

Part I. Question 1 to 10, please choose the answer closest to the underlined word or phrase. One Answer Only. 2 points each.

1. Leaders of the world's largest economies are close to an agreement to tackle the global financial crisis.
(A) fight (B) meditate (C) forbid (D) deal with
2. I think people realize the economy seemingly fell off the cliff.
(A) inclined (B) caught up (C) help up (D) slumped
3. In the future, globalization is going to be increasingly driven quickly to its processes and technologies, and start to march forward.
(A) directed (B) motivated (C) forced (D) manipulated
4. The home team kicked off the season with an easy win.
(A) interrupted (B) commenced (C) avoided (D) complicated
5. The use of stem cells is controversial - opponents object on the grounds that it is unethical to destroy embryos in the name of science.
(A) adversaries (B) allies (C) forerunners (D) associates
6. Slumdog Millionaire is about a Mumbai teen who grew up in the slums, becomes a contestant on the Indian version of "Who Wants To Be A Millionaire?"
(A) asylum seeker (B) gangster (C) youngster (D) homeless
7. Critical listening is a difficult kind of listening because it requires you to both interpret and evaluate the message.
(A) understand (B) integrate (C) intrigue (D) compose
8. He is worried about a potential quiz tomorrow.
(A) possible (B) actual (C) providential (D) surprising
9. These two girls prefer to have intimate conversation one-on-one
(A) personal (B) secret (C) intelligent (D) discreet
10. His position was contrary to that of the teacher's
(A) puzzling (B) opposite (C) compatible (D) foreseeable

Part II. Question 11-15, please choose the answer that best completes the sentence. Question 16-20, please choose the best answer to fill each of the numbered blanks in the passage.

In many countries, it is considered 11 to appear naked or even half-naked on a public beach. However, some places often have a few 12 beaches that are designated as nudist or "clothing optional" beaches, where uninhibited people can fully 13 themselves to the sun. Other countries, especially those where 14 are hot and attitudes are 15, impose no restrictions at all, so people may sunbathe topless or nude even on the public beaches.

11. (A) inappropriate (B) interesting (C) conservative (D) considerate
12. (A) inclusive (B) executive (C) secluded (D) acceptable
13. (A) demonstrate (B) expose (C) lie down (D) externalize
14. (A) seawater (B) cuisine (C) fashion (D) climates
15. (A) strict (B) sincere (C) liberal (D) general

There are many different forms of potential economic stimulus and they work in different ways. Tax cuts for individuals generally encourage short-term spending. Tax cuts for companies encourage both spending and investment. Expenditures on public works create contracts for firms and provide short- to medium-term 16. Investments in research and development take a longer-term approach 17 the theory 18 in the future (and thus provide jobs) if they have the money to make intelligent investments in their operations

now. Finally, some forms of economic stimulus seek to make investments that will pay off in the long run 19 for everybody. An example is investing in the U.S. energy grid. 20, a one-time outlay could make energy costs for both individuals and businesses less expensive for decades to come.

16. (A) opportunities of employment (B) employment opportunities
 (C) employing opportunities (D) employment in opportunities
17. (A) under (B) in (C) of (D) on
18. (A) business is going to be thrive (B) which business is going to be thrive
 (C) that business will thrive (D) business thrives
19. (A) with cheaper consumption (B) in making cheaper consumption
 (C) by consuming cheaply (D) by making consumption cheaper
20. (A) Theoretic concern (B) Theoretical (C) Being theoretic (D) Theoretically

Part III. Reading Comprehension. In this part, you will read several passages. Each one is followed by one question or a number of questions. Question 21 – 40, you should choose the ONE best answer to each question. 2 points Each.

Question 21-25

The importance of strength in many sports is undeniable. It is so important that many university and professional teams now hire a specialized coach who only attends to the development of strength in athletes. It is interesting to note that no such specialist is hired to attend to the other components of physical fitness. We have yet to see a cardiovascular coach, a coach who attends to developing fitness of the heart and blood vessels, hired by universities or professional teams. This situation raises the question of the relative importance of each of these two components, strength training and cardiovascular training, to the other. Does the strength coach develop the cardiovascular system by prescribing a program to increase muscle fiber?

It is theoretically possible to design a weight-lifting program in which the resistance is so low and the repetitions so numerous that it provides the cardiovascular benefits of a running program. Therefore, if you view weights as a way to overload muscles, you can imagine a continuum of programs that emphasize cardiovascular benefits on the one extreme and strength on the other. The practical truth of the matter is that most coaches are primarily concerned with pure strength. Therefore, the athlete has to work on the end of the weight-overload continuum that promotes little, if any, cardiovascular benefit. In fact, one study has found that a high-intensity strength program reduced mitochondrial density (density of the cellular structures that produce energy in the muscle fiber) per unit of muscle. The athletes increased muscle mass, so they did not eliminate mitochondria presumably, but the fact remains that the oxidative capacity, the ability to use oxygen in the synthesis of energy, was not promoted. Oxidative capacity would usually improve in programs that stress cardiovascular conditioning. Neither increased blood flow nor increased mitochondrial density (both indicators of oxygen extraction) occur with strength training.

