高雄醫學大學 100 學年度研究所招生考試試卷

系所:公共衛生學系職業安全衛生碩士班
科目:生物統計及流行病學

※ 可使用電子計算機

1. 請解釋下列名詞:(20%)

(1) Central limit theory

(2) 95% Confidence Interval

(3) Population Attributable Risk Percent

(4) Age-Period-Cohort effect

(5) Berkson bias

2. 有五名工人進入某鋼鐵工廠從事焊接工作，他們在工作前及工作一年後進行血液發炎指標CRP濃度檢測結果如下表，請問工作一年後工人之發炎指數是否顯著提高?(α=0.05, $t_{0.95,4}$= 2.132, $t_{0.975,4}$=2.776)(20%)

編號	工作前 CRP 濃度 (mg/l)	一年後 CRP 濃度 (mg/l)
1	0.8	2.5
2	1.3	1.9
3	1.6	0.7
4	0.4	3.8
5	1.1	4.7

(1)說明虛無假設及對立假設?

(2)請進行統計檢定，發炎指數是否顯著提高?

(3)在本題中第二類誤差的意義爲何?

(4)若要計算本題之統計檢力，應知道那些條件?

3.如果台灣地區近十多年來出生率如下:(15%)

年代	出生率(1/1000)
85	15.2
88	12.9
91	11.1
94	9.1
97	8.6

Coefficients [a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	62.947	5.566		11.309	.001
	年代	-.567	.061	-.983	-9.274	.003

a. Dependent Variable: 出生率

(1)請由上述分析結果，建立年代與出生率之線性模式?
(2)並說明檢定結果並解釋其意義?
(3)是否可用此趨勢來預測未來十年之出生率?爲什麼?

4. 請比較說明下列各種統計模式 Multiple linear regression, Multiple logistic regression, 以及 Cox proportional hazard model 之適用時機?(15%)

5.若欲探討肺癌與職業暴露之相關性，但想盡量減少研究中的 Healthy Worker Survivor Effect，對於以下列兩種研究設計：cross-sectional workplace survey 以及 hospital-based case-control study。請回答下列問題(15%)
(1)你認爲採用那一種研究設計進行最適合?爲什麼?
(2)什麼是 Healthy Worker Survivor Effect?對危險性估計值的影響性爲何?

6.學者想要探討施打新開發疫苗對於 H1N1 新型流感保護效果。他以自願參與者進行隨機分派成兩組，其中一組施打疫苗，另一組施打 placebo，追蹤三個月後評估預防成效，並採用 Intention-to-treat 分析。(15%)
(1)請問此研究設計爲何?
(2)請解釋隨機分派及目的?
(3)何謂 Intention-to-treat 分析?
(4)爲何要以 placebo group 爲對照組?可否只以施打疫苗前後比較?

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一、單選題：(每題 2 分，共計 50 分)

1. 促進性擴散(facilitated diffusion)不具下列何種性質？ (A)經由特定膜蛋白分子(carrier) (B) 將物質由低濃度送往高濃度 (C)特異性(specificity) (D) 飽和現象(saturation)
2. 心電圖中的 P 波與 T 波分別代表： (A)心房去極化與心室再極化 (B)心房再極化與心室再極化 (C)心室去極化與心室再極化 (D)心房再極化與心室去極化
3. 細胞外液中主要陽離子為： (A) 鎂離子 (B)鉀離子 (C) 鈉離子 (D)鈣離子
4. 骨骼的發育過程中，下列哪一種骨骼完全是由軟骨內骨化(endochondral ossification)所形成？ (A) 下頜骨(mandibular bone) (B) 鎖骨(clavicle) (C) 脛骨(tibia) (D) 頂骨(parietal bone)
5. 有關語言功能異常之敘述，下列何者正確？ (A) Arcuate fasciculus 受損導致失去理解語言之能力 (B) Broca's area 受損仍可了解別人說話 (C) Wernicke's area 受損導致表達性失語症 (D) Angular gyrus 受損亦可產生失語症
6. 下列何者與巴金森氏病之主要病理變化最為有關？ (A) substantia nigra (B)Edinger-Westphal nucleus (C)red nucleus (D) amygdale
7. 第三腦室與第四腦室之間的連接構造為何？ (A) ependyma (B) lateral ventricles (C) choroid plexus (D) cerebral aqueduct
8. 下列何者受損會導致短期記憶無法形成新的長期記憶，但不影響過去的長期記憶？ (A) 海馬(hippocampus) (B) 橋腦(pons) (C)顳葉(temporal lobe) (D)枕葉(occipital lobe)
9. 自主神經系統中心位於下列何處？ (A)橋腦 (B)中腦 (C)下視丘 (D)基底核
10. 正常狀態下，何種細胞的動作電位持續的時間最長？ (A)神經細胞 (B)骨骼肌 (C)心肌 (D)平滑肌
11. 平滑肌缺乏下列何種成分？ (A)旋轉素(troponin) (B)肌動蛋白(actin) (C)肌凝蛋白 (myosin) (D)調鈣蛋白(calmodulin)
12. 可體松(cortisol)的分泌，主要受下列那兩種荷爾蒙的調控？ (A)生長激素(GH)，黃體素(LH) (B)促腎上腺皮質素(ACTH)，促腎上腺皮質素釋放激素(CRH) (C)促腎上腺皮質素釋放激素(CRH)，黃體素(LH) (D)促腎上腺皮質素(ACTH)，生長激素(GH)
13. 下列何種激素之受器(receptor)不是位於細胞內？ (A) insulin (B) cortisol (C) testosterone (D) thyroid hormone
14. 抗利尿激素(antidiuretic hormone)主要作用於： (A)腎絲球 (B)近端腎小管(proximal convoluted tubule) (C)集尿管(collecting duct) (D)亨利環(the loop of Henle)
15. 下列何種物質的清除率小於腎小球過濾率(GFR)？ (A)對胺基馬尿酸(PAH) (B)菊糖(inulin) (C)盤尼西林(penicillin) (D)尿素(urea)

