

I. Vocabulary: Choose the answer that best matches the meaning of each bold word or phrase (20%)

1. Fungal spores, lighter and smaller than all plant seeds, are mainly **dispersed** from their parent by wind.
A. spread widely B. delivered C. made more stable D. collected
2. The **devastating** earthquake and tsunami in Fukushima ruined most of the buildings there and killed thousands of lives.
A. foreboding B. damaging and harmful C. bitter D. intimidating
3. The philosophy of Barack Obama's foreign policy has been **postulated** as "The Obama Doctrine" for the principles it advocates.
A. disputed B. dismissed C. assumed D. scorned
4. Debates have been stirred on whether inmates should become the **integral** part of the social workforce.
A. constituent B. honest C. extrinsic D. outward
5. A mistake that was **inadvertently** made by the clerk has cost him his job.
A. intentionally B. deliberately C. carefully D. accidentally
6. It is **mandatory** that all students, regardless of degree program, take at least five core courses offered by the university.
A. compulsory B. optional C. elective D. voluntarily
7. The Bumrungrad Hospital, one of the leading international hospitals in the world, is known for treating patients with **state-of-the-art** technology.
A. very expensive B. the most advanced C. fashionable D. national treasure
8. Clinicians argue that **rigorous** scientific research is not necessary on alternative medicine, but researchers think otherwise.
A. powerful and forceful B. scrupulously accurate C. lenient D. strenuous
9. Under **optimal** temperature and growth conditions, certain bacteria can have a generation of 15-20 minutes.
A. unfavorable B. adverse C. ideal D. disagreeable
10. The word "Linsanity" is now in most NBA fan's **vernacular** as a result of Jeremy Lin's stunning breakout performance in these past few weeks.
A. collection B. everyday language C. souvenir D. password

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

11. Mary is _____ and would never want to be closed in a small room or space.
A. xenophobic B. homophobic C. acrophobic D. claustrophobic
12. Studies show that _____ children are at high risk for a number of conditions, including overweight, high blood pressure and high cholesterol.
A. slim B. anorexic C. obese D. malnourished
13. The ways web-based social media impact our lives are rather different from the ways traditional media do, the most notable being that social media allow communication to become more _____.
A. interactive B. hyperactive C. stagnant D. torpid
14. According to the International Labor Organization, the recent economic decline is likely to increase the unemployment rate for women as well as to make gender _____ in economic policies more visible.
A. equality B. discrepancy C. disparity D. similarity
15. Children with disabilities are discriminated against and treated as burden mainly due to _____ understanding by society and a lack of social supports.
A. sufficient B. ample C. disinterested D. inadequate

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

16. My (A) strong experience, (B) good training, and (C) am a hard worker (D) qualify me for this position.
17. In (A) recent years, some educators argue that it is better for undergraduate students (B) to focus on only one or two subjects than to study a (C) diversified range of different (D) subject.
18. The furniture and refrigerator were (A) delivered (B) promptly to my home, but they were not the style I (C) ordered, and the (D) price was not right either.

19. The saltwater (A) crocodile, the largest of all living (B) reptiles, can travel long (C) distances at sea and is capable of killing any animal that (D) enter its territory.
20. If you are (A) assigned a specific topic for a research paper, you can begin (B) by going to the library to look for (C) informations that (D) is relevant to the topic.
21. According to scientists, if a woman's waist is 70 percent as wide as her (A) hips, she (B) viewed as attractive by most men because the evolution of the brain (C) associates this body figure (D) with fertility.
22. Even though some companies view bribery (A) as illegal, (B) other tolerate it because it is a good way to speed up the (C) completion of a deal and (D) prevent harassment.

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

On the day of Taiwan's presidential election, hundreds of millions of ethnic Chinese worldwide watched the ballot count on TV and the Internet. Taiwan is the sole ethnic Chinese society (23) a second democratic turnover of power. Ethnic Chinese communities around the world (24) their hopes on this crucial political experiment. By succeeding, we can make unparalleled contributions to the democratic development of all ethnic Chinese communities. This responsibility is (25) to fulfill. The new administration's most urgent task is to lead Taiwan through the daunting challenges from globalization. The world economy (26) profoundly, and newly emerging countries are arising rapidly. We must upgrade Taiwan's international (27) and recover lost opportunities. The uncertainty of the current global economy poses as the main challenge to the revitalization of Taiwan's economy. Yet, we firmly believe that, with right policies and steadfast determination, our goals are (28) our grasp. (Source: President Ma's Inaugural Address in 2008)

23. A. to complete B. has completed C. completed D. to completing
24. A. laid B. is laying C. have laid D. will be laying
25. A. yours B. ours C. theirs D. them
26. A. change B. is changing C. had changed D. changed
27. A. competition B. competitiveness C. competitive D. competitor
28. A. beyond B. under C. next to D. within

The cinema offers a number of possible pleasures. One is scopophilia (a pleasure in looking). There are circumstances in which looking (29) is a source of pleasure, just as, in the reverse formation, there is pleasure in being looked at...[Freud] associated scopophilia with taking other people as objects, (30) them to a controlling and curious gaze... The camera satisfies a primordial wish (31) pleasurable looking, but it also goes further: developing scopophilia (32) its narcissistic aspect. (source: excerpt from "Visual Pleasure and Narrative Cinema" by Luara Mulvey)

29. A. itself B. at it C. forward to D. after
30. A. is subjecting B. subjecting C. subjects D. subjected
31. A. in B. at C. to D. for
32. A. in B. at C. to D. for