Obviously, there is nothing wrong with training athletes to gain strength, but in most strength programs cardiovascular improvements are not made. Therefore, for athletes, who require both strength and cardiovascular conditioning, both components must be trained independently.

21. What is the main point of the passage?
- (A) College and professional teams do not need specialized coaches.
 (B) Strength training should be replaced by cardiovascular training.
 (C) Cardiovascular training is more difficult than strength training.
 (D) Athletes need both strength and cardiovascular training.

22. Under which of the following conditions can a weight-lifting program provide cardiovascular benefits?
- (A) When the weights are very heavy
 - (B) When the weights are lifted very slowly
 - (C) When lifting a heavy weight overtires the muscles
 - (D) When light weights are lifted a large number of times
23. Why does the author mention running?
- (A) To give an example of the benefits of strength training
 - (B) To demonstrate what a typical weight program includes
 - (C) To give an example of an activity that provides cardiovascular conditioning
 - (D) To demonstrate the importance of oxygen extraction
24. Which of the following is an important direct result of cardiovascular training?
- (A) Improved oxidative capacity
 - (B) Increased muscle fiber
 - (C) Decreased mitochondrial density
 - (D) Increased body weight
25. Which of the following policies would the author be most likely to support?
- (A) Sports teams should increase their strength-training programs.
 - (B) All athletes should be able to choose the kinds of training they prefer.
 - (C) Sports teams should provide improved cardiovascular training.
 - (D) All athletes should avoid strength training in order to avoid injury.

Question 26-31

It is in search of adequate food supplies that cetaceans, marine mammals such as whales and dolphins, travel the oceans. They live in a world that is largely hidden from humans. Yet their range is three times as large as ours, since oceans occupy about three-quarters of the Earth's surface. They travel through well-marked ocean zones, **each** with its own characteristic marine life. They glide through the water, periodically rising to the surface to breathe. The sea may be raging but cetaceans are untroubled by the greatest storms; indeed they are more at home in rough than in calm seas.

Indirectly, however, their life is greatly influenced by wind. The eastward rotation of the Earth produces the **prevailing** trade winds, blowing east to west at the equator. These winds drag the surface waters and all they contain in a westerly direction. Warmed by its passage through the tropics, the wind-driven water is deflected against the westward continents, turning southwest in the Southern Hemisphere and northwest in the Northern Hemisphere.

In the Southern Hemisphere, the warm flow of tropical water under the west-going equatorial trade wind produces a genial climate along the eastern shores of Australia, South America, and South Africa. But there is open ocean to the south. Here the current is driven eastward unimpeded by land before the almost incessant westerly gales of this zone. The huge mass of water moves fast, chilled by water from the Antarctic Region, but **laden** with masses of plankton.

This cold, swift current is **split** when it strikes the southwestern extremities of the three southern continents. The northern portion of this water is diverted by the southwest coast of South America to sweep northward toward the equator. Known as the Humboldt Current, this current is rich in plankton on which cetaceans feed. Part of this same cool eastward-flowing current, enriched with water from higher latitudes, is similarly diverted north along the southwest coast of South Africa. This is the Benguela Current, where many cetaceans come to feed.

26. The passage answers which of the following questions?
- (A) What is the main difference between cetaceans and other marine life?

- (B) How far do most cetaceans travel in a year?
(C) How often do cetaceans need to breathe?
(D) What winds and ocean currents affect cetaceans?
27. The word **each** in paragraph 1 refers to a
(A) cetacean (B) surface (C) range (D) zone
28. The word **prevailing** in the passage is closest in meaning to
(A) arctic (B) blowing (C) dominant (D) energetic
29. The word **laden** in paragraph 3 is closest in meaning to
(A) balanced (B) filled (C) touched (D) wrapped
30. The word **split** in paragraph 4 is closest in meaning to
(A) stopped (B) divided (C) opened (D) surrounded
31. What do paragraphs 3 and 4 primarily discuss?
(A) The water currents in the Southern Hemisphere
(B) The trade winds in the Southern Hemisphere
(C) The three continents in the Southern Hemisphere
(D) The large area of open ocean in the Southern Hemisphere.