16. 腎臟髓質組織間的高張性除了由鈉離子、鉀離子、氯離子維持之外，尚有何種重要物質參與？ (A)尿素 (B)尿酸 (C)鈣離子 (D)抗利尿激素

17. 腎素(renin)是由哪一類細胞分泌？ (A)緻密斑(macula densa) (B)近腎絲球細胞(juxtaglomerular cells) (C)腎臟足細胞(podocytes) (D)遠側曲小管(distal convoluted tubule)的上皮細胞

18. 紅血球生成素(erythropoietin)是由哪一個器官分泌？ (A)脾臟 (B)胰臟 (C)腎臟 (D)心臟

19. 成人之平均動脈壓為 103 mmHg，脈搏壓為 48 mmHg，則其收縮壓為多少 mmHg？ (A) 76 (B) 87 (C) 127 (D) 135

20. 某君心跳 70 次/分鐘，心室舒張期結束時之體積為 130 mL，而心室收縮期結束時之體積為 70 mL；則心輸出量為： (A) 2500 mL (B) 4200 mL (C) 4900 mL (D) 9100 mL

21. 人體循環系統中含血液總量最多的部位？ (A)動脈 (B)靜脈 (C)心臟 (D)微血管

22. 內生性因子(intrinsic factor) 由何種細胞所分泌？ (A)壁細胞(parietal cell) (B)主細胞(chief cell) (C)胃部內分泌細胞(gastric endocrine cell) (D)黏液頸細胞(mucus neck cell)

23. 正常情況下，小腸的運動方式並不包括下列何者？ (A)張力性收縮(tonic contraction) (B)分節式收縮(segmentation contraction) (C)蠕動(peristalsis) (D)總蠕動(mass peristalsis)

24. 因過度焦慮引起過度換氣，會造成下列何種情形？ (A)呼吸性酸中毒 (B)呼吸性鹼中毒 (C)代謝性酸中毒 (D)代謝性鹼中毒

25. 製造抗體的細胞是：(A) T lymphocyte (B) monocyte (C) macrophage (D) plasma cell

二、 名詞解釋：請解釋以下的名詞，敘述力求精簡扼要（每題 4 分，共計 20 分）

1. Homeostasis
2. Hematocrit
3. Excitation-contraction coupling
4. Tetanus
5. Renal autoregulation

三、 問答題：請詳答以下的問題，必要時可用圖或表輔助說明（每題 10 分，共計 30 分）

1. 請說明法蘭克及史達林氏心臟定律(Frank-Starling law of the Heart)? 並使用此定律解釋心室收縮強度如何受心跳過速的影響?

2. 請說明當一個健康成年人從平躺的姿勢突然站起時，身體如何藉由感壓反射調節血壓及心跳?以及血壓及心跳的變化為何？

3. 請解釋當飲食中缺乏碘會造成甲狀腺腫大之發生機制?

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科目: 生物化學

一、解釋名詞： 20 % (每題二分)

1. SNP
2. salvage pathways
3. entropy
4. ketosis
5. cellular senescence
6. isozyme
7. Lesch–Nyhan syndrome
8. carcinogenesis
9. enantiomers
10. uncoupling agents:

二、簡答題： 30 %

1 有一混合胺基酸溶液 Lys, Tyr, Glu, Ala, Arg, Asp，加入一陰離子交換樹脂(pH 12)，試問當 pH 逐漸下降時，這些胺基酸分離的順序為何? **(4%)**

2. What is a neurotransmitter formed from tyrosine by hydroxylation and decarboxylation reactions. **(2%)**

3. Affinity for Oxygen of Hemoglobin. What is the effect of the following changes on the O_2 affinity of hemoglobin? (a) A drop in the pH of blood plasma from 7.4 to 7.2. (b) A decrease in the partial pressure of CO_2 in the lungs from 6 kPa (holding one's breath) to 2 kPa (normal). (c) An increase in the BPG level from 5 mM (normal altitudes) to 8 mM (high altitudes). (d) An increase in CO from 1.0 parts per million (ppm) in a normal indoor atmosphere to 30 ppm in a home that has a malfunctioning or leaking furnace. **(4%)**

4. Draw the structures of β-D-fructofuranose and β-D-fructopyranose. **(4%)**
5. Describe the molecular steps necessary for the generation of force in muscle. **(4%)**
6. Why are the vitamins niacin and riboflavin necessary for metabolism? **(4%)**
7. What is the role of Acetyl-CoA in catabolism? **(4%)**
8. Which enzyme is the major control point for glycolysis in muscle? **(2%)**
9. What is the sequence of start codon? **(2%)**

