested one. Which one of the following is the most likely culprit?
- (A) oligomycin
 - (B) dinitrophenol
 - (C) barbiturate
 - (D) cyanide
 - (E) antimycin D

(後面有試題)

29. As electrons are received and passed down the transport chain show below, the various carriers are first reduced with acceptance of the electron and then oxidized with loss the electron. A patient poisoned by which of the following compounds has the most highly reduced state of most of the respiratory chain carriers?

- (A) antimycin A
- (B) rotenone
- (C) puromycin
- (D) carbon monoxide
- (E) chloramphenicol

30. Which of the following correctly describes the intermediate 4-hydroxy-3-methylglutaryl CoA?

- (A) It is formed by HMG CoA reductase
- (B) It is an intermediate in the synthesis of 3-hydroxybutyrate and acetoacetate
- (C) It is formed only in cytosol
- (D) It is formed by condensation of two molecules of acetyl CoA
- (E) It inhibits the first step in cholesterol synthesis

31. What protein often malfunctions in diseases associated with the symptoms of high blood triacylglycerides levels and steatorrhea?

- (A) LDL receptor
- (B) Lecithin:cholesterol acyltransferase (LCAT)
- (C) phospholipase C
- (D) lipoprotein lipase
- (E) pancreatic lipase

32. Which one of the following tissues can metabolize glucose, fatty acids, and ketone bodies for ATP production?

- (A) adipose tissue
- (B) liver
- (C) muscle
- (D) brain
- (E) red blood cells

33. It has been noted that infants placed on extremely low-fat diets for a variety of reasons often develop skin problems and other symptoms. This is most often due to

- (A) deficiency of fatty acid desaturase greater than Δ^9 (Δ^{12}, Δ^{15})
- (B) deficiency of chylomicron and VLDL production
- (C) overproduction of prostaglandin E_2
- (D) glycogen storage disease
- (E) sphingolipidose

34. Which one of the following compounds is a key intermediate in the synthesis of both triacylglycerols and phospholipids?

- (A) Phosphatidate
- (B) CDP-choline
- (C) eicosanoid
- (D) CDP-diacylglycerol
- (E) Ceramide

35. A teenager girl suffers from hypoglycemia. Inherited defect in all of the following enzymes may be the cause of hypoglycemia except which one?

- (A) glucose-6-phosphatase
- (B) debranching enzyme
- (C) muscle phosphorylase
- (D) carnitine acyltransferase I
- (E) long-chain 3-hydroxylacyl-CoA dehydrogenase

II. Match proteins in column B with the functions in column A (10 分)

(請於答案卷上作答)

Column A

- 1. Remove RNA primer from the Okazaki fragments and copies DNA
- 2. Eukaryotic mRNA capping
- 3. Regulates the SOS response in E.Coli
- 4. Joins Okazaki fragments and other disconnected pieces of DNA together
- 5. Catalyzes supercoiling isomerization
- 6. Control the lytic pathway in bacteriophage λ
- 7. Polymerizes dNTPs
- 8. Uses ATP to unwind double-strand DNA
- 9. Synthesis of RNA primer
- 10. Maintenance of the length of chromosomes

Column B

- A) Topoisomerase
- B) DNA polymerase I
- C) DNA polymerase III
- D) DNA ligase
- E) Primase
- F) Helicase
- G) Telomerase
- H) Guanyl transferase
- I) Lex A
- J) Cro protein

III. Please explain the following terms or techniques (20 分) (請於答案卷上作答)

- 1. Reporter gene
- 2. RFLP
- 3. Kozak consensus sequence
- 4. Spliceosome
- 5. Ubiquitin
- 6. Signal sequence
- 7. FISH
- 8. Proliferating cell nuclear antigen
- 9. Northern blotting
- 10. Leucine zipper motif