Question 32-36

Doris Lessing received her Nobel Prize in 2007. Her novel *The Golden Notebook* is considered a feminist classic by some scholars, but notably not by the author herself, who later wrote that its theme of mental breakdowns as a means of healing and freeing one's self from illusions had been overlooked by critics. She also regretted that critics failed to appreciate the exceptional structure of the novel. As she explains in *Walking in the Shade*, Lessing modeled Molly, to an extent, on her good friend Joan Rodker, the daughter of the author and publisher John Rodker.

Lessing does not like the idea of being pigeon-holed as a feminist author. When asked why, she replies:

What the feminists want of me is something they haven't examined because it comes from religion. They want me to bear witness. What they would really like me to say is, 'Ha, sisters, I stand with you side by side in your struggle toward the golden dawn where all those beastly men are no more.' Do they really want people to make oversimplified statements about men and women? In fact, they do. I've come with great regret to this conclusion.

- Doris Lessing, *The New York Times*, 25 July, 1982[8]

32. Doris Lessing is a Nobel Prize winner in
(A) Feminism. (B) Literature. (C) Sociology. (D) Peace.
33. According to Doris, what feminists want from her is
(A) exceptional structure. (B) fighting against men.
(C) creative ideas about men and women. (D) healing power from battles between men and women.
34. Doris Lessing does not particularly like the idea of being **pigeon-holed** as a feminist; pigeon-holed here means
(A) categorized (B) wholesale (C) viewed (D) completed
35. Which of the following statements is **FALSE**?
(A) Critics often neglect the theme of mental breakdowns as a self-freeing power.
(B) She models a heroine on her friend in one of her books.
(C) Her book *The Golden Book* is particularly considered a feminist one by Lessing.
(D) Lessing thinks critics understand her work very well.
36. Generally speaking, Lessing's attitude towards being considered a feminist is
(A) accepting (B) disappointed (C) welcomed (D) patient

Question 37-40

In recent years, many Taiwanese have won awards at international film festivals. However, many theater owners don't consider even prize-winning Taiwanese films to have much commercial potential in their home market. Their viewpoint is generally confirmed by the largely empty seats at showings of locally produced movies. The market share for local films is only about two percent, while more than 95 percent of the market is taken by Hollywood blockbusters. The dominance of American-made films in Taiwan has continued for the past ten years, but the government is proposing some solutions. It is hoped that some legal changes and few promotional projects will help Taiwan's struggling film industry.

One proposal is to give individuals or companies a tax deduction for money spent to produce a film. The idea is that the tax deduction would encourage investments in new films. There are also plans to provide financial support not only for film production, but also for marketing.

37. Which of the following could be a title for this passage?

- (A) The international Movie Industry and Taiwanese Films
- (B) Trends in Taiwanese Moviegoing Habits
- (C) Prize-Winning Taiwanese Films
- (D) A Helping Hand for the Taiwanese Film Industry

38. Which of the following statements is true about Taiwanese films in general?

- (A) They have been commercially successful both locally and abroad.
- (B) Most production of local films has been moved to Hollywood.
- (C) They have won many international awards, but little response from local audiences.
- (D) They have found little success anywhere in the world.

39. What does the passage imply is the main reason that Taiwanese films do not have a large local audience?

- (A) Taiwanese audiences dislike prize-winning films, thinking them "arty."
- (B) American films are superior in quality.
- (C) The Taiwanese film industry is not supported well enough financially.
- (D) Ticket prices for local films are too high.

40. How is the government attempting to help the local film industry?

- (A) By limiting the number of foreign films that local theater owners can show.
- (B) By encourage lower ticket prices for local films.
- (C) By establishing schools for training local filmmaking talent.
- (D) By helping to make creating and promoting local films more affordable.

Part IV. Essay. 20 points.

Do you think that technology alienate people from one another? Why or Why not? Please write a well-structured essay in 150 to 200 words discussing your opinions.

一、解釋名詞: (30%)

- (1) Homeostasis
- (2) Positive feedback
- (3) Mucosa barrier
- (4) Down-regulation
- (5) Synergistic effect
- (6) Stroke volume

二、問答題: (每題 10%)

1. 請分別舉例說明各種不同性質的分子在細胞膜運送(membrane transport)的方式
2. 試述人體調控細胞外液容積及電解質的各種機制
3. 試述骨骼肌收縮的機制
4. 試述與血糖恆定有關之激素及其在人體不同狀態下(如饑餓, 飯後, 壓力, 修復)所扮演的角色
5. 試述循環性休克(circulatory shock)的可能原因與機制
6. 病人有某種蛋白質(如蛋白激酶)功能的缺失時, 他的問題可能出自於哪幾個層面的異常?
7. 何謂骨重塑 (bone remodeling)? 造成骨質疏鬆(osteoporosis)的常見原因為何?