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

In a recent experiment, scientists asked a group of prescreened people to look at a set of gray patterns and try to visualize color. Eleven members of the group had been identified as highly susceptible to hypnosis while seven of the subjects were not susceptible. Hypnosis is a trance-like state characterized by heightened focus, concentration, and inner absorption, according to the Mayo Clinic. About 10 percent of people worldwide are highly susceptible to hypnosis while 10 percent are not influenced at all. The remaining 80 percent—the majority of the population—are moderately susceptible, said study co-author William McGeown, a neuroscientist at the U.K.'s Hull University. The new study found that all the subjects who were easily hypnotized reported seeing a range of colors even while not under hypnosis, McGeown said. The scientists didn't just take their word for it—MRI scans showed that the parts of the subjects' brains linked to color perception lit up when they saw the imaginary hues. "We can see changes in these color-sensitive regions of their brains, which they have no way of faking," said McGeown, who published the study with colleagues in the December issue of the journal *Consciousness and Cognition*.

The new study also found that being under hypnosis enhanced color hallucination in susceptible subjects. But those who were not susceptible to hypnosis could not hallucinate color with or without hypnosis. Stephen Kosslyn, a psychologist at Stanford

University, said the results reinforce his team's earlier research. In 2000, Kosslyn and colleagues published one of the first studies on hallucinating color. Their experiment asked highly susceptible people under hypnosis to imagine gray squares as being in color. That study, which used PET scans of the subjects' brains, also found that the subjects activated parts of their brains associated with color perception. The new study confirms a similar finding with MRI scans, which are more often favored in today's experiments because they provide better spatial resolution, co-author McGeown said.

Ultimately, the hallucination research may help medical professionals who use hypnosis to treat a range of conditions, from phobias to pain, McGeown noted. That's because, despite its medical use, many people are fearful of the procedure. The new research shows that suggestion can be almost as powerful a tool, which means there may be a less intimidating alternative for people fearful of hypnosis, he said. "Psychological therapies which consist of making suggestions to a patient—even in the absence of hypnosis—may help with their problem substantially."

(Source: "People Can Hallucinate Color at Will" by Christine Dell'Amore in *National Geographic News*, published December 7, 2011)

33. The word "susceptible" in this passage is closest in meaning to
- A. unresistant
 - B. invulnerable
 - C. unexposed
 - D. doubtful
34. Which of the following is NOT one of the characteristics of hypnosis?
- A. The subject is put into a sleeplike state
 - B. Hypnosis is a state of mental concentration
 - C. A hypnotized mind is judging and critiquing.
 - D. None of the above
35. Which of the following statements is NOT true?
- A. Subjects who are susceptible to hypnosis can hallucinate color.
 - B. Subjects who are unsusceptible to hypnosis can visualize color when being under hypnosis.
 - C. Only MRI scans were used in the experiment conducted by William McGeown and his partner.
 - D. The parts of the brain that respond to color perception are activated when the subjects are hallucinating color.
36. According to McGeown, the findings of hallucination research may be of help to people with
- A. irrational fear of a specific object or activity
 - B. migraine
 - C. fever
 - D. A and B only
37. Which of the following statements best summarizes the central idea of this article?
- A. Hypnosis can help people with their problems.
 - B. Some people are fearful of hypnosis
 - C. Only a portion of people are susceptible to hypnosis.
 - D. People can hallucinate color just with the power of suggestion.

"Green" has become a popular English phrase. It means that something is good for the environment. Customers are looking for products that are "natural," "pure," and "made from recycled materials." They feel good about helping the Earth and about buying food and cosmetics that are healthier for their bodies. Anita Roddick sensed this when she founded The Body Shop in 1976. She advertised cosmetics that were "100 percent pure" and boasted that The Body Shop's products were not tested on animals. Also, she said The Body Shop did not take unfair advantage of the workers in poor countries.

For some people, this sounded too good to be true. In 1994, reporter Jon Entine wrote a famous magazine article disputing Roddick's claims. He said that The Body Shop cosmetics were actually only one percent pure. Entine also pointed out that most of the ingredients in The Body Shop's product were, indeed, tested on animals. This prompted Roddick to change the phrase on her cosmetics labels. Instead of "not tested on animals," it became "against animal testing." Later, other critics joined in. The London chapter of Greenpeace accused The Body Shop of exploiting poor workers.

Today many other "green" companies face similar criticism. Are products marketed as "green" really good for environment, or

do producers simply claim that they are so they can make more money? It's a tough question. Thanks to writers such as Entine, however, one thing is certain: They are less likely to trust the manufacturer's word.

(Source: "The Green Myth" in *Reading for the Real World*, Campus Publishing, 2009)

38. According to the passage, the word "green" has become associated with products
- A. that are not greasy and look fresh
 - B. that are friendly to the environment
 - C. that can be easily absorbed by the body
 - D. All of the above
39. Which of the following claims of The Body Shop was NOT disputed by Jon Entine?
- A. The Body Shop cosmetics did not exploit workers in poor countries.
 - B. The Body Shop cosmetics were not tested on animals.
 - C. The Body Shop cosmetics were 100% pure.
 - D. None of the above
40. Which of the following statements best summarizes the main idea of the article?
- A. Customers should never trust the manufacturers because they are dishonest.
 - B. Green advertising claims could be misleading.
 - C. "Green" is a good marketing strategy to sell products.
 - D. False advertising should be punished.
41. Which of the following statement would the writer of this passage probably agree with?
- A. We should stop buying "green" products because none of them is really "green."
 - B. Anita Roddick has abused the trust of her customers.
 - C. Writers such as Jon Entine work to ruin manufactures' reputation.
 - D. All products are bad for environment.

