# 高雄醫學大學九十九學年度學士後醫學系招生考試試題

科目:英文　　考試時間: 80 分鐘

說明:一、選擇題用 2B 鉛筆在「答案卡」上作答，修正時應以橡皮擦擦拭，不得使用修正液(帶)，未遵照正確作答方法而致電腦無法判讀者，考生自行負責。

二、非選擇題限黑色或藍色墨水之鋼筆、原子筆或中性筆，在「答案卷」上作答。

三、試題、答案卡及答案卷必須繳回，不得攜出試場。

**I. Grammar and Sentence Structure: Choose the <u>best</u> answer to complete each sentence. 20 points**
**【單選題】每題 1 分，共 20 題，答錯 1 題倒扣 0.25 分，倒扣至本大題零分為止，未作答，不給分亦不扣分。**

1. _____ in the United States, St. Louis has now become the 24th largest city.
(A) It is the fourth biggest city　(B) It was the fourth biggest city
(C) Once the fourth biggest city　(D) Before the fourth biggest city it was
(E) The fourth biggest city

2. Martha Graham, _____, has run her own dance company for half a century.
(A) is the great modern choreographer　(B) one of the great modern choreographers
(C) that the great modern choreographers　(D) the modern choreographers were great
(E) whom the great modern choreographer is

3. Biochemists use fireflies to study bioluminescence, _____.
(A) the heatless light given off by certain plants and animals
(B) certain plants and animals give off the heatless light
(C) which certain plants and animals give off the heatless light
(D) is the heatless light given off by certain plants and animals
(E) of which is given off the heatless light by certain plants and animals

4. The behavior of gases is explained by _____ the kinetic theory.
(A) scientists who call　(B) what do scientists call　(C) scientists they call
(D) scientists call it　(E) what scientists call

5. How high an average _____?
(A) a fellowship student maintains　(B) must a fellowship student maintain
(C) maintains a fellowship student　(D) will maintain a fellowship student
(E) fellowship maintains a student

6. Valerie has been sick for a long time, so she _____ pain.
(A) used to　(B) is used to　(C) use to　(D) is use to　(E) uses

7. If you _____ to see Mayor Tsu, what would you tell him?
(A) are　(B) will be going　(C) must　(D) want　(E) were

8. “Could I borrow your Jay Chou’s record?”
“I’d get it for you _____ I could remember who last borrowed it.”
(A) except that　(B) if only　(C) on condition that　(D) considering whether
(E) even though

9. I believe _____ very largely due to mistaken views of the world.
(A) this unhappiness are　(B) to be this unhappiness
(C) this be unhappiness　(D) this unhappiness to be
(E) unhappiness to be this

10. The timid mother _____ that they are never safe.
(A) causes her children feel　(B) causes her children feeling
(C) causes her children to feel　(D) feels her children cause
(E) felt the children

11. Only after Norman acquired considerable facility in speaking _____.
(A) finally comes reading and writing　(B) then he learned reading and writing
(C) he learned to read and write　(D) eventually reading and writing are learned
(E) did he learn to read and write

12. Skimming along the surface of the ocean or rising from its depths like delicate balloons, ____ to their aquatic habitat.
(A) jellyfish are perfectly adapted (B) the perfect adaptation of jellyfish
(C) jellyfish are adapted to perfectly (D) perfectly adapted jellyfish
(E) and the adaptation is perfectly for jellyfish

13. The more we learn about the ambassador, the more we have _____.
(A) increase of his status (B) accumulate his reverence (C) praise increasing
(D) respect in him (E) admiration for him

14. Part of the Great Plains, Iowa is famous for ___ fields of corn.
(A) its seemingly endless (B) it seems endless
(C) it is seemingly endless (D) endless seemingly (E) it is endless it seems

15. A person who is not an expert should never eat mushrooms gathered in the woods, _____.
(A) for you may be seriously poisoned if you do (B) for he may be seriously poisoned if you do
(C) for they will be certainly poisoned if they do (D) for he may be seriously poisoned if he does
(E) for he be hit by suddenly poison

16. “Do you need a new tie to go with your new suit, Mr. Lai?”
“ No, _____.”
(A) I am having plenty of ties (B) I think I have several that will do
(C) there are lots of ties for the match (D) I have lots of ties to do it
(E) plenty of ties I have to go

17. “My father will be here tomorrow.”
“ Oh, I thought that he _____ today.”
(A) was coming (B) is coming (C) will come (D) comes (E) would comes

18. “What did he say?”
“He said that he _____ since two o’clock.”
(A) has been writing (B) had been writing (C) was writing (D) wrote (E) has been written

19. The recent discovery of a novel by Harriet Wilson, published in 1859, _____ a landmark in Black American literature.
(A) has brought to light (B) light to brought has
(C) brought to light has (D) has light to brought
(E) to have brought light

20. It seems very difficult _____.
(A) to stop the child to cry (B) restraining the child to cry
(C) to keep the child from crying (D) hold the child’s crying
(E) closing the child’s cry

**II. For each sentence, choose one underline part that contains faulty English. 20 points**
**【單選題】每題 1 分，共 20 題，答錯 1 題倒扣 0.25 分，倒扣至本大題零分為止，未作答，不給分亦不扣分。**

21. For seven years, Spanish censorship did not allow Juan’s name to be mentioned or his works from being published.
A B C D E

22. Mumps are a very common disease which usually affects children.
A B C D E

23. No sooner had the words been spoken so he realized that he should have remained silent.
A B C D E

24. I am sure that our system seems as odd to you as yours do to us.
A B C D E

25. If you were to ask John what did he with his money, he would have difficulty remembering.
A B C D E

26. However, since no ammonia fumes are detected, this theory does not seem credibly.
A B C D E

27. A turkey’s neck is a little longer that than of a duck, and not so gracefully curved as a swan’s.
A B C D E

28. In the field of classical music, Mozart has earned a reputation that is very greater than that of any other composer.
A B C D E

29. Neither France nor the United States have been able to discover a mutually satisfactory plan for gradual disarmament.
A B C D E

30. Providence, Rhode Island, is a busy manufacturing city and seaport, as well the state capital.
A B C D E

31. Though blacks were emancipated with the end of the Civil War in 1865, but the first black senator was not elected into
A B C D
office until 1966.
E

32. Pacific Northwest forests consist of a wide variety of trees and underbrush, which be constantly evolving.
A B C D E

33. Despite of his physical disadvantages, his determination led him to win the race.
A B C D E

34. Christopher Columbus found a New World and a new people despite he hoped to reach Asia.
A B C D E

35. Today it is almost impossible imagining American society as it was before the invention of television.
A B C D E

36. Some problems are relatively simple, others are such complex that there is no way to solve them.
A B C D E

37. Some rocks, such as sedimentary rocks, contain fossils, whereas other rocks, such as igneous rocks, were too hot to have
A B C D
fossils when form.
E

38. Not since Richard Nixon has a U.S. President been indicted for abuse of power and obstruction of justice, or leave office
A B C D
under the threat of impeachment.
E

39. Whether as general, emperor, and author, Julius Caesar was fated to enjoy enduring fame throughout much of the world.
A B C D E

40. Throughout her length career, Maria Marcey has been known for her ability to capture the distinct rhythms of Boston
A B C D
speech in her poems.
E

**III. Reading Comprehension: Choose the best answer. 40 points**

**【單選題】每題 2 分，共 20 題，答錯 1 題倒扣 0.5 分，倒扣至本大題零分為止，未作答，不給分亦不扣分。**

**Passage 1 (Questions 41-45):**

We sometimes think humans are uniquely vulnerable to anxiety, but stress seems to affect the immune defenses of lower animals too. In one experiment, for example, behavioral immunologist Mark Laudenslager, at the University of Denver, gave mild electric shocks to 24 rats. Half the animals could switch off the current by turning a wheel in their enclosure, while the other half could not. The rats in the two groups were paired so that each time one rat turned the wheel it protected both itself and its helpless partner from the shock. Laudenslager found that the immune response was depressed below normal in the helpless rats but not in those that could turn off the electricity. What he has demonstrated, he believes, is that lack of control over an event, not the experience itself, is what weakens the immune system. Other researchers agree, Jay Welss, a psychologist at Duke University School of Medicine has shown that animals who are allowed to control unpleasant stimuli don't develop sleep disturbances or changes in brain chemistry typical of stressed rats. But if the animals are confronted with situations they have no control over, they later behave passively when faced with experiences they can control. Such findings reinforce psychologists' suspicions that the experience or perception of helplessness is one of the most harmful factors in depression.

One of the most starting examples of how the mind can alter the immune response was discovered by chance. In 1975 psychologist Robert Ader at the University of Rochester School of Medicine conditioned mice to avoid saccharin by simultaneously feeding them the sweetener and injecting them with a drug that while suppressing their immune systems caused stomach upsets. Associating the saccharin with the stomach pains, the mice quickly learned to avoid the sweetener. In order to extinguish this dislike for the sweetener, Ader reexposed the animals to saccharin, this time without the drug, and was astonished to find that those mice that had received the highest amounts of sweetener during their earlier conditioning died. He could only speculate that he had so successfully conditioned the rats that saccharin alone now served to weaken their immune systems enough to kill them.

41. Laudenslager’s experiment showed that the immune system of these rats who could turn off the electricity _____.
(A) was strengthened (B) was not affected (C) was altered (D) was weakened (E) was created

42. According to the passage, the experience of helplessness causes rats to _____.
(A) try to control unpleasant stimuli (B) turn off the electricity
(C) behave passively in controllable situations (D) become abnormally suspicious
(E) act madly as if being threatened

43. The reason why the mice in Ader's experiment avoided saccharin was that _____.
(A) they disliked its taste (B) it led stomach pains
(C) it affected their immune systems (D) they associated it with stomachaches
(E) they loathed the smell

44. The passage tells us that the most probable reason for the death of the mice in Ader's experiment was that _____.
(A) they had been weakened psychologically by the saccharin
(B) the sweetener was poisonous to them
(C) their immune systems had been altered by the mind
(D) they had taken too much sweetener during earlier conditioning
(E) the dysfunction of their digestive system

45. It can be concluded from the passage that the immune systems of animals _____.
(A) can be weakened by conditioning (B) can be suppressed by drug injections
(C) can be affected by frequent doses of saccharin (D) can be altered by electric shocks
(E) can be strengthened by the sweetener

**Passage 2 (Questions 46-50):**

Long ago prehistoric man began to domesticate a number of wild plants and animals for his own use. After centuries of being nomadic, of moving from place to place in pursuit of game or of fresh supplies of plant food, humans were finally able to stay in one place and systematically exploit the seasonal resources of one locality. This not only provided more abundant food but also allowed more people to live on a smaller plot of ground. As a result, societies developed knowledge and experience about the world around them; our present-day pets, livestock, and food plants were taken from the wild and developed into the forms we know today.