三、選擇： 20%

1. Which of the following is at a higher level of oxidation than CH_3CHO?
   A) CH_3CH_2OH　B) CH_3CH_3　C) $CH_2=CH_2$　D) CH_3CO_2H　E) none of the above
2. How many electrons do (does) the prosthetic group(s) in cytochrome *c* accept?
   A) none　B) two　C) one　D) one or two　E) four

3. 溫度對酵素反應的影響是：

A)溫度從 50℃升高 10℃，其反應速率加倍　B)能降低反應的活化能　C)在酵素被破壞前每增加 10℃反應速率加倍　D)超過 50℃，反應速率隨著溫度增加而減少

4. 下列那一個維生素為 coenzyme A 的先驅物？

A)核黃素（riboflavin）　B)菸鹼酸（nicotinic acid）　C)泛酸（pantothenic acid）　D)生物素（biotin）

5. 當反應中存在 competitive inhibitor 時，有關酵素反應 kinetics 變化，下列那一個敘述正確？

A)Vmax 減少，Km 減少　B)Vmax 減少，Km 不變

C)Vmax 不變，Km 增加　D)Vmax 增加，Km 減少

6. 下列化合物中哪個不含腺甘酸組分：　A)CoA　B)FMN　C)FAD　D)NAD+

7. The β cells of the islets of Langerhans secrete _____ in response to _____ glucose levels; the α cells release _____ in response in response to ____ glucose levels.

A) insulin, low; glucagon, low　B) insulin, high; glucagon, low

C) glucagon, low; insulin, high　D) glucagon, high; insulin, high

E) none of the above

8. Rank the melting points of the following fatty acids:

(1) *cis*-oleate (18:1)　(2) *trans*-oleate (18:1)　(3) linoleate (18:2)

A) 1 > 2 > 3　B) 2 > 1 > 3

C) 2 > 3 > 1　D) 3 > 1 > 2

E) none of the above

9. Which of the following is most likely to form a liposome?

A) Fatty acids　B) Triacylglycerols　C) Glycerophospholipids　D) Steroids

E) None of the above

10. Vitamin B_1 is a component of the coenzyme

A) phosphofructokinase　B) pyruvate　C) thiamine pyrophosphate　D) ATP

E) pentose phosphate

四、問答題： 30%

1. What are the symptoms of diabetes mellitus?
2. Some antibiotics are small organic molecules that act as inhibitors of the biochemical pathways by which peptidoglycans are synthesized. Why are these antibiotics so effective against bacterial disease? Why do antibiotics sometimes become less effective over time?
3. How can the levels of lactate dehydrogenase in the blood be correlated to heart disease?

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NOTE: on your answer sheet, find the number of the question and mark your answer.

I. SENTENCE COMPLETION: You are to choose the word or phrase that best completes the sentence. 20%

1. Joe is really creative fashion designer. He can always be relied on to ____ new ideas.
   (A) put up with (B) come up with (C) face up with (D) draw to
2. Everyone admired Dr. Victor Chang, the brilliant heart transplant surgeon. He was respected _____the world.
   (A) outside (B) over (C) throughout (D) through
3. At the end of the century, the Y2Kcomputer virus could have caused ____ in information systems worldwide.
   (A) problem (B) chaos (C) stoppage (D) fright
4. Have you ever ____ about a career in the electronics industry? I think you would be very successful.
   (A) thought (B) spoken (C) discussed (D) considered
5. I love springtime, when the mountains are covered in wild flowers. It's the most ____ time of the year.
   (A) awful (B) delightful (C) painful (D) fruitful
6. We've having a college reunion next week. ____ you like to join us?
   (A) Will (B) Can (C) Could (D) Would
7. Sometimes I get sick of studying, but I know it will be ____ it in the end.
   (A) good (B) useful (C) worth (D) worthwhile
8. It's very ____ when someone uses a cell phone during a movie because it disturbs other people.
   (A) annoyed (B) interesting (C) annoying (D) frustrated
9. ____ my grandfather is 85 years old, he still walks miles everyday.
   (A) Even (B) Despite (C) Although (D) However
10. That's the last time I'll go to that restaurant. The food made me ____ and I had to see a doctor.
    (A) angry (B) sad (C) unhappy (D) sick

II. CLOZE TEST: This passage contains several missing words or phrases. You are to choose the best answer for each missing word or phrase in the passage. 10%

The small Greek island of Eleni is not popular with tourists because it is isolated and difficult to get to. There are only two ferry services a week from Athens and the trip _(11)_ eleven hours. Nevertheless, it was the ideal _(12)_ for me to take the quiet vacation that I had dreamed about for so long. On the first evening, I sat on a sandy beach admiring the beauty of the sea and _(13)_ the

peaceful atmosphere. The air was clear and warm and everything was bathed in the orange rays of the setting sun that was slowly disappearing (14) the western horizon. A few small boats could be seen returning to harbor with their cargoes of freshly caught fish. As I sat there relaxing, I realized that I did not miss the city life with all its pressure and noise and I thought to myself: "I wish I (15) stay here forever."