About a year ago I was diagnosed with cancer. I had a scan at 7:30 in the morning, and it clearly showed a tumor on my pancreas. I didn't even know what a pancreas was. The doctors told me this was almost certainly a type of cancer that is incurable, and that I should expect to live no longer than three to six months. My doctor advised me to go home and get my affairs in order, which is doctor's code for prepare to die. It means to try to tell your kids everything you thought you'd have the next 10 years to tell them in just a few months. It means to make sure everything is buttoned up so that it will be as easy as possible for your family. It means to say your goodbyes. I lived with that diagnosis all day. Later that evening I had a biopsy, where they stuck an endoscope down my throat, through my stomach and into my intestines, put a needle into my pancreas and got a few cells from the tumor. I was sedated, but my wife, who was there, told me that when they viewed the cells under a microscope the doctors started crying because it turned out to be a very rare form of pancreatic cancer that is curable with surgery. I had the surgery and I'm fine now.

This was the closest I've been to facing death, and I hope it's the closest I get for a few more decades. Having lived through it, I can now say this to you with a bit more certainty than when death was a useful but purely intellectual concept:

Your time is limited, so don't waste it living someone else's life. Don't be trapped by dogma — which is living with the results of other people's thinking. Don't let the noise of others' opinions drown out your own inner voice. And most important, have the courage to follow your heart and intuition. They somehow already know what you truly want to become. Everything else is secondary.

When I was young, there was an amazing publication called *The Whole Earth Catalog*, which was one of the bibles of my generation. It was created by a fellow named Stewart Brand not far from here in Menlo Park, and he brought it to life with his poetic touch. This was in the late 1960's, before personal computers and desktop publishing, so it was all made with typewriters, scissors, and polaroid cameras. It was sort of like Google in paperback form, 35 years before Google came along: it was idealistic, and overflowing with neat tools and great notions.

Stewart and his team put out several issues of *The Whole Earth Catalog*, and then when it had run its course, they put out a final issue. It was the mid-1970s, and I was your age. On the back cover of their final issue was a photograph of an early morning country road, the kind you might find yourself hitchhiking on if you were so adventurous. Beneath it were the words:

"Stay Hungry. Stay Foolish." It was their farewell message as they signed off. Stay Hungry. Stay Foolish. And I have always wished that for myself. And now, as you graduate to begin anew, I wish that for you.

Stay Hungry. Stay Foolish.

(Source: Stanford commencement address delivered by **Steve Jobs** on June 12, 2005)

42. Which of the following statements is/are true about Steve Jobs?
- A. He did not seem to be familiar with some body organs before his illness.
 - B. He was told that he would be dead in less than a year.
 - C. The tumor he got could be removed with surgery
 - D. All of the above
43. The phrase "buttoned up" is closest in meaning to
- A. kept silence
 - B. finished
 - C. loosened up
 - D. tied down
44. Why did Steve Jobs' doctors react so strongly to the fact that Jobs' cancer was actually curable?
- A. They were upset over the misdiagnosis they had made.
 - B. They were worried that Job would sue them for medical malpractice.
 - C. They were surprised that they could keep their patient alive.
 - D. None of the above
45. In his speech, what advice did Jobs give to Stanford students?
- A. Do not try to live up to others' expectation
 - B. Do not let other people speak louder than you do
 - C. Always put yourself in others' shoes
 - D. It is a waste of time to live with others
46. What did Jobs probably mean by "Stay Hungry. Stay Foolish"?
- A. He meant that it is good to eat less and study less.
 - B. He meant that it is important to always have the curiosity for knowledge.
 - C. He meant that without enough food one can never be smart.
 - D. He meant that it is foolish to stay hungry.

Tonight is a particular honor for me because, let's face it, my presence on this stage is pretty unlikely.

My father was a foreign student, born and raised in a small village in Kenya. He grew up herding goats, went to school in a tin-roof shack. His father, my grandfather, was a cook, a domestic servant to the British. But my grandfather had larger dreams for his son. Through hard work and perseverance my father got a scholarship to study in a magical place, America, that's shown as a beacon of freedom and opportunity to so many who had come before him. While studying here my father met my mother. She was born in a town on the other side of the world, in Kansas.

My parents shared not only an improbable love; they shared an abiding faith in the possibilities of this nation. They would give me an African name, Barack, or "blessed," believing that in a tolerant America, your name is no barrier to success. They imagined me going to the best schools in the land, even though they weren't rich, because in a generous America you don't have to be rich to achieve your potential.

They're both passed away now. And yet I know that, on this night, they look down on me with great pride. And I stand here today grateful for the diversity of my heritage, aware that my parents' dreams live on in my two precious daughters. I stand here knowing that my story is part of the larger American story, that I owe a debt to all of those who came before me, and that in no other country on Earth is my story even possible.

Tonight, we gather to affirm the greatness of our nation not because of the height of our skyscrapers, or the power of our military, or the size of our economy; our pride is based on a very simple premise, summed up in a declaration made over two hundred years ago: "We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain inalienable rights, that among these are life, liberty and the pursuit of happiness."

That is the true genius of America, a faith in simple dreams, an insistence on small miracles; that we can tuck in our children at night and know that they are fed and clothed and safe from harm; that we can say what we think, write what we think, without hearing a sudden knock on the door; that we can have an idea and start our own business without paying a bribe; that we can participate in the political process without fear of retribution; and that our votes will be counted -- or at least, most of the time.