As centuries passed and human cultures evolved and blossomed, humans began to organize their knowledge of nature into the broad field of natural history. One aspect of early natural history concerned the use of plants for drugs and medicine. The early herbalists sometimes overworked their imaginations in this respect. For instance, it was widely believed that a plant or part of a plant that resembled an internal organ would cure ailments of that organ. Thus, an extract made from a heart-shaped leaf might be prescribed for a person suffering from heart problems. All early societies include individuals who learned to use plants for medicinal purposes. Salves, potions, and brews made from leaves, roots, and the fruits of plants were devised to cure illnesses, to heal wounds, to ward off depression, and even as birth-control measures for women. Often the early herbalists of a society guarded the knowledge of medicinal uses of plants for their select group. They became very powerful members of the early societies and were sometimes credited with magical or religious powers.

Nevertheless, the overall contributions of these early observers provided the <u>rudiments</u> of our present knowledge of drugs and their uses.

46. This passage mainly discusses _____.
(A) the powerful members of the early societies (B) one aspect of early natural history
(C) the beginning of agriculture (D) drugs and their uses
(E) the imagination of prehistoric man

47. Domestication of plants and animals probably occurred because of _____.
(A) need for more readily available food (B) powerful cure of the plants
(C) lack of wild animals and plants (D) early man's power as a hunter
(E) the desire of prehistoric man to be nomadic

48. It can be inferred from the passage that an herbalist is_____.
(A) a dreamer (B) someone who uses plants in medicine (C) an early historian
(D) a florist (E) a farmer

49. Which of the following statements can be inferred from the passage?
(A) The shape of a plant is indicative of its ability to cure ailments of a similarly shaped organ.
(B) Early herbalists were unimaginative.
(C) The work of early herbalists has nothing to do with present day medicine.
(D) There is little relation between a cure for illness and the physical shape of a plant.
(E) Pets, livestock, and plants were devised to cure illness.

50. The word "rudiments" is closest in meaning to _____.
(A) history (B) requirements (C) beginnings (D) protocol (E) regulations

**Passage 3 (Questions 51-55):**

It is true that we cannot be starving and cold and still be happy. But an abundance of food, the satisfaction of elementary physical needs alone, is not enough. A man wants to feel that he is important. He wants to be able not only to express his opinion freely, but to know that it carries some weight; to know that there are some things that he decides, or has a part in deciding, and that he is a needed and useful part of something far bigger than he is.

This hankering to be an individual is probably greater today than ever before. Huge factories, assembly lines, mysterious mechanisms, standardization—these underline the smallness of the individual, because they are so fatally impersonal.

If the immediate future of the world could be made personal to the life of most men; if they could see themselves, because it was true, as actual participants in that development in their own communities, on their own land, at their own jobs and businesses—there would be something to tie to. Men would not only have more things; they would be stronger and happier men.

It is the unique strength of democratic methods that they can provide a way of simulating and releasing the individual resourcefulness and inventiveness, the pride of workmanship, the creative genius of human beings whatever their station or function. A world of science and great machines is still a world of men; our modern task is more difficult, but the opportunity for democratic methods is greater even than in the days of the ax and the hand loom.

51. The most appropriate main theme for this article is _____.
(A) Democracy and Machines
(B) Happiness and Men
(C) Happiness and Democracy
(D) Machines and Happiness
(E) Men and Machines

52. Which of the following statements can best describe one of the main ideas in this passage?
(A) The individual's talent and characteristics have become more vital in this age of machines.
(B) If the near future of the world could meet the increasing demands of democracy, life would be happier and easier.
(C) A world of science and great machines can guarantee that people can lead a better life to come.
(D) Men nowadays still desire faster machines and more advanced technology to standardize their ways of life.
(E) Happiness has nothing to do with science and technology.

53. In the second paragraph, the author used the word "hankering." What does it mean in its context? It means _____.
(A) a fantasy or illusion
(B) a strong, often restless desire
(C) resoluteness with strong will
(D) an unexpected idea
(E) a happy imagination

54. According to the author, an abundance of food can only satisfy basic physical needs, what a man really wants is to _____.
(A) invent new machines and develop new technology
(B) keep life happy and simple
(C) travel around the world to understand the smallness of the individual
(D) express his opinions freely
(E) build up his own self-esteem and self-confidence

55. What is the "unique strength of democratic methods" in this article?
(A) Men are good at releasing their potentials and fulfill their dreams in the age of machines.
(B) People never look down other's resourcefulness and inventiveness.
(C) Human beings are able to spur their own resourcefulness and creativity.
(D) Men can provide a way of creating new ways to solve any kinds of human problems.
(E) The creative genius of human beings know how to invent new machines.

**Passage 4 (Questions 56-60):**

True learning is not a matter of the formal organization of knowledge of books. It is a series of personal experience. The written word makes public a state of mind, it transfers from private to public expression a set of ideas and facts that might otherwise remain unknown. For the writer, it is more than communication. It is the revelation, to oneself as writer, of things that have been hidden, now forced into expression.

On the other side, the side of the reader, it is the revelation of one person to another, a personal communication in an impersonal world. The reader in his true role is a private person, learning what another private person has to tell him. He may be seated in a library with a thousand others, but his way of knowing is by taking to himself the writer whose book he is reading. The teacher exists to get his students ready to read for and by themselves.

My plea is for the restoration of the element in modern life and in modern education at a time when everything is pushing us into collective states of mind, when intellectuals huddle together in committees that issue reports in anonymous prose, when so many people are willing to stripe themselves of their personal qualities in order to become clusters of approved characteristics.

But as far as the deeper aims of education are concerned, the problem is not how to distribute more information to larger numbers of students. That, as we have seen, is fairly easy to solve. You put more students into the same classes and pump the material in.

The question is: What intellectual, personal, and moral qualities are we developing in our students? What are they learning to care about? What are they doing with their lives?

56. The most appropriate title for this article is _____.
(A) Quick Learning and Meaningful Knowledge
(B) The True Knowledge and True Teacher
(C) The Private World of the Men with a Book
(D) Soul in the Body and Thought in a Book
(E) Personal Communication and Public Knowledge

57. According to this article, the deeper goal of education to the author is _____.
(A) to distribute more information and better knowledge to students
(B) to guide students to build up their own anticipations and aims of life
(C) to teach students what are the best role models of intelligence and moral qualities for them to learn
(D) to show students good skills and right knowledge to be useful persons
(E) to give the excellent qualities of knowledge to students

58. Which of the following statements is **NOT** one of the main ideas in this article?
(A) The true learning is not a matter of the formal organization of knowledge of books.
(B) A lot of people are willing to strip themselves of their personal qualities in order to become clusters of approved characteristics.
(C) For the writer, the revelation of things that have been hidden, now forced into expression, is more significant than communication.
(D) Knowledge is useless materials unless it can help students to build up their own qualities of life.
(E) The teachers need to know the important question: “what are they doing with their lives?”

59. According to the article, the true purpose of a teacher is _____.
(A) to help her/his students to know how to learn by themselves
(B) to get her/his students to study as much as they can in and off the classroom
(C) to talk to her/his students about the meaning of life
(D) to be a good friend and tutor of her/his students
(E) to say “I don’t know,” when s/he has no idea of the given question

60. The author said: “My plea is for the restoration of the personal element in the modern life and in modern education at a time when everything is pushing us into collective states of mind, when intellectuals huddle together in committees that issue reports in anonymous prose . . .” What does “huddle together” mean here? It means _____.
(A) “to talk and discuss together”
(B) “to unite together”
(C) “to share different ideas together”
(D) “to vote together”
(E) “to crowd or draw together”

**IV. Writing: Write a well-structured essay (in 250 words) to discuss your idea of “Medical Ethics” in Taiwan. 20 points**

# 高雄醫學大學九十九學年度學士後醫學系招生考試試題

科目:普通生物學　　考試時間: 80 分鐘

說明:一、選擇題用 2B 鉛筆在「答案卡」上作答，修正時應以橡皮擦擦拭，不得使用修正液(帶)，未遵照正確作答方法而致電腦無法判讀者，考生自行負責。
二、試題及答案卡必須繳回，不得攜出試場。

**I.【單選題】1-50 題，每題 1 分，共計 50 分。答錯 1 題倒扣 0.25 分，倒扣至本大題零分為止，未作答，不給分亦不扣分。**

1. Which of the following belongs to paracrine?
① prostaglandin ② NO ③ cytokine ④ glucagon ⑤ melatonin
(A) ③④ (B) ③⑤ (C) ①②③ (D) ③④⑤ (E) ①③⑤

2. Microsatellites DNA is various number of short nucleotide repeat presence in our genomic DNA. If John's father has microsatellites of 9 repeats and 6 repeats, his mother has 6 repeats and 5 repeats. What could be the combination of microsattelites in John's genomic DNA?
① 9 repeats and 6 repeats
② 15 repeats and 12 repeats
③ 6 repeats and 6 repeats
④ 9 repeats and 5 repeats
⑤ 12 repeats and 14 repeats
(A) ①② (B) ①③④ (C) ②④ (D) ③④⑤ (E) ④⑤

3. What control the heart rate?
(A) medulla oblongata (B) neocortex (C) pituitary (D) cerebellum (E) thalamus

4. What is the logical treatment to make a seed break dormancy?
(A) IAA (B) $CO_2$ (C) DTT (D) gibberellins (E) ascorbic acid

5. What will be the amino acid carried by a tRNA whose anticodon sequence is 5'-CAU-3' ? (AUG: Met; CAU: His; UAC: Tyr; GUA: Val; CGU: Arg)
(A) Met (B) His (C) Tyr (D) Val (E) Arg

6. Which of the following statement is **NOT** correct about immunoglobulin producing B cells?
(A) B cell does not express its immunoglobulin gene unless primed by antigen.
(B) B cells rearrange their immunoglobulin gene during their development.
(C) The VDJ rearrangement creates the diversity of immunoglobulin produced by B cells.
(D) Somatic mutation of immunoglobulin gene is one way to produce high affinity antibody.
(E) B cell anergy is one way to induce tolerance.