11. (A) is taking (B) takes (C) to take (D) taking
12. (A) city (B) home (C) place (D) continent
13. (A) hating (B) thinking (C) enjoying (D) watching
14. (A) below (B) over (C) between (D) beside
15. (A) ought to (B) should (C) could (D) would

III. WRITTEN EXPRESSION: In questions 16-20each sentence has four underlined words or phrases. Identify the one underlined word or phrase that must be changed in order for the sentence to be correct. 10%

16. Until the 1910 formation (A) of the National Hockey Association in eastern Canada, professional and amateur (B) teams were (C) allowed to playfully (D) together.
17. Widely acknowledged as a great (A) and import playwright, Eugene O'Neill brought to the United States stage it (B) was probably its first (C) really serious drama (D).
18. The first known (A) radio program among (B) the United States was (C) broadcast on Christmas Eve, 1906, by Reginald Fessenden from his experimental (D) station at Brant Rock, Massachusetts.
19. A typical (A) feature-length film costs (B) millions of dollars to make (C) and requires the skillful (D) of hundreds of workers.
20. Tilling means preparation (A) the soil to plant (B) the seeds and keeping the soil in (C) the best condition to help the crop grow until it is (D) ready for harvesting.

IV. COMPREHENSION QUESTION: read each passage and answer questions. 60%

The dulcimer is a musical instrument that basically consists of a wooden box with strings stretched across it. The name *dulcimer* is derived from the Latin word *dulcis* (sweet) and the Greek word *melos* (song). In one form or another, dulcimers have been around since ancient times. Their earliest ancestor was a Persian instrument called the santir. Dulcimer-like instruments were played throughout the Middle East and North Africa and were brought by Arab musicians to Spain. From Spain, the instrument spread throughout Europe and eventually to North America.

Today there are two main types of dulcimers played in the United States: the hammered dulcimer and the Appalachian, or mountain, dulcimer. The hammered dulcimer is shaped like a

trapezoid and is played by striking the strings with small wooden hammers called mallets. On the hammered dulcimer, there are sets of two, three, or four strings, called courses, which are struck at one time to sound each note. There are from twelve to twenty-two courses on a standard hammered dulcimer. The hammered dulcimer is usually categorized as belonging to the zither family of string instruments, although some musicologists challenge this classification.

The Appalachian dulcimer's immediate ancestors include the German scheitholt, the French epinette, and perhaps the Swedish hummel. It is classified as a member of the lute family of instruments. Appalachian dulcimers are painstakingly crafted by artisans, mainly in the mountain areas of West Virginia, Kentucky, Tennessee, and Virginia. They have three strings-the melody, middle, and bass string. Sometimes a second melody string is added. This instrument is played by plucking the strings with the fingers or with quills. They are shaped like teardrops or hourglasses. Heart-shaped holes in the sounding boards are traditional. Most performers play the instrument while seated with the instruments in their laps, but others wear them around their necks like guitars or place them on tables in front of them. Before the 1960's, the Appalachian dulcimer had a limited appeal. It was usually associated with dance music and with "hillbilly" music. However, the instrument was popularized by musicians such as Jean Richie and Richard Farina during the folk music revival of the 1960's and is today featured in many types of music.

21. The author says that the word dulcimer
    (A) means "wooden box" (B) was not used until the 1960's
    (C) means "sweet song" in Persian (D) comes from two languages
22. What is the greatest number of notes that could be played on a standard hammered dulcimer?
    (A) Three (B) Four (C) Twelve (D) Twenty-two
23. According to the passage, experts do NOT all agree that the
    (A) Appalachian dulcimer is a member of the lute family
    (B) hammered dulcimer should be classified as a string instrument
    (C) hammered dulcimer is a member of the zither family
    (D) Appalachian dulcimer had a limited appeal before 1960
24. Which of these instruments could NOT be considered an ancestor of the Appalachian dulcimer?
    (A) The zither (B) The epinette (C) The santir (D) The scheitholt
25. According to the passage, how many strings does the Appalachian dulcimer have?
    (A) One or two (B) Three or four (C) Four or five (D) Six or more
26. According to the passage, most musicians play the Appalachian dulcimer
    (A) while sitting down (B) with the instrument around their necks
    (C) while standing next to tables (D) with wooden hammers
27. According to the passage, Jean Richie and Richard Farina are known for
    (A) playing dance music and "hillbilly" music
    (B)designing and building Appalachian dulcimers
    (C) helping to bring more attention to dulcimers
    (D) beginning the folk music revival of the 1960's

Pigeons have been taught to recognize human facial expressions, upsetting long-held beliefs that only humans have evolved the sophisticated nervous systems needed to perform such a feat. In recent experiments at the University of Iowa, eight trained pigeons were shown photographs of people displaying emotions of happiness, anger, surprise, and disgust. The birds learned to distinguish between these expressions. Not only that, but they were able to correctly identify the same expressions on photographs of unfamiliar faces. Their achievement does not suggest, of course, that the pigeons had any idea what the human expressions meant.

Some psychologists had theorized that, because facial expression is vital to human communication, humans have developed special nervous systems capable of recognizing subtle differences between expressions. Now the pigeons have cast doubt on that idea.