And fellow Americans, Democrats, Republicans, independents, I say to you, tonight, we have more work to do..... more work to do, for the workers I met in Galesburg, Illinois, who are losing their union jobs at the Maytag plant that's moving to Mexico, and now they're having to compete with their own children for jobs that pay 7 bucks an hour; more to do for the father I met who was losing his job and choking back the tears wondering how he would pay \$4,500 a month for the drugs his son needs without the health benefits that he counted on; more to do for the young woman in East St. Louis, and thousands more like her who have the grades, have the drive, have the will, but don't have the money to go to college.

People don't expect -- people don't expect government to solve all their problems. But they sense, deep in their bones, that with just a slight change in priorities, we can make sure that every child in America has a decent shot at life and that the doors of opportunity remain open to all.

(Source: Excerpt from **Barack Obama's** Democratic Convention Speech delivered on July 27, 2004)

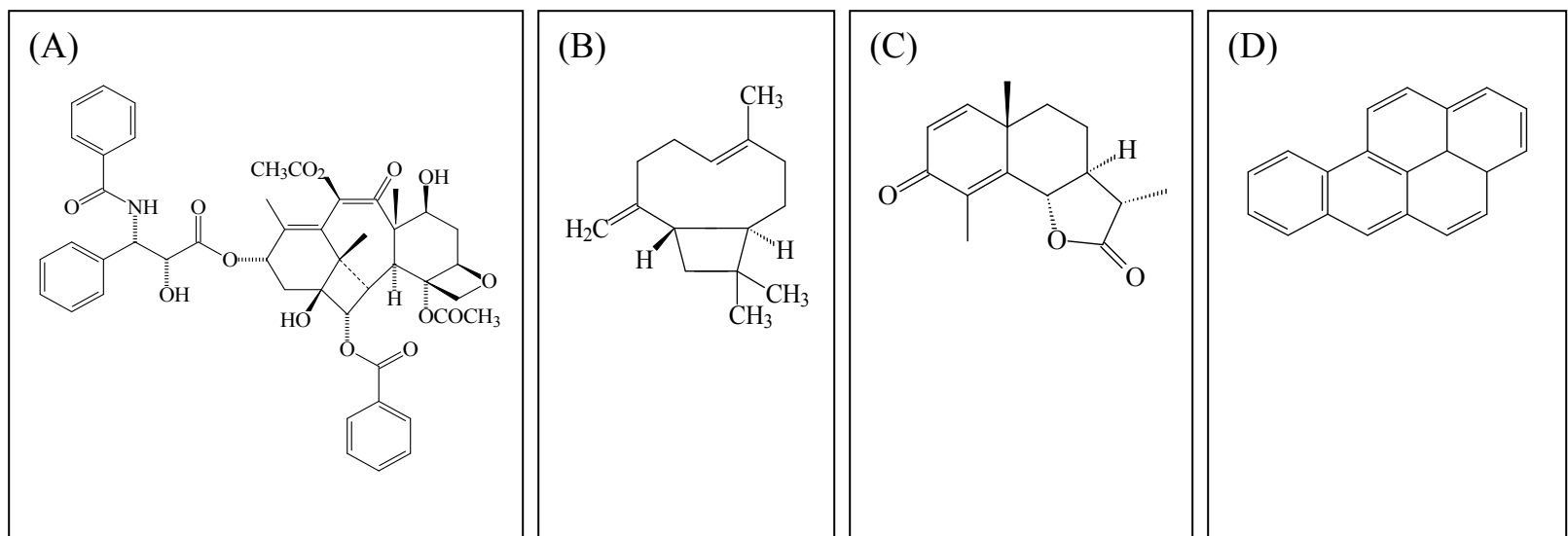
47. Which of the following is/are mentioned in Obama's speech?
- A. Interracial heritage
 - B. Education
 - C. Opportunity
 - D. All of the above
48. Obama's parents thought their son's African name would not hinder his success because
- A. they believed he could go to the best school.
 - B. America is a racially tolerant country
 - C. Obama is blessed by his name
 - D. one of his parents was born in America
49. Which of the following statements would Obama probably have faith in?
- A. All men are created equal
 - B. One does not have to be rich to achieve one's dream in America
 - C. There is no poverty in America
 - D. A and B only
 - E. B and C only
50. What are some of the social causes that Obama would most probably support according to the passage?
- A. Encouraging interracial marriage
 - B. Offering financial aids to low income students
 - C. Lowering the unemployment rate
 - D. A and B only
 - E. B and C only

【單選題】請在答案卷標好題號，寫入答案。(20%)

