

**Part I. Question 1 to 10, please choose the answer closest to the underlined word or phrase. Question 11 to 15, please choose the answer that best completes the sentence. One Answer Only. 2 points.**

1. Some of the **potential** dangers to cows treated with synthetic bovine growth hormone were brought into light through the effort of some scientist.  
(A) related (B) possible (C) certain (D) obvious
2. As more U.S workers spend their days at keyboards, hand injuries and lawsuits are **multiplying**.  
(A) increasing (B) minimizing (C) boundary-crossing (D) profit-making
3. There are several **bodies** that match volunteers with voluntary groups, including the National Volunteering Centre.  
(A) organizations (B) remains (C) people (D) motivations
4. Piaget believed that we go through four stages in understanding the world. Each of the stages is age-related and consists of **distinct** ways of thinking.  
(A) new (B) simple (C) different (D) exact
5. Some people think that spoken language is **transient** but writing tends to last because of its physical medium (characters on some surface).  
(A) unimportant (B) temporary (C) interesting (D) clear
6. But what most prevents women from reaching the boardroom, say bosses and headhunters, is lack of **hands-on** experience of a firm's core business.  
(A) significant (B) available (C) tested (D) practical
7. Manufactured in the **tranquil** New England town of Concord, New Hampshire, the famous Concord Coach came to symbolize the Wild West.  
(A) peaceful (B) bustling (C) industrial (D) tiny
8. With oil prices shooting up, the demand for big cars is **dwindling**. Now compact cars are on great demand.  
(A) depressing (B) surpassing (C) decreasing (D) swirling
9. All of this she conferred on me without ever **setting foot in** the kitchen of her house.  
(A) leaving (B) dressing (C) entering (D) preparing
10. In choosing your career, you should follow your heart, but you also need to be **rational**.  
(A) making decisions based on intelligent thinking (B) making decisions using strong emotion of feeling  
(C) making decisions because of relationships (D) making decision because of profits
11. \_\_\_\_\_ abolishing death penalty is a global trend, the public is so polarized over the issue that it requires more discussion.  
(A) Because (B) Whereas (C) Although (D) In addition to
12. Women now often work areas \_\_\_\_\_ medicine, business management and higher education, which would not have been possible 100 years ago.  
(A) regardless of (B) in virtue of (C) due to (D) such as
13. Both the National Cancer Institute and the World Health Organization say there isn't evidence to support the assertion that cell phones are a \_\_\_\_\_ threat.  
(A) health public (B) healthy public (C) public-health (D) publically health
14. \_\_\_\_\_ on barren slopes can help prevent erosion.  
(A) Planting trees (B) For trees to be planted (C) In order to plant trees (D) Trees are planted
15. Almost four in five people around the world believe that \_\_\_\_\_, a poll for the BBC World Service suggests.  
(A) access the Internet is a fundamental right (B) that access to the Internet is a fundamental right  
(C) fundamental right accessing the Internet is (D) the fundamental right is access the Internet

**II. Question 16 to 25, please choose the best answer to fill each of the numbered blanks in the passages. 2 points each.**

People communicate in many different ways and yawning is one important means of 16 communication. It gives many different 17 to people and everyone yawns. Some birds, reptiles, fish and most mammals also yawn. However, the reason why we do it is still a mystery. There is also very little research available on yawning as for most people, it is not a problematic 18. Here are a few things that are known about yawns: 1.) The 19 duration of a yawn is about six seconds; 2.) in humans, the 20 yawn happens about eleven weeks after conception; 3.) Yawns become contagious to people between the first and second years of life.