In fact, the ability to recognize facial expressions of emotion is not necessarily innate even in human babies, but may have to be learned in much the same way that pigeons learn. In experiments conducted several years ago the University of Iowa, it was found that pigeons organize images of things into many of the same logical categories that humans do.

None of these results would come as any surprise to Charles Darwin, who long ago wrote about the continuity of mental development from animals to humans.

28. From the information in paragraph 1, it can be inferred that pigeons
    (A) show more emotions than people thought they could
    (B) can understand the human emotions of happiness, anger, surprise, and disgust
    (C) can identify only the expressions of people that they are familiar with
    (D) have more sophisticated nervous systems than was once thought
29. The author probably believes that the psychologists mentioned in paragraph 2
    (A) will need to revise their theory
    (B) no longer believe that expressions are important in human communication
    (C) have conducted their own experiments with pigeons
    (D) no longer think that the pigeons have cast doubt on their theories
30. In paragraph 3 , the author suggests that, at birth, human babies
    (A) have nervous systems capable of recognizing subtle expressions
    (B) can learn from pigeons
    (C) are not able to recognize familiar faces
    (D) may not be able to identify basic emotions through facial expressions
31. What can be inferred about the experiments that were conducted several years ago at the University of Iowa ?
    (A) They were completely contradicted by more recent experiments.
    (B) They supported the idea that pigeons and humans share certain mental abilities.
    (C) They were conducted by scientists on human babies.
    (D) They proved that animals other than pigeons could recognize human expressions.

32. If Charles Darwin could have seen the results of this experiment, his most probable reaction would have been one of _____ .
(A) rejection (B) surprise (C)agreement (D)amusement

The 1960's saw a rising dissatisfaction with the modernist movement in architecture, especially in North America, where its failings were exposed in two influential books, Jane Jacobs's *The Death and Life of Great American Cities* in 1961 and Robert Venturi's *Complexity and Contradiction in Architecture* in 1966. Jacobs highlighted the destruction of the richness and variety of America that occurred as a result of the urban renewal programs sponsored by the federal government. She went on to say that these historic buildings were being replaced by massive, impersonal buildings. Venturi implied that modernist structures were without meaning because they lacked the complexity and intimacy of historical buildings. Both writers called for a new style of architecture.

By the early 1980's, post-modernism had become the dominant style, particularly for public buildings in the United States. Post-modernism evolved from modernism and yet it is a contradiction of that style. In fact, post-modernists have little in common with one another in terms of style or theory. They are united mainly in their opposition to the modernist style. One quality that is common to many post-modernist buildings is characterized by what architect Peter Jencks calls "double coding," a mixture of two styles: modern mixed with tradition, contemporary with historical, functional with decorative, and familiar with newly invented. These characteristics can be seen in Robert Venturi's bold designs for the Brant-Johnson House (1975) in Vail, Colorado, which mixes contemporary and Italian Renaissance style. Similar characteristics are clear in the work of Venturi's disciple Michael Graves's Portland Building (1982) in Portland, Oregon, and his Humana Tower (1986) in Louisville, Kentucky, have the bulk of skyscrapers but incorporate historical souvenirs such as colonnades, belvederes, keystones, and decorative sculpture. Likewise, Robert Stern's Observatory Hill Dining Hall (1984) at the University of Virginia in Charlottesville, Virginia, combines the red brick and white wood of Thomas Jefferson's original plan for university building with modern building forms and walls with large windows. Chinese-American architect I. M. Pei's design for an addition to the Louvre Museum in Paris (1989) included a glass pyramid, referring to the Egyptian art in the Louvre and the fact that French emperor Napoleon Bonaparte played a major role in making Egypt a subject of study in the early 1800's.

Another major tendency in post-modern architecture is the emphasis on decoration, which modernism eliminated. This can be seen in the works of Phillip Johnson, who was once a champion of modernism but became an out-spoken advocate of post-modernism. He wrapped the AT&T building (1984), which is now the SONY Building, in New York City, in pinkish granite and topped it with a tower that looks like an enormous piece of Chippendale furniture. Some architects turned entire building into sculptures. Frank Gehry's monumental Guggenheim Museum in Bilbao, Spain (1997), resembles an enormous abstract sculpture made of glass and titanium steel.

Glossary

Chippendale: an ornate style of furniture first developed in Britain in the eighteenth century

33. Which of these statements best expresses the opinion of Jane Jacobs and Robert Venturi as given in paragraph 1 ?
    (A) Post-modern buildings are massive and impersonal.
    (B) Modernist architecture is rich and varied
    (C) The federal government should increase its urban renewal efforts.
    (D) Modernism should be replaced by some other style of architecture.
34. The primary purpose of the second paragraph is to
    (A) explain "double coding" and give examples of various combinations of styles
    (B) describe several features of skyscrapers
    (C) discuss how Pei's pyramid refers to Napoleon Bonaparte and his study of Egyptian culture
    (D) show how post-modernism evolved from modernism
35. The author probably uses the word *souvenirs* in paragraph 2 because
    (A) tourists often visit the Portland Building and the Humana Building and buy souvenirs
    (B) the Portland Building and the Humana Building now exist only in people's memories
    (C) some features of the Portland Building and the Humana Building remind people of the past
    (D) the Portland Building and the Humana Building house important museums
36. The author presents details about the AT&T (now the SONY) building in New York City to show that it
    (A) resembles an abstract sculpture (B) influenced post-modern furniture design
    (C) was built when Johnson was modernist architect (D) has ornamental architectural features