問答題 (每題 20%)

1. 請描述人體骨盆(pelvis)動作有那些？而分別造成這些動作的主要作用肌群為何？
2. 肌電訊號(electromyographic signal)的來源為何？其與肌肉力量值又有何關係？
3. 請畫出 muscle spindle 的構造，並解釋其作用方式與功能；並比較其和 Golgi tendon organ 功能的差異。
4. 何謂本體感覺(proprioception)？與人體那些感覺受器(sensory receptor)有關？在運動醫學上有何應用？
5. 何謂足底壓力(plantar pressure)？人體步行時有何特徵？在運動醫學上有何應用？

每題 20 分

1. 骨骼肌是運動時主要作用肌肉，試敘述骨骼肌的力學特性以及影響力學表現的因子。
2. 腳踝扭傷是運動場上最常見的傷害，請以生物力學的觀點敘述造成傷害的力學機制，並設計一實驗作討論。
3. 請由解剖及生物力學的觀點，描述人體肩關節的構造及特有功能。
4. 撐竿跳的過程中包含許多複雜的動作，請以力學的觀點敘述選手為求得好成績在整個過程中的動作以及所利用的力學原理。
5. 試舉出兩例流體力學在運動場上的應用，並說明所利用的原理。

試題共四題，一題 25 分，共 100 分

1. 當棒球投手的慣用手（投球的手）出現間肩關節疼痛時，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？
2. 何謂網球肘（Tennis elbow）？有何症狀？有那些理學檢查可以評估？如何處置與治療？
3. 膝關節前十字韌帶斷裂的病人會有那些症狀？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. 在籃球場若有選手的踝關節扭傷，急性期該如何處理？急性期過後的處置計劃有那些？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？

問答題(共 5 題，每題 20 分)

一、針對中年女性運動效益的評估探討，請說明以下項目：

1. 您覺得常威脅中年女性健康的疾病有哪些？
2. 針對以上疾病，請舉例說明在實施運動處方前，有哪些體適能與健康指標參數需先行測量，代表的意義為何？
3. 身為體適能指導員，您如何針對以上疾病設定適合的運動處方？

二、請以神經學(neural)、形態學(morphological)、神經內分泌物(neuroendocrine)、代謝(metabolic)與心血管(cardiovascular)各層面，探討阻力訓練(resistance training)在人體神經肌肉系統中產生的適應(adaption)現象，並說明其意義。

三、以下文章摘錄自 2008 年 Journal of Strength and Conditioning Research 期刊，作者為 Lobb LR 等人，標題為 Perceptions of antiobesity medications among personal trainers，請詳閱下文後綜合整理其大綱，並以體適能指導員角色說明您對本研究的看法。

The purpose of this research was to develop a baseline understanding of the knowledge and perceptions that certified personal trainers have of both prescription and nonprescription weight loss drugs. A 16-item qualitative survey instrument was used to interview certified personal trainers. Interviews were conducted via telephone to assess trainers' current level of knowledge and perceptions of weight loss drugs. Questions about both prescription medications and over-the-counter (OTC) medications were included in the survey instrument. All trainers (n = 43) held current National Association of Personal Trainers (NAPT) certifications or certification from the American College of Sports Medicine (ACSM). Criteria for inclusion were dependent on having knowledge about prescription weight loss medications (n = 24). Almost half of the sample had no knowledge of weight loss medications. Of the 43 trainers surveyed, 58% were able to list one currently or previously available medication, 42% were able to list two medications, and no certified personal trainer was able to provide names of more than two medications.

四、個案王小姐是位 35 歲的女性，因車禍導致左側遠端股骨粉碎性骨折，及右手遠端無移位橈尺骨骨折，個案並無其他家族或疾病的病史，左下肢經開放復位內固定，而右上肢則接受閉合性復位內固定治療治療，目前她的左下肢僅能做足尖觸地式承重 (toe-touch-weight-bearing)，而右上肢完全不能承重；個案目前與丈夫同住並從事律師助手的工作，在病患陳述中曾提及在受傷前的兩個星期曾報名一間俱樂部的瑜珈與飲食管理的體重管理課程，但參加的並不規律，所以體能狀況都一直不太好，上下樓梯會喘。藉由以上的資訊，請您幫忙病患規劃設定其在「急性期」、「亞急性期」與「出院後復健期」各別的運動計劃目標(plan)及運動處方(exercise prescription)內容。

五、目前您的指導教授擬規劃一個研究計劃案，題目為「The Effect of Strength Training on Functional Fitness in Older Adults」，請您撰寫一份簡單計劃書，計劃書內容應至少包括設計老年人適當的肌力訓練項目、與規劃老年人的功能性體適能檢測方法，並請於計劃書中詳列所有需完成此計劃案所需之器材及實驗流程。