16. (A) audio (B) friendly (C) non-verbal (D) scenario  
 17. (A) messages (B) funs (C) challenges (D) experiments  
 18. (A) resistance (B) repeat (C) reflex (D) rejection  
 19. (A) critical (B) analytical (C) terminal (D) average  
 20. (A) most difficult (B) earliest (C) most fundamental (D) experiential

Culture shock can be an excellent lesson 21 human differences. The reason culture shock occurs is that we are not prepared for these differences. 22 the way we are taught in our culture, we are all ethnocentric. This term comes from the Greek root ethnos, 23 a people or group. Thus, it refers to 24 our outlook or world view is centered on our own way of life. Ethnocentrism is the belief that one's own patterns of behavior are the best: the most natural, beautiful, right, or important. Therefore, other people, 25 that they live differently, live by standards that are inhuman, irrational, unnatural, or wrong.

21. (A) on relative values and understanding (B) in relative values and in understanding  
 (C) about relating values and on understanding (D) by means of relative values and understanding  
 22. (A) Because of (B) Because (C) In the event of (D) In spite of  
 23. (A) it means (B) it is meaning (C) meaning (D) by meaning  
 24. (A) that the fact (B) the fact that (C) the fact (D) the fact that is  
 25. (A) to the extend (B) by and large (C) more or less (D) drawing a line

**III. Reading Comprehension. In this part, you will read several passages. Each one is followed by a number of questions. Question 26 to 40, you should choose the ONE best answer to each question. 2 points each.**

Dariusz Leszczynski, a research professor at Finland's Radiation and Nuclear Safety Authority in Helsinki, has done studies indicating that radio frequency radiation may create a stress reaction in the cells that line blood vessels, leading to a dangerous breach in the blood-brain barrier. "Mobile-phone radiation may be able to indirectly hurt cells, perhaps by interfering with their ability to repair normal DNA damage," he says. "Given the scientific uncertainty, it's premature to say the use of cell phones is safe."

If radio frequency radiation increases the chances of developing brain cancer, it should show up in long-term studies of cell-phone users. But many epidemiological studies have found no clear connection, including a 2007 Danish Cancer Society study of 421,000 cell-phone users, which led many in the media to conclude that mobiles are harmless. To date, "peer-reviewed scientific evidence has overwhelmingly indicated that wireless

devices do not pose a risk," says John Walls, a spokesman for CTIA, a global wireless association.

26. According to Prof. Dariusz Leszczynski,

- (A) whether or not the use of cell phones is safe is still uncertain.
- (B) it is proved that cell phone would impair normal DNA.
- (C) Using cell phones will block blood vessels.
- (D) The research on cell phones is not reliable.

27. The passage following these two passages might be about

- (A) the autobiography of Dariusz Leszczynski.
- (B) problems with many of these studies.
- (C) the development of brain cancer.
- (D) peer review of cell phones.

While fats have lately acquired a bad image, one should not forget how essential they are. Fats provide the body's best means of storing energy, a far more efficient energy sources than either carbohydrates or proteins. They act as insulation against cold, as cushioning for the internal organs, and as lubricants. Without fats, energy would have no way to utilize fat-soluble vitamins. Furthermore, some fats contain fatty acids that contain necessary growth factors and help with the digestion of other food.

An important consideration of fat intake is the ratio of saturated fats to unsaturated fats. Saturated fats, which are derived from dairy products, animal fats, and tropical oils, increase amount of cholesterol in the blood. Cholesterol may lead to coronary heart disease by building up in the arteries of the heart. However, unsaturated fats, derived from vegetable oils, tend to lower serum cholesterol if taken in a proportion twice that of saturated fats.

The consumption of a variety of fats is necessary, but the intake of too much fat may lead to a variety of health problems. Excessive intake of fats, like all nutritional excesses, is to be avoided.

28. Comparing with carbohydrates or proteins, fats

- (A) store food more efficiently.
- (B) deserve their bad image.
- (C) consume more oils.
- (D) provide more fluids.

Which of the followings is the main idea of

29. The main idea of the third paragraph is that

- (A) people are eating less and less fat today.
- (B) fats should be eliminated.
- (C) excessive consumption of fats may be dangerous to one's health.
- (D) fats taken in the proper proportion may reduce serum cholesterol.