In April 187, an art exhibit opened in Paris featuring famous and priceless works of art. However, at the time, no one knew that these paintings would one day be considered masterpieces. The paintings and the painters were virtually unknown at the time and would remain that way for several years. (Paragraph 1)

In the nineteenth century, French art was dominated by the Academy of Fine Arts. Every year the academy held an art show called *Le Salon*. In 1863, the Academy rejected one of the paintings of Edouard Manet. Manet and a group of other independent artists organized their own show, which they called *Salon des Refuses* (Salon of the Rejected), which opened on April 15, 1874. A newspaper critic maned Louis l Leroy visited the gallery and was not pleased with what he saw. One painting of boats in a harbor at dawn by Claude Monet particularly enraged him. It was called *Impression: Sunset.* Leroy wrote that this piece and in fact most of the pieces in the show, looked like "impressions"—a term for a preliminary, unfinished sketch made before a painting is done. Leroy's newspaper review was jokingly called "The Exhibition of the Impressionists." Within a few years of Leroy's review, the term *Impressionists* had clearly stuck, not as a term of derision but as a badge of honor, and a new movement was born. (Para 2)

The Impressionist movement included the French painters Edouard Manet, Claude Monet, Pierre-Auguste Renoir, Edgar Degas, Paul Cezanne, and the American painter Mary Cassatt. The

techniques and standards employed within the Impressionist movement varied widely, and though the artists shared a core of values, the real glue which bound the movement together was its spirit of rebellion and independence. (Para 3)

This spirit is clear when you compare Impressionist paintings with traditional French paintings of the time. Traditional painters tended to paint rather serious scenes from history and mythology. Many Impressionist paintings feature pleasant scenes of urban life, celebrating the leisure time that the Industrial Revolution had won for the middle class, as shown in Renoir's luminous painting *Luncheon of the Boating Party.* In that famous painting, the sun filters through the orange-striped awning, bathing everything and everyone at the party in its warm light. Renoir once said that paintings should be "…likable, joyous, and pretty." He said, "There are enough unpleasant things in this world. We don't have to paint them as well." It is this joy of life that makes Renoir's paintings so distinctive. (Para 4)

The Impressionists delighted in painting landscapes (except for Edgar Degas, who preferred painting indoor scenes, and Mary Cassatt, who mainly painted portraits of mothers and children). Traditional painters, too, painted landscapes, but their landscapes tended to be somber and dark. The Impressionists' landscapes sparkle with light. Impressionists insisted that their works be "true to nature." When they painted landscapes, they carried their paints and canvases outdoors in order to capture the ever-changing light. Traditional painter generally made preliminary sketches outside but worked on the paintings themselves in their studios. (Para 5)

"Classic" Impressionist paintings are often easy to spot because of the techniques used by the painters. One of the first "rules" of the Impressionist, that the colors should be dropped pure on the canvas instead of getting mixed on the palette, was respected by only a few of them and for only a couple of years, but most Impressionists mixed their paints as little as possible. They believed that it was better to allow the eye to mix the colors as it viewed them on the canvas. The traditional technique at the time was to make sketches or outlines of the subject before painting them. Generally, Impressionists painted directly onto the canvas without sketches. Impressionists tended to paint with short, thick strokes of paints shaped like commas. While traditional painters paid attention to details, Impressionists valued overall effect. Traditional painters always tried to hide their brush strokes, but Impressionists left brush strokes on the canvas for the world to see. Unlike traditional painters, Impressionists applied one layer of paint on top of the last one without waiting for the paint to dry. These techniques created paintings that seemed strange and unfinished to the general public when they were first painted, but are much loved in our time. (Para 6)

37. What point does the author make about the art show that opened on April 15, 1874, at the Salon des Refuses in Paris？
    (A) It was more popular with visitors and critics than the official show called "Le Salon."
    (B) It made the painters and paintings shown there instantly successful.
    (C) Its organizers refused to allow Edouard Manet to display his paintings there.
    (D) It featured famous paintings and painters before they became well known.
38. The word virtually in the passage is closest in meaning to the word _____.

(A) almost (B) infinitely (C) seemingly (D) forever

39. According to the author, Louis Leroy used the term “Impressionists” because _____ .
(A) he understood that these artists did not carefully study their subjects, but only got a quick impression of what they painted
(B) he thought that Monet’s painting, and all of the paintings at the show, looked like unfinished drawings
(C) he believed that giving these artists a group name would help them become famous
(D) he thought that the painting *Impression: Sunset* was the best painting at the show

40. The word derision in the passage is closest in meaning to
(A) ridicule (B) sincerity (C) respect (D) sorrow

41. Renoir’s painting *Luncheon of the Boating Party* is given in paragraph 4 as an example of
(A) an industrial scene (B) a study of some urban buildings
(C) a picture of people enjoying their leisure time (D) a traditional French painting

42. According to the information in paragraph 5, what did the painters Edgar Degas and Mary Cassatt have in common?
(A) They both painted portraits of children and mothers.
(B) Neither of them was originally from France.
(C) Neither of them was primarily interested in landscapes.
(D) They both preferred painting unpleasant scenes.