7. Huntington disease (HD) is inherited dominantly. If homozygote patient of HD is about 4% in a population, what will be the percentage of normal individuals in this population?
(A) 96% (B) 81% (C) 64% (D) 49% (E) 20%

8. In plant leave, products of photosynthesis is collected in which of the following leave cells?
(A) collecting cell (B) transfer cell (C) tracheid (D) boundle sheath cell (E) endodermal cell

9. Which of the following ion channel causes the reflectory period when neuron cannot response to another stimulus shortly after an action potential?
(A) sodium ion channel (B) potassium ion channel (C) proton channel
(D) chloride channel (E) calcium ion channel

10. Glucose in human hepatocyte can be synthesized from which combination of the following non-sugar sources?
① adenine ② alanine ③ lactate ④ palmitate ⑤ glycerol
(A) ①②③ (B) ①④ (C) ②③④⑤ (D) ④⑤ (E) ②③⑤

11. Acne is caused by infection of the sebaceous glands by *Propionibacterium acne*, which is Gram-positive bacterium whose cell wall composed of which of the following?
(A) thick lipopolysaccharide layer
(B) thick peptidoglycan layer
(C) thin lipopolysaccharide layer over a thick peptidoglycan layer
(D) thick lipopolysaccharide layer over a thin peptidoglycan layer
(E) thick lipopolysaccharide layer over a thick peptidoglycan layer

12. Which of the following is the **least** possible growth limitation factor for a plant community?
(A) nitrogen source (B) carbon source (C) phosphorus source (D) potassium source (E) water source

13. According to their pigmentation, which algal group would be most likely to perform photosynthesis in the deepest sea?
(A) red algae (B) green algae (C) brown algae (D) golden algae (E) blue-green algae

14. An action potential of neuron is characterized by the following, **except __**.
(A) it is initiated by opening of voltage-gated potassium channels
(B) it is regarded as a regenerative response
(C) it is regarded as a all-or-none response
(D) it does not degrade in magnitute with space or time
(E) it is transmembrane potential changes that occur in most axons

15. What is hormone most active in a person who is subjective to short-term starvation?
(A) insulin (B) glucagon (C) epinephrine (D) oxytocin (E) glucocorticoids

16. Which of the following hormone secreted from hypothalamus?
(A) thyrotropin releasing hormone (B) oxytocin (C) luteinizing hormone
(D) glucagon (E) glucocorticoids

17. Which of the following is **NOT** a factor influencing membrane fluidity?
(A) number of double bond in lipids (B) temperature (C) flip-flop move of lipids
(D) cholesterol (E) none of the above

18. Which of the following is required for synthesis of prothrombin and blood coagulation factors in hepatocyte?
(A) folic acid (B) vitamin K (C) vitamin B12 (D) vitamin A (E) vitamin B1

19. Where do you find the cells undergo meiosis in plants?
(A) shoot apical meristem (B) pollens (C) embryo sacs (D) corolla
(E) ovule

20. When animal cell loss its extra-membranous oligosaccharides, it will be deficient in which of the following function?
(A) the aggregation of cytoskeleton (B) the intercellular recognition
(C) the exchange of proton across the membrane (D) the change of membrane action potential
(E) the calcium influx or efflux

21. About high blood pressure, which of the following statement is **NOT** correct?
(A) Blood pressure is always high.
(B) Systolic pressure above 144 mmHg and diastolic pressure over 90 mmHg.
(C) It is caused by long term raise of cardiac ouput.
(D) May be caused by kidney dysfunction.
(E) Can be treated with diuretic drug.

22. Which of the following is peptide hormone?
(A) thyroxin (B) epinephrine (C) antidiuretic hormone (D) progesterone
(E) cortisone

23. The translation terminates in which of the following condition?
① ribosome reaches the end of mRNA ② ribosome reaches the stop codon
③ deficient in certain amino acid ④ no aminoacyl-tRNA enters ribosome
⑤ polypeptide folds into protein
(A) ①③ (B) ②④ (C) ①②③ (D) ③④ (E) ②③④

24. Cancer types can be classified according to the origin of cells or tissues. Which of the following statements is ***FALSE****?*
(A) Cancers of the leukemia cells are called lymphomas.
(B) Cancers of the epithelial cells are called carcinomas.
(C) Cancers of the glandular cells are called adenocarcinoma.
(D) Cancers of the connective tissue are called sarcomas.
(E) Cancers of the glial cells are called gliomas.

25. Which of the following RNAs works in RNA splicing?
(A) rRNA (B) tRNA (C) snRNA (D) miRNA (E) mRNA

26. _____ is **NOT** a second messenger.
(A) $Ca^{2+}$ (B) Nitric oxide (C) Phosphatidylinositol 4, 5-bisphosphate (D) Sphingomyelin
(E) ATP

27. Which of the following statements is ***FALSE***?
(A) The sex determined in most ants and bees is by the Z-W system.
(B) Any gene located on a sex chromosome is called a sex-linked gene.
(C) Nondisjunction occurs when members of a chromosome pair fail to separate.
(D) The impact of a single gene on more than one character is called pleiotropy.
(E) Linked genes generally do not follow the laws of independent assortment.

28. Which of the following functional groups participate in chromatin-mediated gene expression?
(A) OH (B) COOH (C) $CH_3$ (D) $NH_2$ (E) CO

29. The eukaryotic DNA replication does **NOT** contain
(A) ligase (B) DNA polymerase (C) helicase (D) topoisomerase (E) gyrase

30. Which of the following statements about signal transduction is ***FALSE*** ?
(A) Signal transduction only can start with a signal to a membrane receptor, and ends with a change in cell function.
(B) The signal must be amplified in a cascade manner within the cells.
(C) Signal transduction can link with all cellular responses respond to external stimuli.
(D) Signal transduction closely links with gene expression to alter metabolism.
(E) Signal transduction is largely carried out by second messenger molecules.

31. Which of the following statements is ***FALSE***?
(A) The cells of the mucous membrane lining human air tubes carry cilia that sweep mucus up and out of the respiratory system.
(B) Adipose tissue is a type of connective tissue.
(C) Epithelial tissues cover both external and internal body surfaces.
(D) The most common type of connective tissue in the human body is fibrous connective tissue.
(E) Connective tissue is different from the other major tissue types in that the cells are sparsely scattered through a nonliving matrix.

32. Which of the following structures does **NOT** belong to the human lymphatic system?
(A) tonsils (B) thymus (C) pancreas (D) appendix (E) bone marrow

33. Which of the following statements regarding the nervous system is ***FALSE***?
(A) Schwann cell is also a kind of nerve cell and found in the peripheral nervous system (PNS).
(B) The functional unit of the nervous system is the neuron.
(C) Sensory neurons convey signal from sensory receptors into the central nervous system (CNS).
(D) Motor neurons convey signals from the CNS to effector cells.
(E) PNS has ganglia, clusters of neuron cell bodies.

34. Which of the following statements about circulatory systems is ***FALSE***?
(A) Arthropods and earthworms have open circulatory system.
(B) The pulmonary circuit carries blood between the heart and gas exchange tissues in the lungs.
(C) The systemic circuit carries blood between the heart and the rest of the body.
(D) Salmon has a single circuit of blood flow and two heart chambers.
(E) Mammals have two atria and two ventricles in their hearts.

35. In eukaryotic cells, 5S rRNA gene is transcribed by _____.
(A) RNA polymerase I (B) RNA polymerase II
(C) RNA polymerase III (D) RNA polymerase IV
(E) RNA polymerase V

36. _____ is produced in the roots of plants. It promotes cell division and growth, and retards the aging of flowers and leaves?
(A) Ethylene (B) Abscisic acid (C) Karrikins (D) Cytokinins (E) Gibberellins

37. Which of the following statements regarding cytoskeleton is true?
(A) The subunit of microfilaments is tubulin.
(B) The subunit of intermediate filaments can be dyneins.
(C) The subunit of intermediate filaments can be keratin.
(D) The subunit of intermediate filaments can be kinesins.
(E) Microtubules are polymers of alpha and beta actin.

38. Trace elements are those required by an organism in only minute quantities. Which of the following is a trace element that is needed by all forms of life?
(A) calcium (B) iron (C) iodine (D) sodium (E) potassium

39. Which is a functional group that helps stabilize proteins by forming covalent cross-links within or between protein molecules?
(A) amino group (B) carboxyl group (C) sulfhydryl group (D) carbonyl group (E) phosphate group

40. Which of the following is (are) the mechanism(s) of epigenetic varivations?
(A) histone acetylation (B) single nucleotide substitution (C) DNA methylation
(D) both A and C (E) all of A, B, and C

41. The process by which unrelated organisms with similar environment demands evolve superficially similar structures is
(A) natural selection (B) homologous (C) convergent evolution
(D) comparative anatomy (E) adaptation

42. On a daily basis, the amount of urine produced is approximately ___ of the amount of filtrate.
(A) 80% - 90% (B) 50% - 60% (C) 30% - 40% (D) 10% - 20% (E) 1% - 2%

43. Which of the following is **NOT** a density-dependent regulation of population size?
(A) competition (B) disease (C) predation (D) biotic potential (E) toxic waste

44. Breathing rate increases because of
(A) insufficient oxygen in the blood (B) excess carbon dioxide in the blood
(C) the accumulation of metabolites in the blood (D) both A and B (E) all of A, B, and C

45. Which of the following vitamins is **incorrectly** associated with its use?
(A) vitamin B2: component of coenzymes $NAD^+$ and $NADP^+$
(B) folic acid: coenzyme in nucleic acid and amino acid metabolism
(C) vitamin C: used in collagen synthesis
(D) vitamin A: component of visual pigments
(E) vitamin K: important in blood clotting

46. Which of the following areas of study examines energy flow and chemical cycling between organisms and the environment?
(A) population ecology (B) community ecology (C) ecosystem ecology (D) landscape ecology (E) global ecology

47. What is the target organ for thyrotropin-releasing hormone?
(A) hypothalamus (B) anterior pituitary (C) posterior pituitary (D) thyroid (E) liver

48. In the formation of a blood clot, damaged cells and platelets release substances which catalyze the conversion of
(A) fibrinogen to fibrin (B) fibrin to fibrinogen (C) prothrombin to thrombin
(D) thrombin to prothrombin (E) thrombin to fibrin

49. Phosphatidylinositol 4,5-bisphosphate ($PIP_2$) is cleaved by phospholipase C into
(A) 1,2-diacylglycerol (DAG) (B) phosphatidylinositol (PI)
(C) inositol 1,4,5-trisphosphate ($IP_3$) (D) A and C (E) B and C

50. The correct sequence, from the most to the least comprehensive, of the taxonomic levels listed here is
(A) kingdom, domain, phylum, class, order, and family
(B) domain, kingdom, phylum, class, order, and family
(C) kingdom, domain, phylum, class, family, and order
(D) kingdom, phylum, domain, class, family, and order
(E) kingdom, phylum, domain, class, family, and order

**Ⅱ.【單選題】51-75 題，每題 2 分，共計 50 分。答錯 1 題倒扣 0.5 分，倒扣至本大題零分為止，未作答，不給分亦不扣分。**

51. Which of the following statement about plant flower is correct?
(A) A flower is the vegetative organ of a plant.
(B) A flower lacking any of sepal, petal, stamen or carpel is an imperfect flower.
(C) Most grasses have imperfect flowers.
(D) Floral parts in all angiosperm are arranged as four whorls.
(E) Floral parts are sequentially initiated at the floral meristem.