- 下列生藥基原—成分—骨架屬性配對，何者錯誤？
 - Remannia glutinosa* — Catalpol — Iridoid type
 - Tanacetum parthenium* — Parthenolide — Germacranolide type
 - Coleus forskohlii* — Forskolin — Eudesmanolide type
 - Quillaja saponaria* — Quillaja-saponin — β -amyrin type
- 下列Alkaloids成分之生藥基原—成分—骨架屬性配對，何者錯誤？
 - Camellia sinensis* — Theophylline — Purine alkaloids
 - Rauwolfia serpentina* — Reserpine — Indole alkaloids
 - Papaver somniferum* — Morphine — Imidazole alkaloids
 - Veratrum album* — Protoveratrine — Steroidal alkaloids
- 下列對生藥所含脂質類 (Lipids) 成分之敘述，何者錯誤？
 - 荷荷芭油 (Jojoba oil) 在室溫下為液狀，是屬於固定油 (Fixed oils)
 - Erucic acid為不飽和脂肪酸，Myristic acid為飽和脂肪酸
 - Olive oil有Sweet oil (甜油) 之別名稱呼
 - 花生油 (Peanut oil) 之主要成分是Oleic acid
- 下列各生藥與其揮發油主要組成的配對中，何者正確？
 - 肉桂 (*Cinnamomum cassia*) 含桉油酚 (Cineole)
 - 檸檬桉 (*Eucalyptus citriodora*) 含檸檬油 (Lemon oil)
 - 薰衣草 (*Lavandula angustifolia*) 含麝香草酚 (Thymol)
 - 冬青 (*Gaultheria procumbens*) 含甲基水楊酸 (Methyl salicylate)
- Ginger 之辣味成分主要為：
 - Bisabolene
 - Zingiberene
 - Zingiberol
 - Zingerone
- 某試藥溶於等量之甘油及酒精溶液，用於油類、軟木壁之染色，可檢查分泌細胞及導管，此試劑為下列何種？
 - Fehling's solution
 - Ruthenium red solution
 - Millon's reagent
 - Sudan III solution
- 在飲食中，下列何者是Prostaglandins之最重要前驅物？
 - Lauric acid
 - Linoleic acid
 - Oleic acid
 - Palmitic acid
- 下列「生藥名—科名—藥用部位」之配合，何者錯誤？
 - Feverfew — Compositae — 乾燥頭狀花
 - Ginseng — Araliaceae — 根
 - Kava — Piperaceae — 根及根莖
 - Capsicum — Solanaceae — 成熟果實

9. 下列敘述何者錯誤？
- (A) 沒藥 (Myrrh) 不屬於Balsams
 - (B) 秘魯香膠 (Peruvian balsam) 具收斂作用可應用於治療痔瘡
 - (C) 松香 (Rosin) 屬於Oleo-gum-resin
 - (D) 吐魯香膠 (Tolu balsam) 可應用於藥用糖漿、口香糖及香水製造
10. 下列生藥別名與生藥基原之配對，何者錯誤？
- (A) Buckthorn bark — *Rhamnus purshiana* (Cascara sagrada)
 - (B) Ginseng of Europe — *Matricaria chamomilla* (Chamomile)
 - (C) Mayapple — *Podophyllum peltatum* (American mandrake)
 - (D) Hashish — *Cannabis sativa* (Hemp)
11. 下列敘述何者正確？
- (A) 北美聖草 (Eriodictyon) 主成分含有萜類 (terpenoids)，如eriodictyol，美國印地安人用來治氣喘
 - (B) Solasodine結構屬Steroid-alkaloid glycosides，可被用來作為製造口服避孕藥的原料
 - (C) 大蒜 (Galic) 經myrosinase酵素水解後，主要的刺激性產物為含硫 (S) 的Allyl isothiocyanate
 - (D) Artemisinin用於治瘧疾，主要抗瘧疾活性結構為環內的Peroxide官能基
12. 下列對強心配糖體 (Cardiac glycosides) 的敘述，何者錯誤？
- (A) Cardiac glycosides能抑制細胞膜中的 Na^+ , K^+ -ATPase而產生作用
 - (B) Cardiac glycosides基本骨架上第C-14位上之OH為 α -型式
 - (C) Purpurea glycoside A之苷基 (aglycone) 為Digitoxigenin
 - (D) Lanatoside C所接的糖基 (glycone) 為：2 digitoxose + 1 acetyldigitoxose + 1 glucose
13. 下列有關 Δ^9 -Tetrahydrocannabinol藥理作用的敘述，何者正確？
- 可用於抑制化學療法引起之嘔吐
 - 可抑制化學療法引起之落髮
 - 具止痛作用，但易引起失眠
 - 可刺激AIDS病人之食慾
- (A) 僅 (B) 僅 (C) 僅 (D)
14. 下列對揮發油 (Volatile oils) 的敘述，何者錯誤？
- (A) Anethole屬於Phenolic ether volatile oil
 - (B) (+)-Borneol屬於Bicyclic alcoholic-sesquiterpene volatile oil
 - (C) Ascaridole屬於Peroxide volatile oil
 - (D) (+)-Citronellal屬於Acyclic aldehyde-monoterpene volatile oil
15. 下列何生藥之藥材五官辨識中，具有「鸚哥嘴」或「紅小瓣」之特徵？
- (A) 白及
 - (B) 知母
 - (C) 天麻
 - (D) 黃精

16. 下列何生藥組織鏡檢可發現「樹脂道 (Resin channel)」？
 (A) 黨參 *Codonopsis pilosula* (B) 三七 *Panax notoginseng*
 (C) 酸棗仁 *Ziziphus jujuba* var. *spinosa* (D) 麥門冬 *Ophiopogon spicatus*
17. 下列何者的藥用部位含有 Inulin？
 (A) 番紅花—柱頭 (B) 洋甘菊—頭狀花 (C) 車前子—種子 (D) 桔梗—根
18. 氣喘患者因重複使用 β -Adrenergic agonist 藥物而產生抗藥性，下列何種天然物可改善此一狀況而具有極高的治療價值？
 (A) Naringenin (B) 2-Phenylethanol (C) Echinacoside (D) Forskolin
19. 茵陳蒿所含強力利膽作用成分 6,7-二甲氧基香豆精 (6,7-dimethylesculetin) 在何時含量最高？
 (A) 10 公分的幼苗期 (B) 完全生長的開花前期
 (C) 開花至結果期 (D) 果落植株凋萎期
20. 下列何天然藥物的結構骨架屬於 Diterpenoid？