30. With which of the following is the whole passage primarily concerned?

- (A) The role of fats in human health
- (B) The dangers of cholesterol
- (C) The benefits of fats in the diet
- (D) The importance of good nutrition

### Gender Equity

(1) In the past decade, increasing attention has been paid to the issue of gender equity in the science, technology, engineering, and mathematics (STEM) fields. Research publications, including the American Association of University Women Educational Foundation's Tech Savvy (2000) and Women at Work (2003), have documented the troubling shortage of girls and women preparing to work in these fields. In response to this "**shrinking pipeline**" of girls and women in STEM, a wide array of programs and strategies has been promoted and funded by governmental and nongovernmental organizations.

(2) The AAUW Educational Foundation and the National Science Foundation are among the top supporters of gender equity projects in the STEM fields. In the last decade alone, these two foundations have

invested nearly \$90 million to fund more than 400 projects specifically aimed at increasing the participation of girls and women in STEM fields. This body of projects presented a unique opportunity to explore the nature of gender equity intervention projects in STEM. Until now, no comparable survey of gender equity intervention projects in STEM has been done.

(3) The research for this report, led by Yasmin Kafai and a team of researchers at the University of California, Los Angeles, was guided by several overarching questions: What types of projects have been funded within and across the various STEM disciplines? Are there areas where we have concentrated our efforts, and areas we have overlooked? What patterns emerge among the project types and disciplines?

(4) The findings document impressive efforts in preparing girls and women for science, technology, engineering, and mathematics studies and careers and demonstrate a rich and diverse body of gender equity intervention projects within all STEM disciplines. About two-thirds of the projects involved extracurricular informal learning activities such as museum visits and field trips. Equally important were mentoring activities in many forms, ranging from traditional one-to-one to large-scale online versions, and professional development activities, such as course taking and network building, that were successfully integrated into projects.

(5) At the same time, the findings reveal some troubling trends. Many projects focused predominantly on career advice without providing access to necessary skill and content development. A majority of projects occurred outside the school curriculum. While such extracurricular projects can be effective and valuable, the overall lack of integration into the school curriculum suggests that gender equity remains on the margins of teaching and learning in the STEM fields. Finally, an absence of data on participant demographics and a lack of project evaluation make it difficult to determine who is being served and if and how project outcomes are being measured.

31. What does the phrase "shrinking pipeline" in paragraph refer to?

- (A) the shortage of oil supply                      (B) the shortage of labor supply  
(C) the shortage of training programs              (D) an issue that is getting smaller

32. Which of the sentences below best express the essential information in the highlighted sentence in the passage 2? (Incorrect choices change the meaning in important ways or leave out essential information.)

- (A) These projects allowed us to study the differences between men and women employed in STEM jobs.  
(B) We were able to intervene when women STEM workers were being treated unfairly.  
(C) Studying these projects helped to create more gender equity intervention projects.  
(D) STEM jobs were able to be studied by exploring nature.

33. In paragraph 3, "Are there areas where we have concentrated our efforts, and areas we have overlooked?"

In this sentence, "we" refers to

- (A) the author and his/her coworkers.              (B) people involved in creating gender equity projects.  
(C) people in the STEM disciplines.              (D) Yasmin Kafai and his team.

34. According to paragraph 4, what is one positive finding of this research?

- (A) the STEM field is rich and diverse              (B) many projects involved mentoring opportunities  
(C) girls and women are being prepared for STEM jobs      (D) the quality of the questions asked

35. According to paragraph 5, what is one negative trend discovered through this research?

- (A) access to unnecessary content              (B) extracurricular projects were common  
(C) evaluation of the projects was too specific      (D) focus on career advice

Chili peppers are decidedly an international phenomenon, spicing up regional dishes from Thailand to North Africa. In Thailand Confidential, this week's Globalist Bookshelf selection, Jerry Hopkins gives insight

to the culture and history surrounding this fiery fruit (yes, technically a fruit) and highlights how it may be one of the world's best medical miracles.