52. A larvae of certain fly lives on body surface of a dog feeding on host's skin. What will be the ecological position of this creature?
(A) primary consumer (B) secondary consumer (C) tertiary consumer (D) producer (E) decomposer

53. When we refer to a plant as a "short-day plant", we mean that _____.
(A) the plant flowers in winter
(B) the plant flowers when day is shorter than 12 hours
(C) the plant flowers only in the equator area
(D) the plant flowers when the night is longer than its own critical night length
(E) both A and D

54. Which of the following statements regarding photosynthesis is ***FALSE***?
(A) The principal electron carrier in photosynthesis is NADPH; the principal electron carrier in respiration is NADH.
(B) The light reactions occur in the stroma, while the Calvin cycle occurs in the thylakoid membranes.
(C) The light reactions of photosynthesis can produce ATP, NADPH and $O_2$.
(D) Sunlight is a type of electromagnetic energy.
(E) Chlorophyll *a* reflects green light.

55. Which of the following statements about gas exchange is ***FALSE***?
(A) Breathing control centers are located in parts of the brain called the cerebellum and medulla oblongata.
(B) The control center regulates breathing rate in response to changes in the $CO_2$ level of the blood.
(C) Gills are unsuitable for animals living on land because the large surface area of gills would allow dehydration of the animal.
(D) Unlike the tracheal system of insects, vertebrate lungs are restricted to one location in the body.
(E) Medullary breathing centers directly sense and respond to blood pH and $CO_2$ concentration.

56. Which of the following statements is ***FALSE***?
(A) Speciation, or the formation of new species, is the bridge between microevolution and macroevolution.
(B) The likelihood of allopatric speciation increases when a splinter population is small and isolated from the broader range of the species.
(C) Speciation without geographic isolation is called allopatric speciation.
(D) Organisms carry more than two complete sets of chromosomes in are called as polyploid.
(E) Most polyploid species arise from the hybridization of two parent species and subsequent chromosome duplications.

57. Mammalian Toll-like receptors (TLRs) recognize macromolecules present on certain groups of pathogens. Which of the following is most likely to be recognized by TLR that defends against certain viruses?
(A) lipopolysaccharides (B) double-stranded peptide
(C) double-stranded RNA (D) gylcoproteins
(E) phosphopeptides

58. Hemoglobin is responsible for transporting oxygen from lung to tissues. Bohr shift is one of the most important properties of hemoglobin. Which of the following is **NOT** true about Bohr shift?
(A) Additional oxygen is bound by hemoglobin in lung when pH decreases.
(B) Additional oxygen is released from hemoglobin at a lower pH.
(C) Carbon dioxide is involved in Bohr shift.
(D) Bohr shift helps tissues to obtain more oxygen in exercise.
(E) None of the above.

59. Which of the following can maintain gene expression from lac operon?
(A) High level of glucose from the breakdown of lactose (B) Lactose must binds to the operator
(C) High level of cAMP in the presence of lactose (D) Repressor must binds to operator
(E) Stop producing repressor

60. Animals release their nitrogenous waste in different forms. Which of the following statements are true ?
①Urea is excreted by many marine fishes.
②Ammonia is so toxic that it is rarely excreted as nitrogenous waste by any animals.
③The animals in dry environment could excrete uric acid.
④The form of nitrogenous waste is often an adaptation to animal habitats.
(A) ①②③④ (B) ①② (C) ①②④ (D) ②④ (E) ①③④

61. Diversity of antibodies arises from which of the following?
(A) Assortment of V, D, J gene segments (B) Junctional variation upon V-D or D-J joining
(C) Somatic mutation (D) Assortment of heavy and light chain genes
(E) All of the above

62. Genes A and B are linked on the same chromosome with recombination frequency of 20%. What will be the frequency of offspring with recessive phenotype from a cross between individuals with AB/ab and Ab/aB genotypes?
(A) 20% (B) 10% (C) 6% (D) 4% (E) 2%

63. How does the occurrence of self-fertilization relative to cross-fertilization affect the fixation of an advantageous and recessive allele that newly arose in population by mutation?
(A) The relative occurrence of self-fertilization does not affect the fixation of the allele.
(B) The relative occurrence of self-fertilization affects the fixation of the allele only when the population is very small.
(C) The allele will be fixed more quickly when the occurrence of self-fertilization is higher.
(D) The allele will be fixed more quickly when the occurrence of self-fertilization is lower.
(E) The allele will be fixed more quickly when the occurrence of cross-fertilization is higher.

64. Which of the following statements regarding inheritance is ***FALSE***?
(A) “Ture-breeding” means varieties for each self-fertilization produced offspring all identical to the parent.
(B) The offspring of two different varieties are called hybrids.
(C) A monohybrid cross is a breeding experiment in which the parental varieties differ in some characters.
(D) The hybrid offspring of an F1 cross are the F2 generation.
(E) The hybrid offspring of a cross are the F1 generation.

65. In a Hardy-Weinberg population with two alleles, *A* and *a*, that are in equilibrium. The frequency of *aa* individuals in the population is about 0.09. What is the frequency of individuals with *Aa* genotype?
(A) 0.18 (B) 0.21 (C) 0.36 (D) 0.42 (E) 0.91

66. Which of the following statements regarding epigenetics is ***FALSE***?
(A) The study of inherited changes in genotype, especially in gene expression caused by the changes of DNA sequence.
(B) Specific epigenetic processes include imprinting, gene silencing, X chromosome inactivation, and position effect.
(C) Some regulation can be associated with microRNA.
(D) Some regulation can be associated with DNA methylation.
(E) Some regulation can be associated with histone modification

67. The difference between bacteria and archaea is
(A) Membrane-enclosed organelles are present or not. (B) Circular chromosome.
(C) Streptomycin inhibits growth. (D) Both A and C. (E) All of A, B, and C.

68. Which of the following pathways best summarizes the route of a mineral that is absorbed by a plant?
(A) root hair, epidermis, cortex, stele, endodermis, xylem
(B) root hair, cortex, epidermis, stele, endodermis, xylem
(C) root hair, cortex, epidermis, endodermis, stele, xylem
(D) root hair, epidermis, cortex, endodermis, stele, xylem
(E) root hair, epidermis, stele, cortex, endodermis, xylem

69. Which of these sequences correctly describes the cell cycle?
(A) $G_1$, $G_2$, S, prophase, metaphase, anaphase, telophase
(B) $G_1$, $G_2$, S, prophase, metaphase, telophase, anaphase
(C) S, $G_2$, prophase, metaphase, anaphase, telophase, $G_1$
(D) $G_1$, S, $G_2$, metaphase, prophase, anaphase, telophase
(E) $G_2$, S, prophase, metaphase, anaphase, telophase, $G_1$

70. Which of the following statements about immunoglobulin is ***FALSE***?
(A) IgG is the most abundant immunoglobulin in serum.
(B) IgM can activate classical complement pathway.
(C) IgE can induce mast cell degranulation.
(D) IgG is the first immunoglobulin class produced in a primary response to an antigen.
(E) IgA is the predominant immunoglobulin class in external secretions such as breast milk, saliva and tears.

71. One of the typical ratios resulting from epistatic interactions in dihybrid crosses would be
(A) 9:3:3:1 (B) 1:1:1:1 (C) 9:3:4 (D) 1:2:1 (E) 3:1

72. In the absence of recombination, what ratio of phenotypes is expected in the progeny of the cross aB/Ab × AB/ab?
(A) 3 A-B- : 1 aabb (B) 1 aaB- : 2 A-B- : 1A-bb
(C) 9 A-B- : 3 A-bb : 3 aaB- : 1 aabb (D) 1 A-B- : 1 A-bb : 1 aaB- : 1 aabb
(E) 1 aB : 1 Ab : 1 AB : 1 ab

73. Diabetes insipidus is a disorder marked by production of abnormally large in volume and very dilute urine. It can cause severe dehydration. The mechanism(s) attributing the disorder can be
(A) mutations that prevent ADH production (B) mutations that inactivate aquaporin
(C) mutations that inactivate insulin receptor (D) both A and B (E) all of the A, B, and C

74. Which of the following statements is (are) positive feedback?
(A) The hormones stimulate uterus contraction when child-birth occurs in mammals.
(B) A nursing infant's sucking increases the secretion of a milk-releasing hormone in the mother.
(C) An increase in calcium concentration increases the secretion of a hormone that stores calcium in bone.
(D) Both A and B.
(E) All of A, B, and C.

75. The beginning of a new menstrual cycle is initiated by the production and release of _____, which occurs when inhibition by _____ ceases.
(A) FSH and LH; GnRH (B) GnRH; FSH and LH
(C) estrogen and progesterone; GnRH (D) GnRH; estrogen and progesterone
(E) FSH and LH; estrogen and progesterone

# 高雄醫學大學九十九學年度學士後醫學系招生考試試題

科目:有機化學　　考試時間: 80 分鐘

說明:一、選擇題用 2B 鉛筆在「答案卡」上作答，修正時應以橡皮擦擦拭，不得使用修正液(帶)，未遵照正確作答方法而致電腦無法判讀者，考生自行負責。

二、試題及答案卡必須繳回，不得攜出試場。

**I. Choose one correct answer for the following questions**

**【單選題】每題 1 分，共計 60 分，答錯 1 題倒扣 0.25 分，倒扣至本大題零分為止，未作答，不給分亦不扣分。**

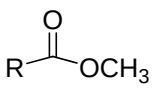
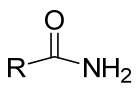
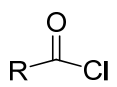
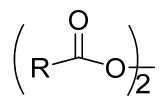
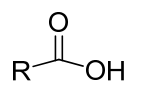
1. About the ionic liquids, which statement is **true**?
(A) They dissolve both polar and nonpolar organic compounds.
(B) They are nonflammable. (C) They are thermally stable.
(D) They do not evaporate. (E) All in the above.