【簡答及問答題】

本大題共四題，每題裡面或又再有小題。請不必抄題，但須註明題號及小題編號，以利閱卷。

〔第一題〕 (15%)

請簡述下列生藥在組織解剖學上具有哪些特徵 (需敘述其名稱及構造)，在光學顯微鏡鏡檢時，可供作鑑別之用？

- A. 掌葉大黃 *Rheum Palmatum* L. 的根及根莖
 B. 人參 *Panax ginseng* C. A. Mey. 的根
 C. 紅耆 (晉耆) *Hedysarum polybotrys* Hand.-Mazz. 的根
 D. 大麻 *Cannabis sativa* L. 的葉子
 E. 何首烏 *Polygonum multiflorum* Thunb. 的根

[第二題] (15%)

請舉出三種由天然物抽取出來的成分已成為現代醫學（非中醫）的醫師處方藥，請寫出其【活性成分名稱】【生藥中文名】【藥用部位】【成分結構骨架屬性】【主要藥理作用及臨床應用】。
 請注意： 同性質的臨床應用生藥不得重複寫（例如同屬抗癌藥者，僅限寫一種），三種生藥必須分屬三種不同臨床疾病；
 必須是已經上市的醫師處方藥，研發中者、健康食品等不算。

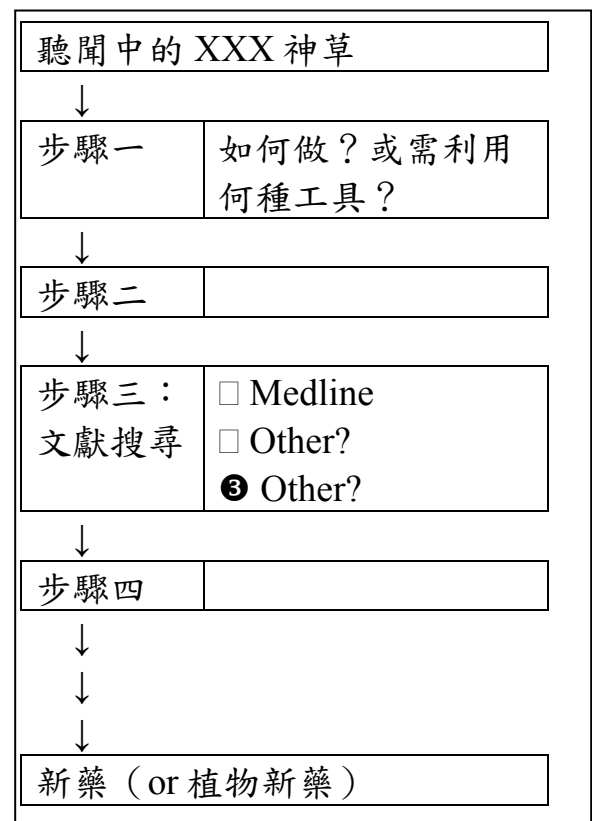
[第三題] (20%)

若您是一位天然藥物的研發人員，在偶然的機會中聽聞某人宣稱他手中握有一種「XXX 神草」，已治好許多人的糖尿病，這「XXX 神草」採自台灣某深山，現由他栽培中。

現在請您設計一個研究流程，如何將「XXX 神草」由聽聞到研發成為一個治療糖尿病的新藥（或植物新藥）。

如右圖所示，請在左邊寫出研究流程的主要步驟名稱（例如假設步驟三是要進行「文獻搜尋」），右邊則寫出此步驟要如何做或需利用何種工具？（例如您會利用 Medline 做文獻搜尋）。

請注意，研究流程必須具完整性且需循序漸進。

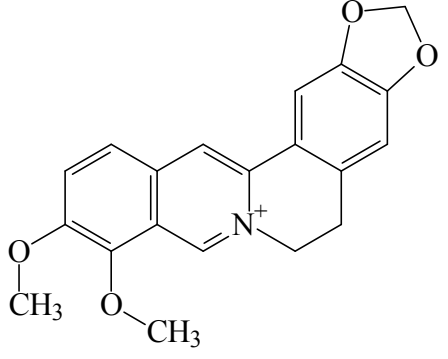


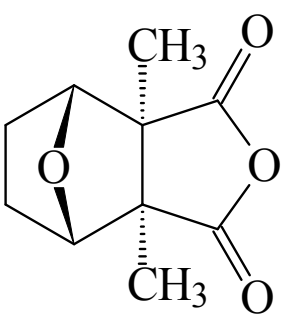
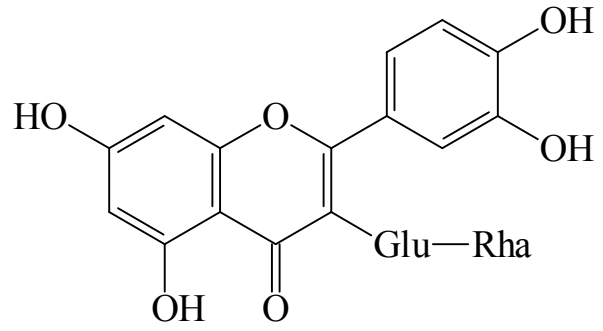
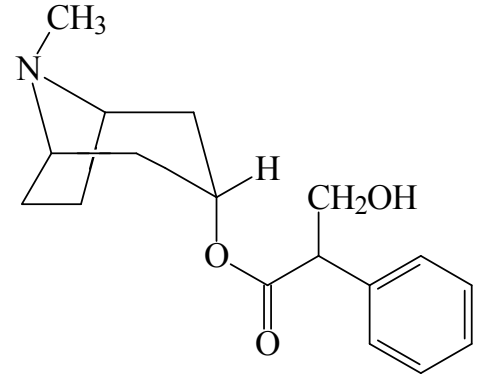
[第四題] (30%)