43. According to paragraph 5, when traditional painters worked on landscape paintings, they
(A) studied the ever-changing light (B) did not make any preliminary sketches
(C) never left their studios (D) sketched outdoors but painted indoors

44. It can be inferred from the information in paragraph 6 that in the author’s view, the first “rule” of Impressionism _____ .
(A) was not really a rule at all (B) was the most important rule of all
(C) led Impressionists to mix their colors (D) lasted longer than other rules

45. The phrase the last one in the passage refers to
(A) an artist (B) a painting (C) a brush stroke (D) a layer of paint

Genetic Engineering is a radical and rapidly developing technology that touches our lives through its application in medicine, forensics, industry and agriculture. Through this science humans are fast becoming the architects of life but there are those who warn against the unknown dangers of playing God while others see its benefits in our fight against disease and the production of **abundant** food supplies.

In the past 50 years, plant and animal production has increased dramatically. Today, the human population is the largest it has ever been and fortunately we produce more food per capita than ever before. Despite the fact that we have enough food for every single human being to have an adequate diet, some 1 billion people still suffer from malnutrition and hunger. A lot of the increase in food

production **is attributed to** efficient farming methods and environmental factors such as irrigation, pest and weed control but the largest contributing factor is modern plant and animal breeding.

Genetically engineered plants and animals have already entered the market and are on our supermarket shelves. Their appearance however has sparked much debate. Scientists have improved plants by changing their genetic makeup through *hybridization* since the 19th century, and farmers have used *crossbreeding* of plants and animals for thousands of years. For example, racehorses are bred to be faster and stronger and roses are bred to produce a wide range of colors. Cattle are bred according to whether they are for beef or dairy herds. Most of today's dairy cattle are very different from the cattle that were originally domesticated. Over the years, dairy herd breeding has focused on increasing milk production and quality. Milk production per cow has doubled in the last 25 years.

So what are GM food and what are the concerns for the consumer? The main difference between GM foods and traditional breeding methods is the direct modification or manipulation of certain genes. Traditional methods involve mixing thousands of genes whereas genetic modification allows just one individual gene, or a small number of genes, to be inserted into a plant, or animal.

The resulting organisms are "genetically modified," "genetically engineered," or "transgenic". The foods that reach the supermarket are known as "GM" foods, *Genetically Modified foods*. The technique allows us to produce plants, animals and microorganisms, such as bacteria, with specific qualities more accurately and efficiently than through traditional methods.

The benefits of GM foods are enormous. Genetic modification can be used to give crops immunity to plant viruses or to improve the nutritional value of a plant. In animals intended for food, genetic modification could potentially increase how fast and how big they grow. *Starvation* on any part of the planer could be a thing of the past as we could the yield, varieties and size of foods and produce strains that are resistant to pests, Extremes in temperature and are tolerant to herbicides.

Opponents of GM foods however consider their production to be the world's biggest uncontrolled biological experiment, a disaster waiting to happen. The biggest concerns are the effects that an uncontrolled genetically modified species could potentially have on human and animal health, agriculture, and on the environment as a whole. Genetically modified species have the potential to become biological pollutants that are far worse than chemical pollutants as they would be virtually impossible to control since they are alive, migrate and could **mutate** producing even more dangerous offspring. This could lead to irreversible damage to the ecology of the planet.

Recent studies have shown that transgenic species could potentially hold bigger surprises than scientists anticipate. Genetically altering plants to resist viruses can cause the virus to mutate into new forms that could potentially be spread. The effect on crops could be disastrous. The toxins released by the genetically mutated virus could also have untold damaging effects on human, animal and plant life. Toxins can produce severe allergic reactions leading to death. (Para 8)

Another example could be the release of larger species into the environment. For example, what if scientists release squid, octopus and salmon that are 3 times their natural size. The new species would eat far more food, leaving less for other species possibly leading to the extinction of several

species that would ultimately damage the delicate ecology of our seas and therefore the planet as whole.

At the moment there is no proof of serious harm to humans, animals and plants but potential for a massive biological disaster that could wreak and irreversible damage is not such a fairy tale. On the other hand the possibility of forever freeing the world of starvation could outweigh ant possible dangers that may or may not be unleashed.

46. What is main difference between GM and traditionally bred foods?
    (A) Scientists can choose the outcome of GM foods such as size and color.
    (B) The consumer if far more concerned about GM foods.
    (C) Traditional methods rely on the direct manipulation of only certain genes.
    (D) The difference lies in the methods and the number of genes that are affected.
47. Why has the appearance of GM foods in the supermarket sparked much debate?
    (A) Some people are worried about man taking over God's role of creator.
    (B) Some people think GM foods should be sent to feed third world countries.
    (C) Some people are concerned about the effects on our health and environment.
    (D) Scientists do not know enough about the harmful effects of certain bacteria
48. In paragraph 6, why does the author state that starvation could be a thing of the past?
    (A) Because all varieties of genetically modified plant or animal will be able to survive in any environment.
    (B) Scientists will be able to raise genetically modified animals on genetically modified animal feed which will dramatically increase their size.
    (C) There would be no need to use expensive herbicides since all genetically modified crops will be pest resistant.
    (D) Scientists will be able to control the size, variety and immunity of crops and animals.
49. In paragraph 7, what is the main opposition to the production of GM foods?
    (A) Chemical pollutants are more dangerous than biological pollutants.
    (B) GM foods are not properly tested.
    (C) Opponents to GM foods say that their production is an agricultural disaster waiting to happen.
    (D) The potential of producing harmful offspring could not be controlled.
50. In paragraph 8, why does the author say that scientists might be surprised?
    (A) Toxins are carried through the air by wind dispersal.
    (B) There is a potential that any new virus strains could be carried to other areas adversely affecting crops, human and animal life.
    (C) They are often surprised by transgenic species.
    (D) Toxins can potentially kill all life forms.