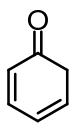
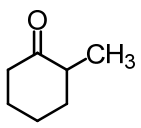
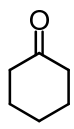
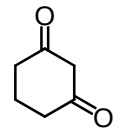
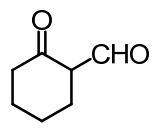
2. When an $S_N2$ reaction was carried out, under which of the following solvents would you expect acetate ion ($CH_3CO_2^{\ominus}$) to be the most reactive nucleophile?
(A) DMSO (B) DMF (C) THF (D) $CH_3OH$ (E) $H_2O$

3. What is the energy difference in kcal/mol between *cis*-1,2-dimethylcyclohexane and its *trans* isomer?
(A) 0 (B) 0.9 (C) 1.8 (D) 2.7 (E) 3.6

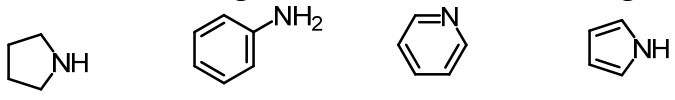
4. Dieldrin, $C_{12}H_8Cl_6O$, is a pentacyclic compound formerly used as an insecticide. How many double bonds does dieldrin have?
(A) 1 (B) 2 (C) 3 (D) 4 (E) 5

5. Which of the following is **not** a major peak in the Mass spectrum of isopentane?
(A) 29 (B) 43 (C) 57 (D) 60 (E) 72

6. Which of the following compounds is the least reactive toward nucleophilic acyl substitution?
(A)  (B)  (C)  (D)  (E) 

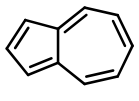
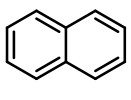
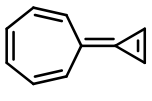
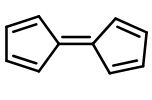
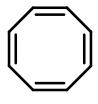
7. When compared to the keto form, the enol form of which of the following compounds is most stable?
(A)  (B)  (C)  (D)  (E) 

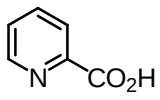
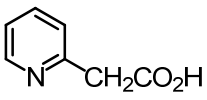
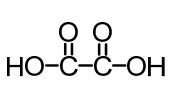
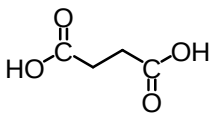
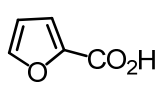
8. Among the butane conformers, which occur at energy minima on a graph of potential energy versus dihedral angle?
(A) gauche only (B) eclipsed and totally eclipsed (C) gauche and anti
(D) eclipsed only (E) anti only

9. Rank the following amines in order of decreasing basicity.

I II III IV
(A) I > II > III > IV (B) II > I > III > IV (C) III > I > II > IV (D) IV > I > III > II (E) I > III > II > IV

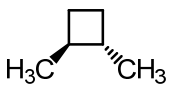
10. Which of the following compounds has the highest boiling point?
(A) $CH_3CH_2CH_2OH$ (B) $CH_3CO_2CH_3$ (C) $CH_3CH_2CO_2H$ (D) $CH_3CH_2CH_2CONH_2$
(E) $CH_3CH_2CN$

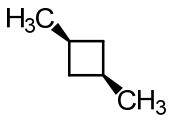
11. In the following alkanes, which one has the lowest strain energy?
(A) cylopropane (B) cyclobutane (C) cyclohexane (D) cycloheptane (E) cyclooctane

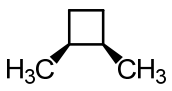
12. Which of the following compounds has the greatest dipole moment?
(A)  (B)  (C)  (D)  (E) 

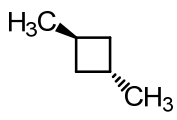
13. Which of the following acids has the greatest rate toward decarboxylation?
(A)  (B)  (C)  (D)  (E) 

14. Which of the following structures is chiral?

(A) 

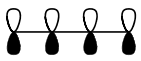
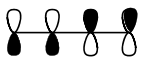
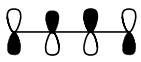
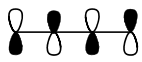
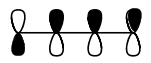
(B) 

(C) 

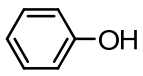
(D) 

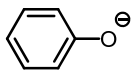
(E) none of above

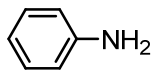
15. Which of the following molecular orbitals is the HOMO of 1,3-butadiene in the ground state?

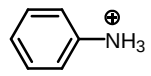
(A) 
(B) 
(C) 
(D) 
(E) 

16. Which of the following species has the greatest $\lambda_{max}$ in the UV spectrum?

(A) 
(B) 

(C) 

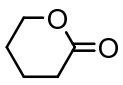
(D) 

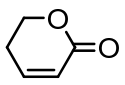
(E) 

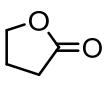

17. Which of the following compounds absorbs the longest wavelength of UV-visible light?
(A) (*Z*)-1,3-hexadiene (B) (*E*)-1,3,5-hexatriene (C) 1-hexene (D) (*E*)-2-butene (E) (*Z*)-2-butene

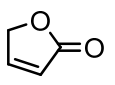
18. Which of the following solvents is best used in IR spectrum?
(A) water (B) ether (C) $CCl_4$ (D) THF (E) methanol

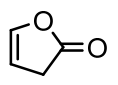
19. Which of the following esters has the highest frequency of the C=O absorption?

(A) 

(B) 

(C) 

(D) 

(E) 

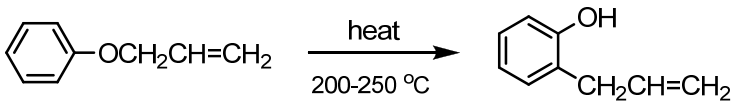

20. Using a 60 MHz spectrometer, a chemist observes the following absorption: doublet, $J$ = 7.0 Hz, at δ 4.00. What would the chemical shift (δ) be in the 300 MHz spectrum?
(A) 3.50 (B) 4.00 (C) 4.50 (D) 20.0 (E) 0.80

21. How many types of nonequivalent protons of the following compounds are possible?

(A) 4 (B) 5 (C) 6 (D) 7 (E) 8

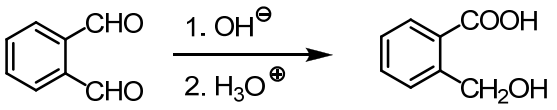
22. The major type of reactions that alkanes undergo is:
(A) electrophilic substitution reactions. (B) electrophilic addition reactions
(C) free radical substitution reactions (D) free radical addition reactions
(E) nucleophilic substitution reactions

23. What is the following name reaction?




(A) Friedel-Crafts alkylation (B) Friedel-Crafts allylation (C) Claisen rearrangement
(D) Ritter reaction (E) Curtius rearrangement

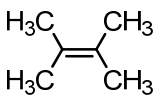
24. What is the following reaction?

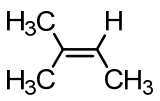


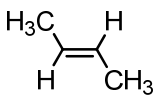

(A) aldol condensation (B) Cannizzaro reaction (C) Claisen-Schmidt reaction
(D) Knoevenagel reaction (E) Wittig reaction

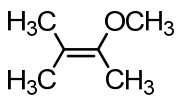
25. What product will be given if indole is reacted with bromine at 0 °C in dioxane?
(A) 2-bromoindole (B) 3-bromoindole (C) 4-bromoindole (D) 5-bromoindole (E) none of the above

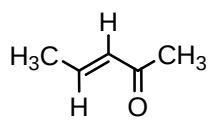
26. Which of the following alkenes has the greatest reactivity toward ozonolysis?

(A) 

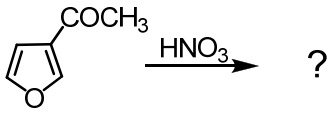
(B) 

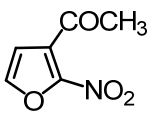
(C) 

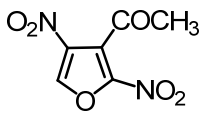
(D) 

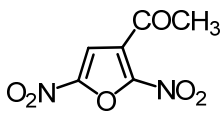
(E) 

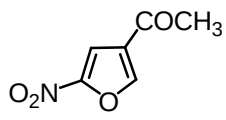

27. What is the major product of the reaction shown below?




(A) 

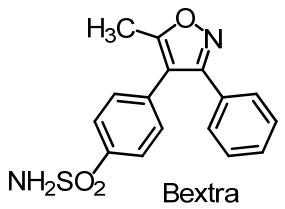
(B) 

(C) 

(D) 

(E) all of the above

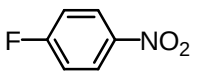
28. Bextra, a COX-2 inhibitor used in the treatment of arthritis, contains a heterocyclic ring. What is this heterocyclic ring named?

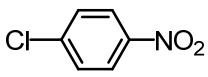


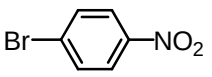
Bextra

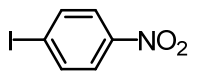
(A) furan ring (B) oxazole ring (C) isoxazole ring (D) thiophene ring (E) indole ring

29. Which of the following halides has the greatest rate toward nucleophilic aromatic substitution?

(A) 

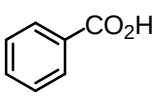
(B) 

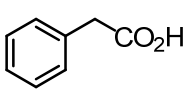
(C) 

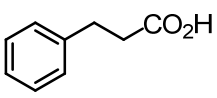
(D) 

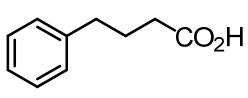

(E) they all have the same rate

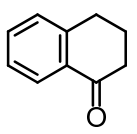
30. Provide the major product in the oxidation of *n*-butylbenzene with $KMnO_4$.

(A) 

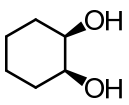
(B) 

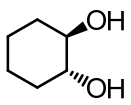
(C) 

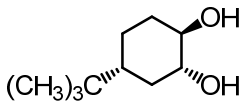
(D) 

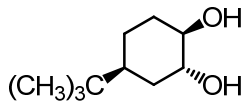
(E) 

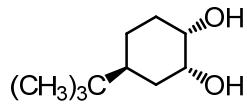

31. Which of the following diols cannot be cleaved by periodic acid?

(A) 

(B) 

(C) 

(D) 

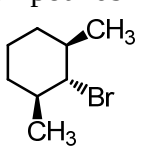
(E) 

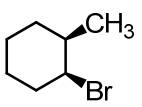

32. A primary kinetic isotope effect could most likely to be observed in which of the following mechanisms?

(A) $S_N1$ and $S_N2$ (B) $S_N2$ (C) E1 and $S_N1$ (D) E2 (E) E1

33. Rank the following compounds in an order of decreasing rate in an E2 reaction.

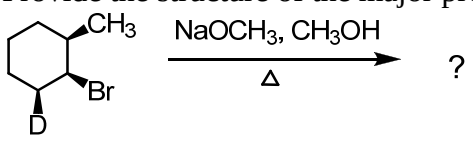
A 

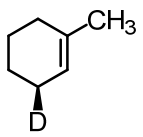
B 

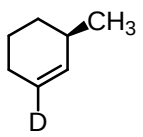
C 

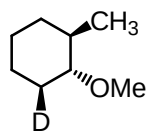

(A) A > B > C (B) A > C > B (C) B > A > C (D) C > A > B (E) C > B > A

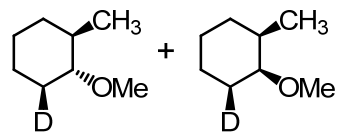
34. Provide the structure of the major product which results in the following reaction.




(A) 

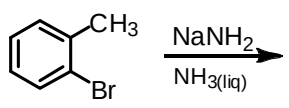
(B) 

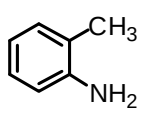
(C) 

(D) 

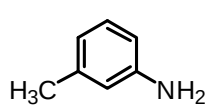
(E) no reaction

35. Provide the organic product(s) of the reaction shown below.

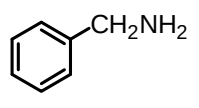


I.



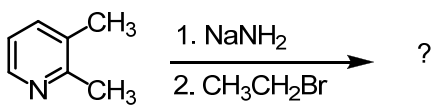
II.



III.