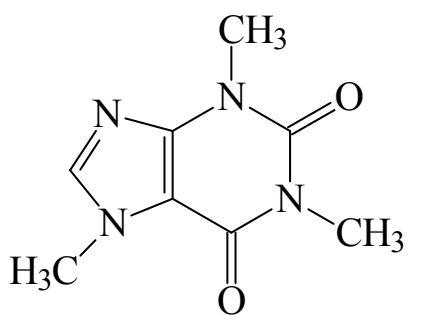
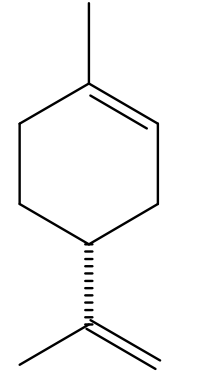
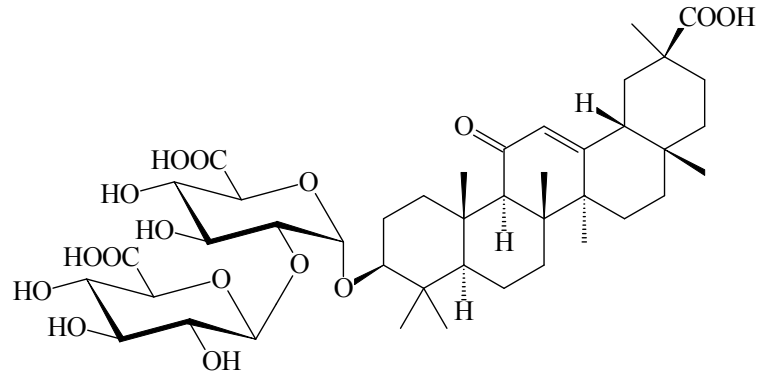
請參考例題所示，寫出 A~F 等 6 個結構式之：

- 成分英文名、□ 結構屬性、⑤ 主含此成分生藥中文名及拉丁學名、④ 此生藥之藥用部位、
⑤ 主要生物活性及應用。

注意：請在答案卷上劃上此結構式再作答。

| | |
|---|--|
| <p>例：</p>  | <p>□ 成分英文名：Berberine □ 結構屬性：生物鹼 (Alkaloids) (註：更精確為 Isoquinone alkaloids) ⑤ 主含此成分生藥中文名：黃連 <i>Coptis chinensis</i> ④ 此生藥之藥用部位：根莖 (Rhizoma) ⑤ 主要生物活性及應用：抗微生物、抗原蟲、抗阿米巴菌、抗志賀氏痢疾桿菌；應用於腸道感染、細菌性菌痢；對急性扁桃腺炎也有療效</p> |
|---|--|

| | | |
|---|--|---|
| <p>A.</p>  | <p>B.</p>  | <p>C.</p>  |
|---|--|---|

| | | |
|---|---|--|
| <p>D.</p>  | <p>E.</p>  | <p>F.</p>  |
|---|---|--|

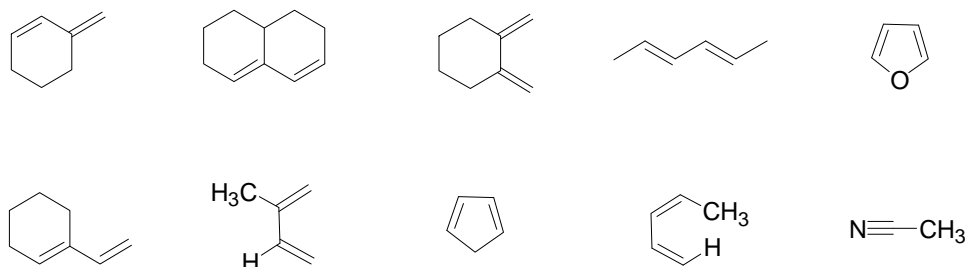
壹、解釋名詞：每題二分，共二十分。

1. mRNA
2. Hsp70
3. IgG
4. Leptin
5. β -oxidation
6. Lysosome
7. Calmodulin
8. Feedback inhibition
9. PCR
10. Histone