In Thailand — where restaurants rate their dishes by placing one, two, three, and sometimes four little red chilis on the menu next to the dishes' names to alert diners — I am tolerated. Barely.

A longtime friend, who is a Thai chef, used to bring home food purchased at street stalls and as she placed this on the table, she would point to one container and say, "Mine," then to another, saying, "Yours." As if to say, "Poor dear."

Thailand is not the birthplace of the Capsicum, or chili pepper; it only acts as if it is. In fact, the chili was imported, along with much else in the national diet. However, in Thailand the **per capital consumption** of the small, fiery fruit is surely as high if not higher than it is anywhere else. And it is in the use of unprocessed, fresh, ripe chilis where Thailand rings all the loudest bells.

The truth is that chili is an international phenomenon. There is a bimonthly magazine published in the United States, Chili Pepper (there is no agreement on the spelling), and a wide variety of products is available, including pepper-shaped wind chimes, bells, and strings of Christmas tree lights. There is even a Hot Sauce Club of America; members receive two new hot sauces and a newsletter every month. There is even a popular American rock and roll band that calls itself the Red Hot Chili Peppers. Yes, the band is hot.

36. From these passages, we learn that the author

- (A) enjoys chili peppers everywhere.
- (B) does not really like chili peppers.
- (C) likes to have chili peppers to go with some certain kind of food.
- (D) like to go to restaurant famous for chili peppers.

37. The best title for these passages is

- (A) Thailand and Chili peppers.                      (B) Chili Peppers and Spicy Dishes.
- (C) Different Tastes all over the World.      (D) Chili Peppers and Globalization.

38. Based on the passages, which of the following is NOT TRUE?

- (A) That Thailand uses unprocessed, fresh, ripe chili peppers has started the popularity of chili peppers.
- (B) Thailand exports a lot of chili peppers.
- (C) Chili peppers are a kind of fruit.
- (D) Thai food is normally quite spicy.

39. What does **per capital consumption** mean?

- (A) amount consumed per person within a specific population.
- (B) capital population and its consumption.
- (C) capital with that the government provides each person for food consumption.
- (D) capital that each person can get for their daily food consumption.

40. What is the main idea of the last paragraph?

- (A) Chili peppers are very popular in the United States.
- (B) The use of chili peppers in the United States is being influenced by Thailand.
- (C) Chili peppers are made into different toys.
- (D) Chilli peppers have made a rock band very hot.

#### IV. Essay. 20 points.

Please write a **well-structured** essay on **how you can prepare yourself for living in a diverse and more global society** in 150 to 200 words discussing your opinions.

一、名辭解釋（共 4 題，每題 5 分）

1. Antidiuretic hormone
2. Eccentric contraction
3. Lung surfactant
4. Serum

二、問答題（選 4 題回答，每題 20 分）

1. 解釋正回饋作用（positive feedback）在動作電位（action potential）的產生所扮演的角色。
2. 說明基底核（basal ganglia）與小腦（cerebellum）在動作控制（movement control）的角色。
3. 比較骨骼肌（skeletal muscle）與心肌（cardiac muscle）的異同。
4. 解釋攝取高鹽食物會如何影響血量與血壓？
5. 描述波爾效應（Bohr effect）對於運動時氧氣運送至骨骼肌的影響。

.....