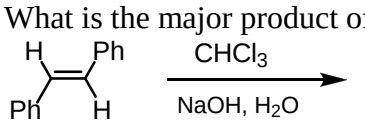
(A) Ⅰ (B) Ⅱ (C) Ⅲ (D) Ⅰ and Ⅱ (E) Ⅰ and Ⅲ

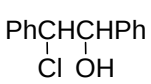
36. What is the major product of the following reaction?

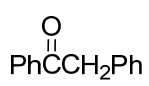


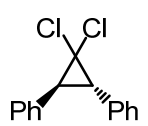

(A) 4-ethyl-2,3-dimethyl-2-propylpyridine (B) 5-ethyl-2,3-dimethyl-2-propylpyridine
(C) 6-ethyl-2,3-dimethyl-2-propylpyridine (D) 2-methyl-3-propylpyridine (E) 3-methyl-2-propylpyridine

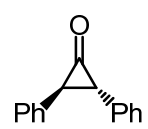
37. What is the major product of the following reaction?




(A) 

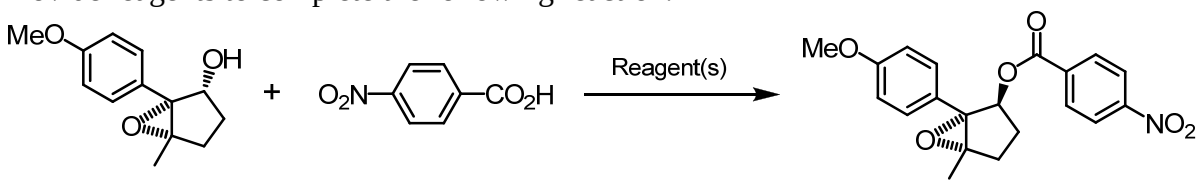
(B) 

(C) 

(D) 

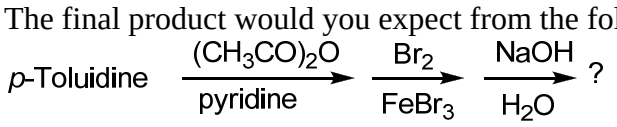
(E) none of the above

38. Provide reagents to complete the following reaction.



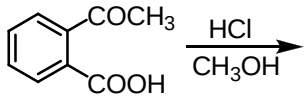

(A) DEAD, $PPh_3$ (B) $H_2SO_4$ (C) NaOH (D) DMSO, oxalyl chloride (E) $Bu_3SnH$

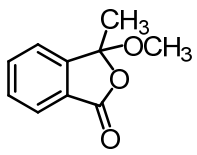
39. The final product would you expect from the following sequential reactions from *p*-toluidine.

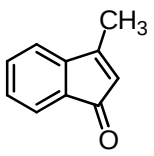


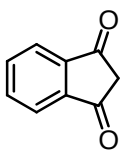

(A) 2-bromo-3-methylaniline (B) 3-bromo-4-methylaniline (C) 2-bromo-4-methylaniline
(D) 2-bromo-4-methylphenol (E) none of the above

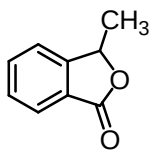
40. What is the major product of the following reaction sequence?

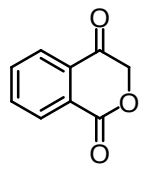



(A) 

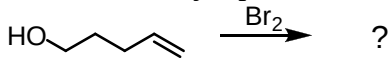
(B) 

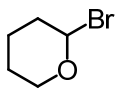
(C) 

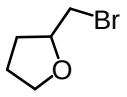
(D) 

(E) 


41. What is the major product of the following reaction?

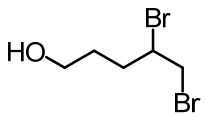



(A) 

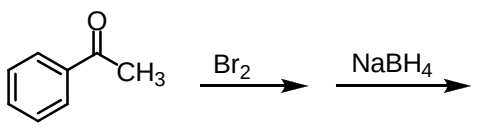
(B) 

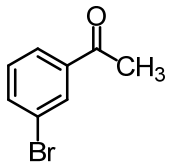
(C) 

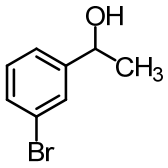
(D) 

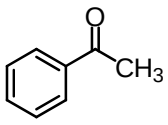
(E) 

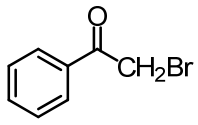

42. What is the major product of the following reaction?

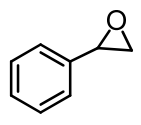



(A) 

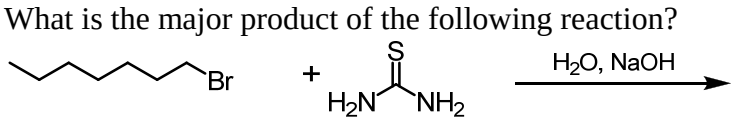
(B) 

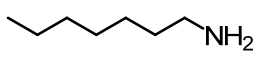
(C) 

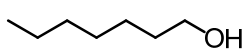
(D) 

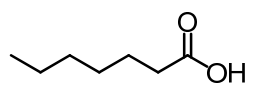
(E) 

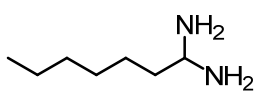

43. What is the major product of the following reaction?

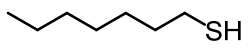



(A) 

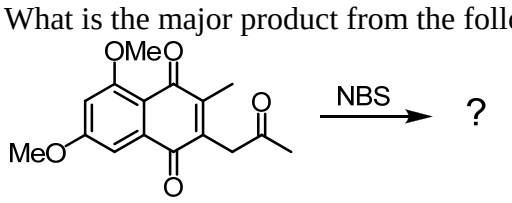
(B) 

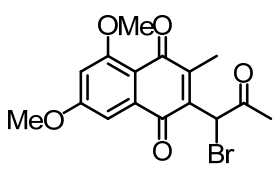
(C) 

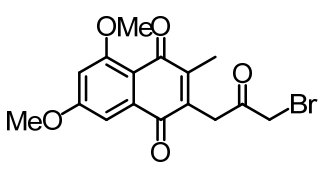
(D) 

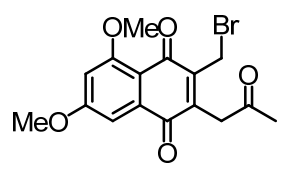
(E) 

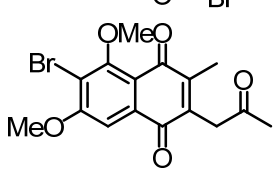

44. What is the major product from the following reaction?

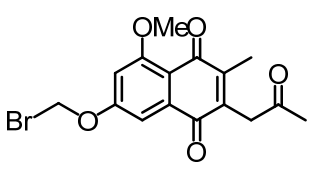



(A) 

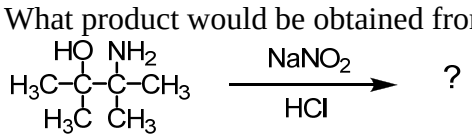
(B) 

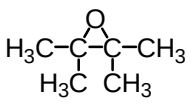
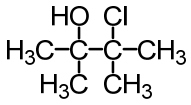
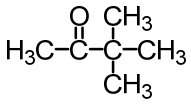
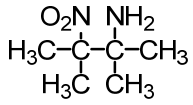
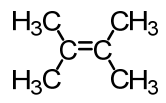
(C) 

(D) 

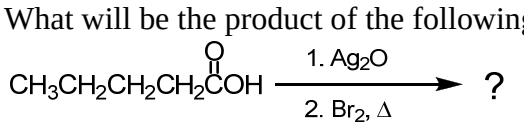
(E) 

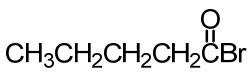
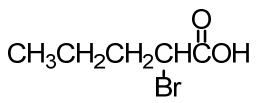
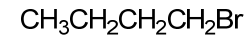
45. What product would be obtained from the following reaction?



(A)  (B)  (C)  (D)  (E) 

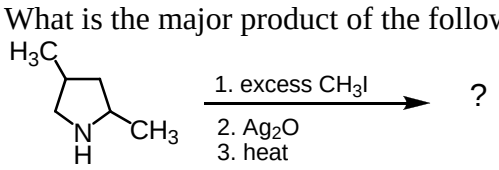
46. What will be the product of the following transformations?

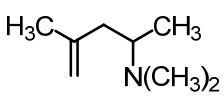
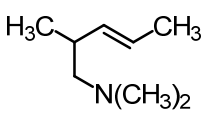
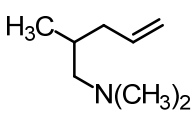
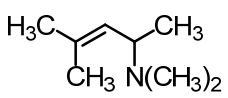


(A)  (B)  (C) 

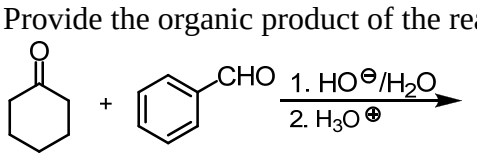
(D)  (E) 

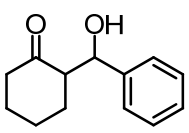
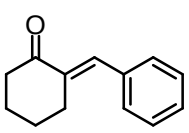
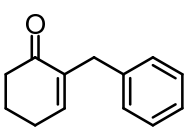
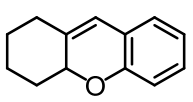
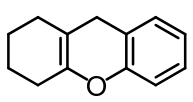
47. What is the major product of the following transformations?



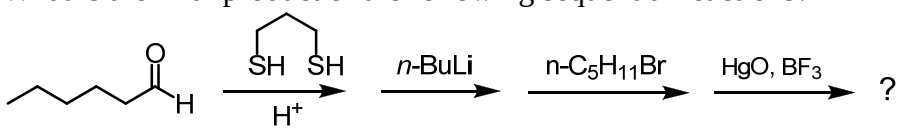
(A)  (B)  (C)  (D)  (E) none of the above

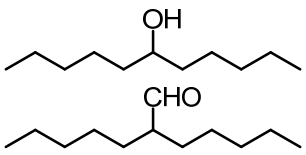
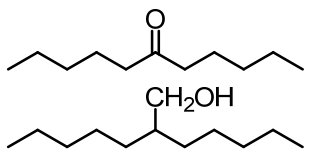
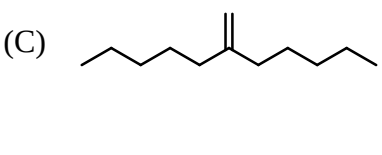
48. Provide the organic product of the reaction shown below.



(A)  (B)  (C)  (D)  (E) 

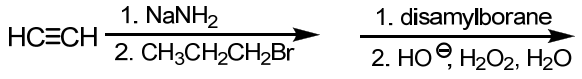
49. What is the final product of the following sequential reactions?