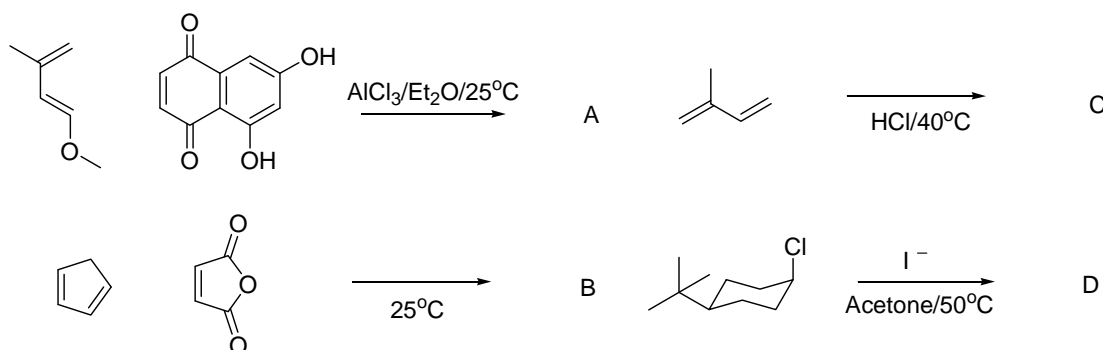
貳、問答題：每題八分，共八十分。

- 一、敘述 TCA cycle 在能量及代謝物質轉換上重要性？
- 二、說明 Pentose phosphate pathway 其主要產物有哪些？
及其有何功能？
- 三、蛋白質可依據其哪些特性分離及純化？
- 四、影響 Enzyme 活性的因素有哪些？
- 五、試述脂質及膽固醇在細胞及生理上有何重要功能？
- 六、說明脂溶性維生素有哪些？並簡述其功用為何？
- 七、引起 DNA 突變的因素有哪些？及如何修復？
- 八、說明粒線體 DNA 有哪些特性？
- 九、敘述 Glucagon 及 Insulin 如何調控 Glucose，以維持血糖恆定。
- 十、請設計如何由中草藥中純化出可用以作為皮膚美白的物質。

1. Which of the following conjugated dienes would not react with a dienophile in a Diels-Alder reaction?(10p)



2. Which major product would you expect to obtain from each of the following reaction?(12p)



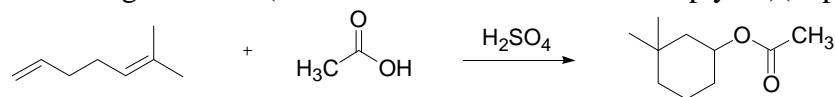
3. Please explain the following terms.(10p)

- S_N2 reaction
- back-side attack

4. For each of the following reactions, give the major elimination product: if the product can exist as stereoisomers, indicate which stereoisomer is obtained in greater yield.(12p)

- (R)-2-bromohexane + high concentration of ^-OH
- (R)-2-bromohexane + H_2O
- trans-1-chloro-2-methylcyclohexane + high concentration of CH_3O^-
- trans-1-chloro-2-methylcyclohexane + CH_3OH

5. Propose a mechanism for the following reaction. (Hint: Number the carbons to help you.)(10p)

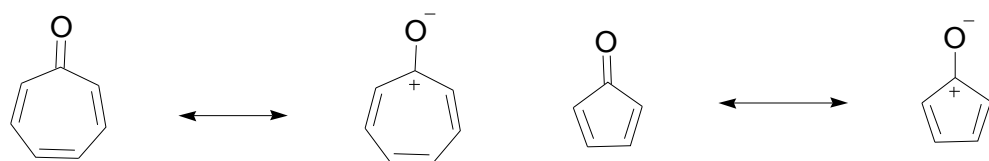


6. Show how the following compounds could be prepared, using ethyne as one of starting materials. Explain why ethyne should be alkylated before, rather than after, nucleophilic addition.(12p)

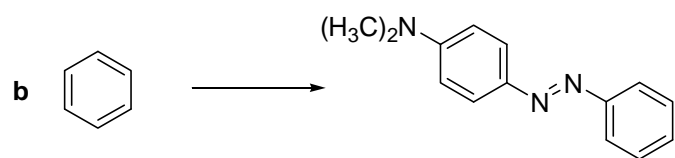
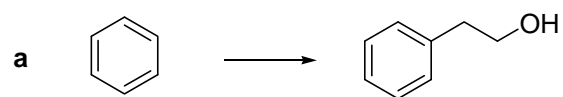
- 1-phenyl-2-butyne-1-ol
- 2-methyl-3-hexyne-2-ol

7. What orbitals contain the electrons represented as lone pairs in the structures of quinoline, indole, imidazole and pyrimidine? Please draw the structure and explain your answer.(8p)

8. Cycloheptatrienone is stable, but cyclopentadienone is so reactive. Please explain it.(6p)



9. Using the given starting material and any necessary reagents to complete each of the following transformations. Show all synthetic intermediates.(20 p)



問答題（總分 100 分）

1. 請解釋與比較 agonist、antagonist、partial agonist。（15 分）
2. 下列 anticancer drugs 有哪些是屬於植物成分：mechlorethamine, vincristine, cisplatin, paclitaxel, fluorouracil, tamoxifen? 並敘述其 mechanism of action。（10 分）
3. Antiplatelet drugs 的 therapeutic indications 為何？請寫出 3 類臨床上使用的 antiplatelet drugs 並敘述其 mechanism of action。（10 分）
4. 主要的 menopause symptoms 有哪些？如何以 hormone replacement therapy 治療？有何注意事項？（15 分）
5. 長期服用 corticosteroids 會產生哪些 adverse effects？Asthma 病人需長期使用 corticosteroids 時宜用哪種給藥方式較能減少 adverse effects 發生？為什麼？（10 分）
6. 請說明為何服用 nitroglycerin 的 angina 病人不可服用 Sildenafil (Viagra)？（10 分）
7. 目前臨床上用來抑制 gastric acid secretion 的藥物有哪兩大類？其 mechanism of action 與 therapeutic indications 為何？（10 分）
8. 某些南美洲原住民會使用含有 tubocurarine 的植物萃取物來作為 arrow poison 以獵捕野生動物，請問其原理為何？另外，請指出此成分之 therapeutic uses。（10 分）
9. 請以 mechanism of action 與 adverse effect 的角度比較 tricyclic antidepressants 與 fluoxetine 類藥物的差異。（10 分）