高雄醫學大學 99 學年度 研究所 招生考試 考試科目: 肌動學

1. 過肩投擲選手常發生肩關節不穩定 (Shoulder Instability) 的現象，請針對以下重量訓練的動作給予姿勢調整性的建議，並說明各動作主要訓練肌群。
  - (1) 胸部推舉 (Bench Press)
  - (2) 肩上啞鈴推舉 (Shoulder Press)
  - (3) 滑輪頸後下拉 (Lat pull-down behind the neck)
  - (4) 雙槓臂屈伸 (Dips on Parallel Bars)
2. 後十字韌帶去除(PCL sacrificing)之人工膝關節置換術後病患在上階梯過程常會有軀幹代償性前傾問題，請以肌動學觀點討論此姿勢的發生原因，並提出可行性的訓練方案？
3. 動力計 (dynamometer) 常被用以輔助檢測病患的等長肌力 (isometric strength)，試問當在坐姿下量測股四頭肌 (Quadriceps) 等長肌力時，試以肌動學觀點繪圖說明當動力計在何種擺放位置下可測得最大的數值 (例如較靠近膝或踝關節處)？
4. 請各舉三例說明可用來量測人體活動過程的運動學 (Kinematic) 與動力學 (Kinetic) 資訊的工具？
5. 請正確翻譯以下這篇短文：

Clinical manual tests refer to increased ankle stiffness in children immobilized due to hip osteochondritis. The aim of the present study was to investigate musculo-articular stiffness via different techniques in immobilized children to confirm or not and quantify these observations. Ankle stiffness was quantified monthly during the long immobilization period in three diseased children and compared to healthy age-matched children. Sinusoidal perturbations were used to evaluate musculo-articular (MA) stiffness of the ankle plantar-flexors. The stiffness index (SIMA-EMG) was the slope of the linear relationship between angular stiffness and plantar-flexion torque normalized with electromyographic activity of the triceps surae (TS). The stiffness of the ankle plantar-flexors was also indirectly evaluated using the TS electromechanical delay (EMD).

一、請說明生物力學的定義、目的及研究範圍。(15 分)

二、名詞解釋 (每小題 5 分，共 25 分)

1. static equilibrium
2. conservation of angular momentum
3. impulse-momentum relationship
4. kinematics
5. free-body diagrams

三、何謂牛頓第二運動定律 (Newton's second law of motion)? 並推導功(work)與能量 (energy)之間的關係。(20 分)

四、何謂 mass moment of inertia? 請舉例說明之。(20 分)

五、膝關節受傷為常見之運動傷害之一，請由解剖及生物力學的觀點，描述人體膝關節的構造及功能，並敘述可能造成傷害的力學機制。(20 分)

試題共四題，一題 25 分共 100 分

1. 當排球選手出現肩關節疼痛時，有可能是那些問題？有那些理學檢查可以評估？有那些檢查可以確定診斷？如何處置與治療？
2. 當棒球投手出現肘關節疼痛時，有可能是那些問題？有那些理學檢查可以評估？有那些檢查可以確定診斷？如何處置與治療？
3. 在籃球場若有選手的膝關節嚴重扭傷，有可能是那些問題？有那些理學檢查可以評估？治療或處置的選擇有那些？什麼情況需要開刀？什麼時候可以選擇非手術治療？
4. 有一位喜歡踢足球的學生抱怨踝關節常常扭傷，如何評估受傷的踝關節是否有不穩定？如果有踝關節不穩定的話，該如何處置？

(一題二十分，共五題)

1. 請描述下列幾種測量身體組成方法的原理，並描述其優缺點。
  - a. Hydrostatic Weighting
  - b. Air Displacement Plethysmography
  - c. Dual-energy X-ray Absorptiometry
  - d. Bioelectrical Impedance Analysis
  
2. 請描述下列幾種坐姿體前彎測試(Sit-and-Reach Test)的特點及使用時機。
  - a. Standard Sit-and-Reach Test
  - b. V Sit-and-Reach Test
  - c. Modified Sit-and-Reach Test
  - d. Back-saver Sit-and-Reach Test
  - e. Modified Back-saver Sit-and-Reach Test
  
3. 進行最大肌力測試時，該如何正確測得 1RM，有那些步驟？另外，如何利用估計方式來測得 1RM？有那些注意事項。
  
4. 給予冠狀動脈疾病(coronary artery disease)和代謝症候群(metabolic syndrome)的運動處方，其評估過程和處方內容有何差異？
  
5. 請闡述 Exercise is Medicine 的內涵？並試說明如何落實。