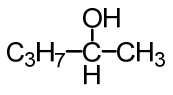


(A)  (B)  (C) 

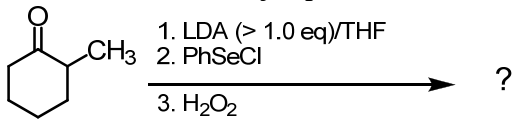
(D)  (E) 

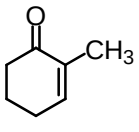
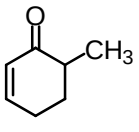
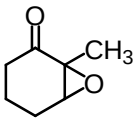
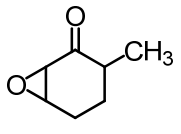
50. What is the product of the following reaction sequence?



(A)  (B)  (C)  (D)  (E) 

51. What is the final major product of the following transformations?



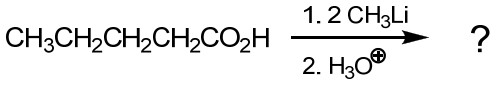
(A)  (B)  (C)  (D)  (E) none of the above

52. Which of the following reaction conditions could **not** be used in the following transformation?

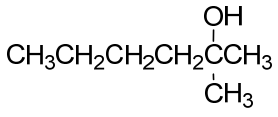


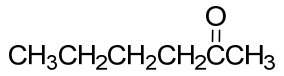
(A)  (B)  (C)  (D)  (E) none of the above

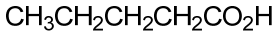
53. What product will be formed by the following reaction conditions?




(A) 

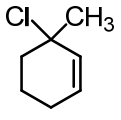

(B) 

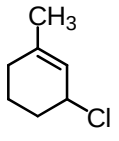

(C) 

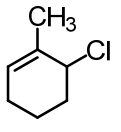

(D) 

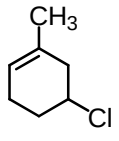

(E) none of the above

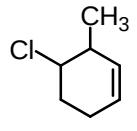
54. Which one is the kinetic product of the following reaction?


(A) 


(B) 


(C) 


(D) 

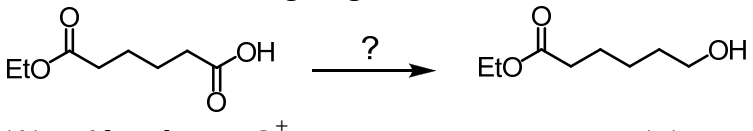

(E) 


55. Which of the following reagents should be used to convert methyl hexanoate to hexanal?

(A) $LiAlH_4$ then $H_3O^+$ (B) $NaBH_4$ then $H_3O^+$ (C) $[(CH_3)_2CHCH_2]_2AlH$, -78 °C then $H_2O$

(D) $LiAlH[OC(CH_3)_3]_3$, -78 °C then $H_2O$ (E) $H_2$, Pd/C

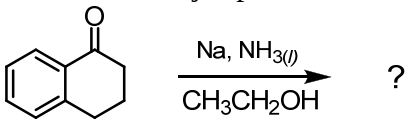
56. Which of the following reagents should be used for the following transformaton?

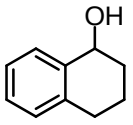


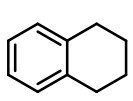

(A) $LiAlH_4$ then $H_3O^+$ (B) $NaBH_4$ then $H_3O^+$ (C) $[(CH_3)_2CHCH_2]_2AlH$, -78 °C then $H_2O$

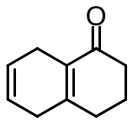
(D) $LiAlH[OC(CH_3)_3]_3$, -78 °C then $H_2O$ (E) $BH_3$ • THF then $H_2O$

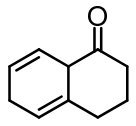
57. What is the major product of the following reaction?

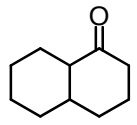



(A) 

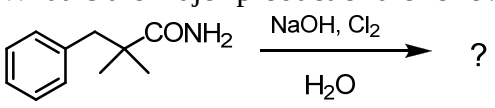

(B) 

(C) 


(D) 


(E) 


58. What is the major product of the following reaction?




(A) 2,2-dimethyl-3-phenylpropanoic acid (B) 2,2-dimethyl-3-chloro-3-phenylpropanoic acid

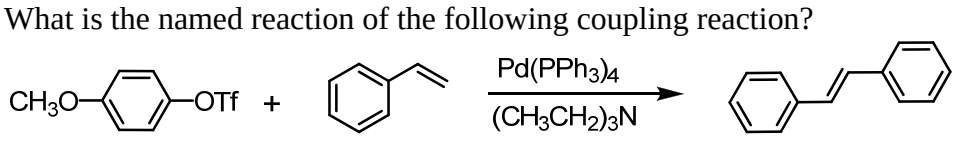
(C) 2,2-dimethyl-3-chloro-3-(2-chloro)phenylpropanoic acid (D) phetermine (E) none of the above

59. What reagents are used to dehydrate amides to nitriles?

I. $P_2O_5$ II. $POCl_3$ III. $SOCl_2$

(A) Ⅰ (B) Ⅱ (C) Ⅲ (D) Ⅰ and Ⅱ (E) all of the above

60. What is the named reaction of the following coupling reaction?



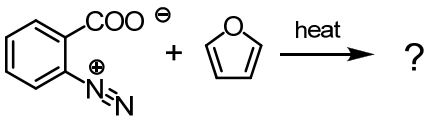

(A) Grignard reaction (B) Gilman reaction (C) Stille reaction (D) Heck reaction (E) Suzuki reaction

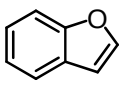
**【單選題】每題 2 分，共計 40 分，答錯 1 題倒扣 0.5 分，倒扣至本大題零分為止，未作答，不給分亦不扣分。**

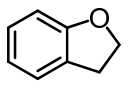
61. Predict the number of carbon resonance lines you would expect in the $^{13}C$-NMR spectra of ethyl acrylate.

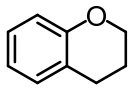
(A) 2 (B) 3 (C) 4 (D) 5 (E) 6

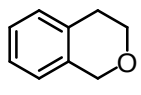
62. What organic product would you expect from the following reaction?

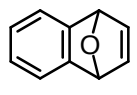



(A) 

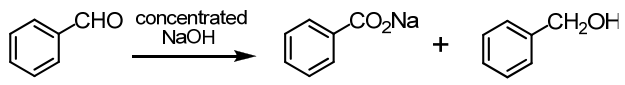

(B) 

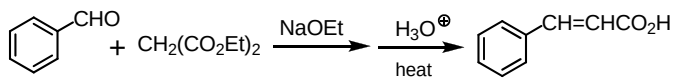

(C) 

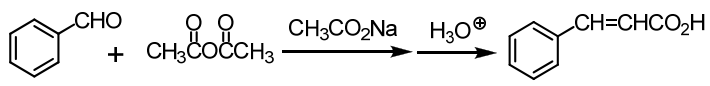

(D) 

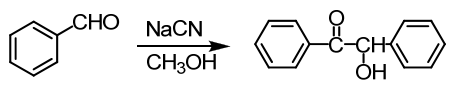

(E) 

63. Which of the following reactions is called Perkin condensation?

(A) 

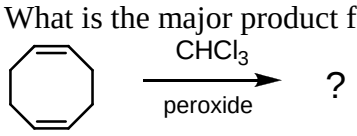

(B) 

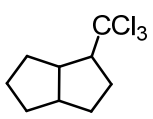

(C) 

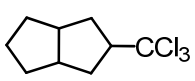

(D) 

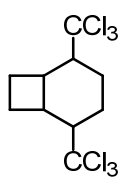

(E) none of the above

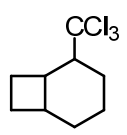
64. What is the major product for the following reaction?

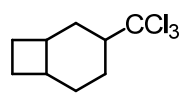



(A) 

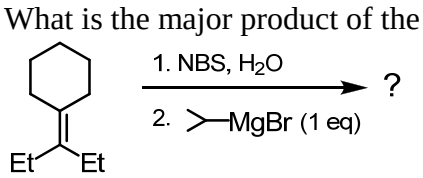

(B) 

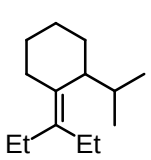

(C) 

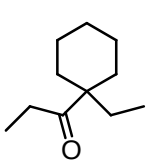

(D) 

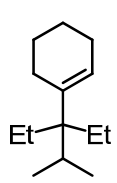

(E) 

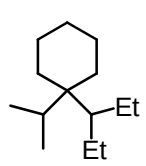

65. What is the major product of the following reaction?

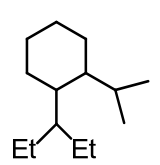



(A) 

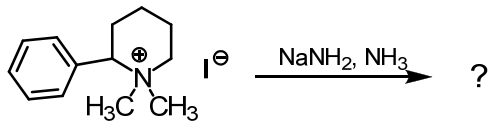

(B) 

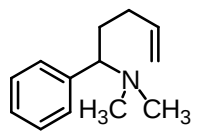

(C) 

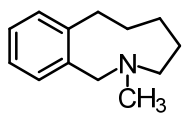

(D) 

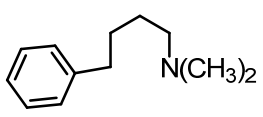

(E) 

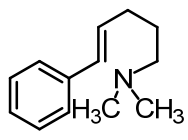

66. Provide the final product of the following reaction.

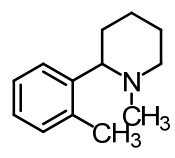



(A) 

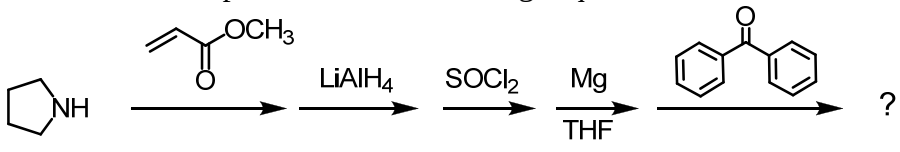

(B) 

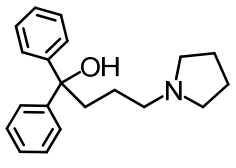

(C) 

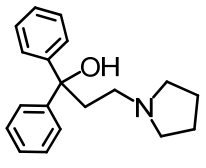

(D) 

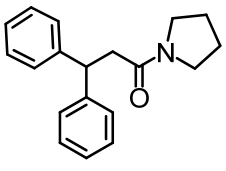

(E) 

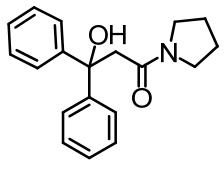

67. What is the final product of the following sequential reactions?

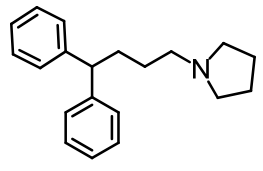



(A) 

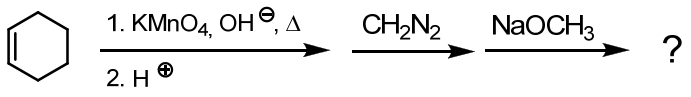

(B) 