高雄醫學大學 100 學年度研究所招生考試試卷

系所：公共衛生學系職業安全衛生碩士班
科目：環境暨職業安全衛生學

1. 某工廠有一個鎳融煉電弧爐，其職業安全衛生須注意甚麼? 勞工的健康有何影響? (25%)

2. 某一公司 20 年前倉庫中囤積許多石棉物料，目前已經清除。但是尚有 20 名年資 30 年以上的員工。對於此公司妳/你的建議是甚麼? (25%)

3. 有一間中小型產業企業要實施勞工基本職業健康服務，請解釋甚麼是「勞工基本職業健康服務」? 並舉例之。(25%)

4. 有一間大型製造業企業要施行健康促進，請擬訂一個符合「世界衛生組織渥太華健康促進憲章」(1986)的全企業員工健康促進計畫。 (25%)

(以下空白)

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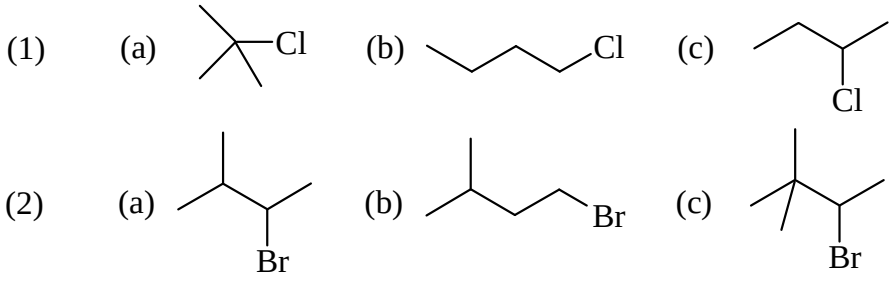
高雄醫學大學 100 學年度研究所招生考試試卷

系所: 公共衛生學系職業安全衛生碩士班
科目: 有機化學

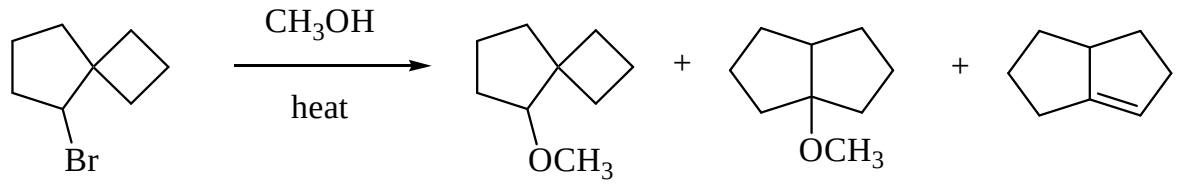
1. Name the five isomers of C_6H_{14}. (10 %)

2. Rank the substances in each of the following groups in order of p*K*a values. (10 %)
   (1) (a) $ClCH_2CH_2CH_2COOH$, (b) $CH_3CH(Cl)CH_2COOH$, (c) $CH_3CH_2CH(Cl)COOH$
   (2) (a) CH_3COOH, (b) CCl_3COOH, (c) CF_3COOH

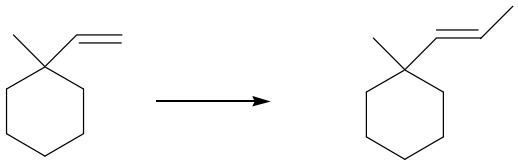
3. Order each of the following sets of compounds with respect to S_N2 reactivity. (10 %)



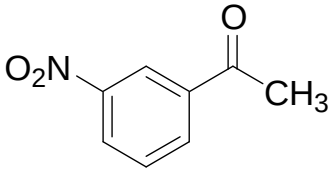
4. Propose the mechanism to account for the observed products in the following reaction. (10 %)



5. Show how to bring about this conversion. (10 %)



6. Show how the following compound could be synthesized from benzene. (10 %)



7. Draw the structure for the each of the following items. (10 %)

   (a) phenol; (b) allyl alcohol; (c) tetrahydrofuran; (d) indole, (e) styrene
8. Predict the major product of the following reactions. (30 %)
   (a) *n*-butanol + hydrogen bromide,
   (b) (*R*)-2-butanol + *p*-toluenesulfonyl chloride (in pyridine),
   (c) potassium *t*-butoxide + methyl iodide,
   (d) cyclopentanol + hydrogen chloride/zinc chloride,
   (e) ethylene oxide + sodium azide,
   (f) pinacol + sulfuric acid