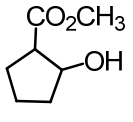

(C) 

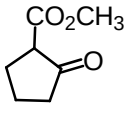

(D) 

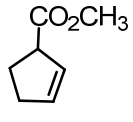

(E) 

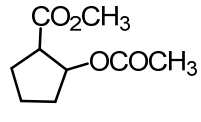

68. What is the major product of the following reaction sequence?

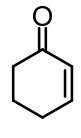



(A) 

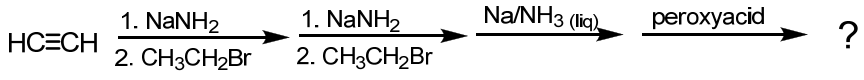

(B) 

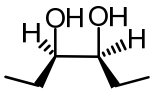

(C) 

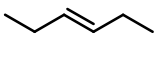

(D) 

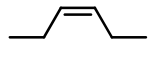

(E) 

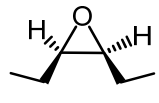

69. What is the product of the following reaction sequence?

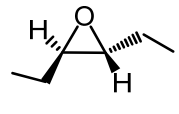



**(A)** 

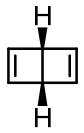
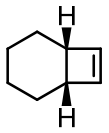
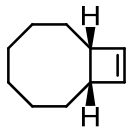

**(B)** 

**(C)** 

**(D)** 

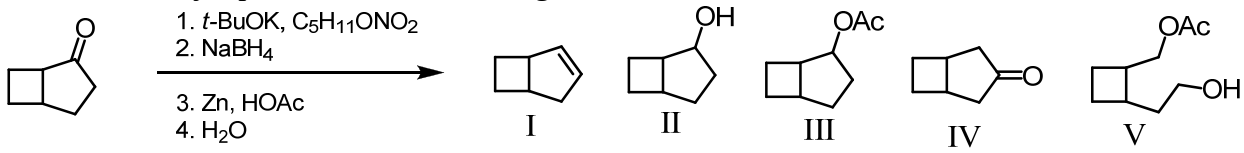

**(E)** 

70. Which of the following compounds will **not** undergo a ring-opening reaction under thermal conditions?


I

II

III

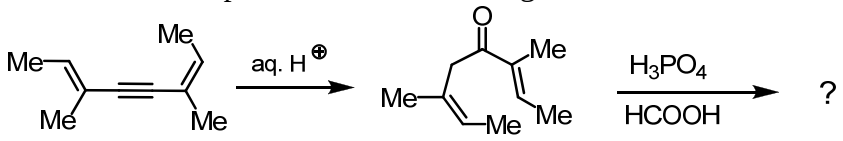
(A) I only (B) II only (C) III only (D) I and II (E) I and III

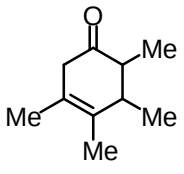
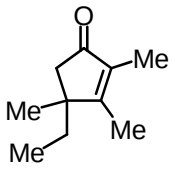
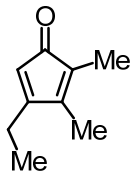
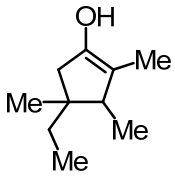
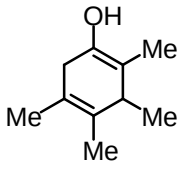
71. What is the major product of the following reaction?




(A) I (B) II (C) I and III (D) IV (E) V

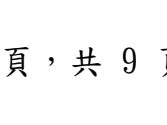
72. Provide the final product of the following reaction.



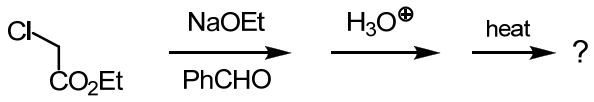

(A)  (B)  (C)  (D)  (E) 

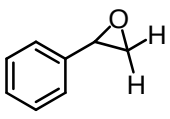
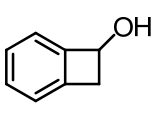
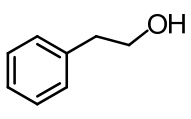
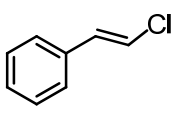
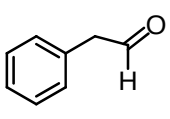
73. Provide the final product of the following reaction.



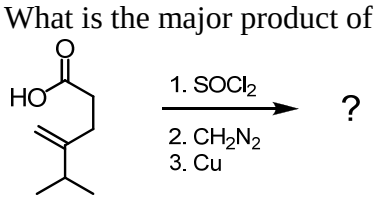

(A)  (B)  (C)  (D)  (E) 

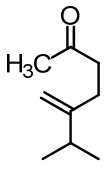
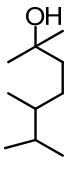
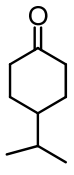
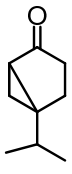
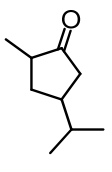
74. Provide the final product of the following reaction.



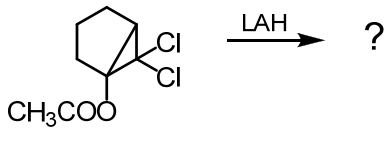

(A)  (B)  (C)  (D)  (E) 

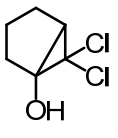
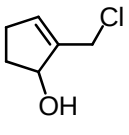
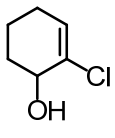
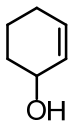
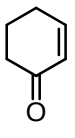
75. What is the major product of the following reaction?



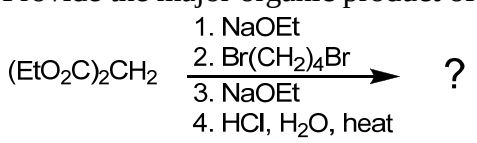

(A)  (B)  (C)  (D)  (E) 

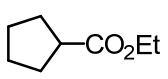
76. What is the major product of the following reaction?

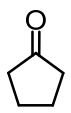


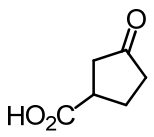

(A)  (B)  (C)  (D)  (E) 

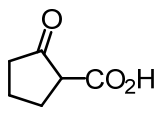
77. Provide the major organic product of the reaction shown below.

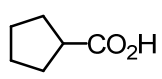



(A) 

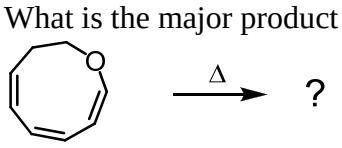

(B) 

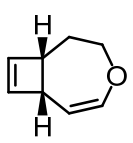

(C) 

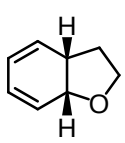

(D) 

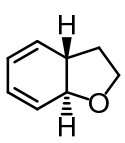

(E) 

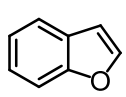

78. What is the major product of the following reaction under thermal conditions?

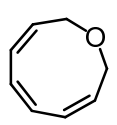



(A) 

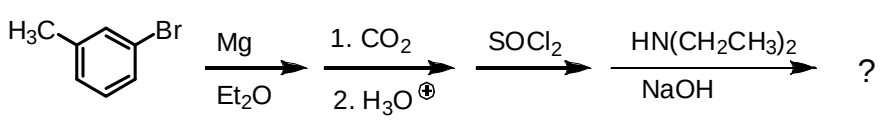

(B) 

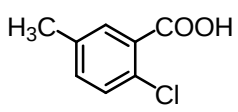

(C) 

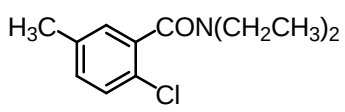

(D) 

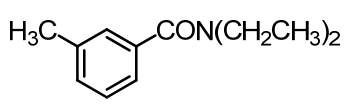

(E) 

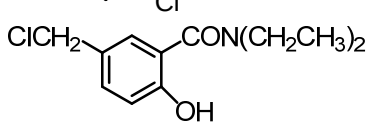

79. Provide the final product of the following reactions.

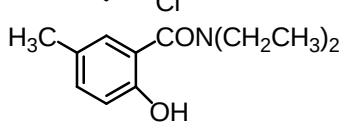



(A) 

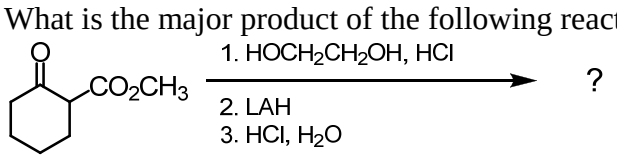

(B) 

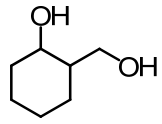

(C) 

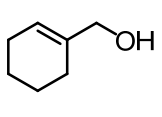

(D) 

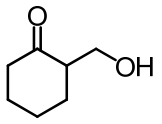

(E) 

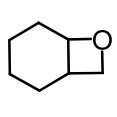

80. What is the major product of the following reactions?

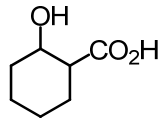



(A) 


(B) 


(C) 


(D) 


(E) 

後醫-英文

| 題號 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 答案 | C | B | A | E | B | B | E | B | D | C | E | A | E | A | D | B | A | B | A | C | E | A | C | D | B |
| 題號 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| 答案 | E | B | D | B | D | C | D | A | D | B | C | E | D | A | A | B | C | D | C | A | B | A | B | D | C |
| 題號 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | | | | | | | | | | | | | | | |
| 答案 | E | A | B | E | C | C | B | E | A | E | | | | | | | | | | | | | | | |

後醫-有機化學

| 題號 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 答案 | E | A | C | A | D | B | A | C | E | D | C | C | B | A | B | C | B | C | E | B | A | C | C | B | B |
| 題號 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| 答案 | D | D | C | A | A | D | D | D | A | D | E | C | A | C | A | B | E | E | C | C | C | C | B | B | C |
| 題號 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 |
| 答案 | B | D | C | A | C | E | D | D | E | D | D | E | C | A | B | B | A | B | E | D | D | B | C | E | D |
| 題號 | 76 | 77 | 78 | 79 | 80 | | | | | | | | | | | | | | | | | | | | |
| 答案 | C | E | B | C | C | | | | | | | | | | | | | | | | | | | | |

後醫-普通生物學

| 題號 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 答案 | C | B | A | D | A | A | C | B | A | E | B | B | A | A | B | A | C | B | E | B | C | C | E | A | C |
| 題號 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| 答案 | E | A | C | E | A | D | C | A | A | C | D | C | B | C | D | C | E | D | D | A | C | B | C | D | B |
| 題號 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 |
| 答案 | E | C | D | B | A | C | C | A | C | E | E | D | C | C | D | A | C | D | C | D | C | B | D | D | E |