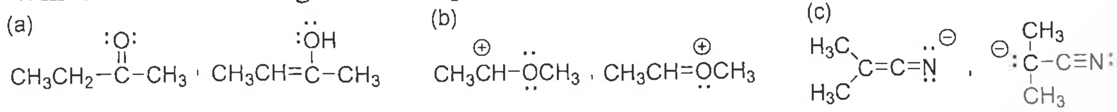
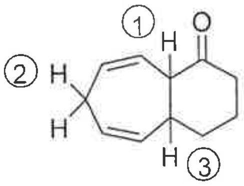
選擇題(單選)每題兩分共 50 題, 答錯倒扣一分:

1. Which of the following choices represent(s) a pair of resonance forms?



(A) both (a) and (b)
(B) both (b) and (c)
(C) both (a) and (c)
(D) All of the above

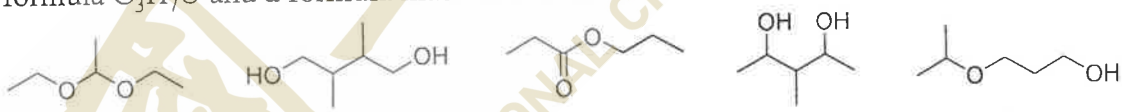
2. Which sequence correctly ranks the following protons in order of increasing acidity?



(A) 1<2<3 (B) 2<3<1 (C) 3<1<2 (D) 3<2<1 (E) 2<1<3

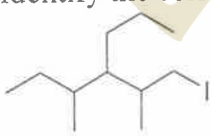
3. Which of the following statements about π molecular orbitals is/are correct?
(A) π molecular orbitals are cylindrically symmetric.
(B) Most of the electron density in a π molecular orbital is centered above and below the internuclear axis.
(C) When two atoms are connected by a double bond, both of these bonds are π bonds.
(D) Both statements B and C are correct.
(E) Statements A, B, and C are all correct.

4. Which of the following compounds is not a constitutional isomer of a compound with an empirical formula C_3H_7O and a formula mass of 118.164?



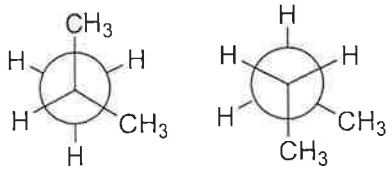
(A) (B) (C) (D) (E)

5. Identify the correct IUPAC name for the following structure.



(A) 3-*s*-Butyl-1-iodo-2-methylhexane
(B) 1-Iodo-2,4-dimethyl-3-propylhexane
(C) 4-(2-Iodo-1-methylethyl)-3-methylheptane
(D) 2,4-Dimethyl-1-iodo-3-propylhexane.

6. The structures below are ________.



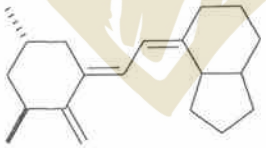
(A) not isomers
(B) conformation isomers
(C) structural isomers
(D) cis-trans isomers
(E) both B and D.

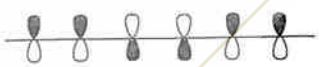
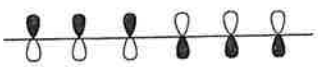
7. When pyridine is treated with a mixture of nitric and sulfuric acids, the major product is _____.
(A) 2-nitropyridine
(B) 3-nitropyridine
(C) 4-nitropyridine
(D) both A and C

8. Which sequence of steps below describes the best synthesis of 5-oxohexanoic acid starting with 1-methylcyclopentan-1-o1?
(A) 1. Conc. $KMnO_4$; 2. Dry gaseous HBr; 3. Mg/ether; 4. CO_2
(B) 1. Conc. $KMnO_4$; 2. CH_3MgBr/ether; 3. H_3O^+
(C) 1. H_2SO_4 and heat; 2. O_3; 3. $(CH_3)_2S$
(D) 1. H_2SO_4 and heat; 2. Conc. $KMnO_4$; 3. $LiAlH_4$; 4. H_3O^+
(E) 1. H_2SO_4 and heat; 2. Conc. $KMnO_4$;

9. What compound is produced when cyclohexene is treated with concentrated $KMnO_4$?
(A) adipic acid
(B) benzoic acid
(C) succinic acid
(D) cyclohexacarboxylic acid
(E) caproic acid

10. Which of the following represents the highest occupied molecular orbital for the conjugated pi system in the structure below?



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

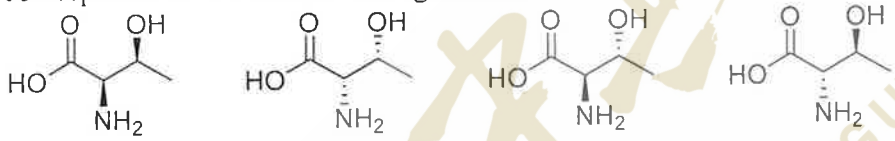
11. What is the major organic product which results when cyclohexene is irradiated in the presence of *N*-bromosuccinimide?
(A) 1-bromocyclohexene
(B) 2-bromocyclohexene

(C) 1,2-dibromocyclohexane
(D) 3-bromocyclohexene
(E) 4-bromocyclohexene

12. Which of the following would not have a C-H stretch at about 3050 cm^{-1}?
(A) 1-pentene
(B) 2-pentene
(C) 2,3-dimethyl-2-pentene
(D) 2-methyl-2-pentene
(E) 2,4-dimethyl-2-pentene

13. What compound has a significant *m/z* 70 in its mass spectrum?
(A) 2-butanol
(B) diethyl ether
(C) (*E*)-2-pentene
(D) 1-pentanol
(E) octane

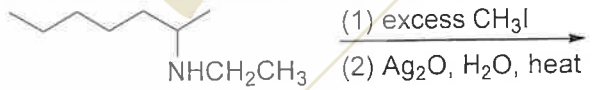
14. The stereochemical configuration of *D*-Threonine is (2*R*, 3*S*). Which of the following structures corresponds to the correct configuration?

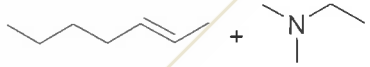
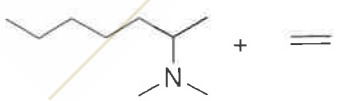


(A)　(B)　(C)　(D)

15. Which series of reactions described below, if any, will result in the formation of 2-methylpentan-3-one starting with 1-propanol?
(A) 1. $(CH_3)_2CHMgBr$; 2. dilute H_3O^+; 3. PCC.
(B) 1. PCC; 2. $(CH_3)_2CHLi$; 3. dilute H_3O^+; 4. $Na_2Cr_2O_7/H_2SO_4$.
(C) 1. $Na_2Cr_2O_7/H_2SO_4$; 2. $2(CH_3)_2CHMgBr$; 3. dilute H_3O^+; 4. $LiAlH_4$.
(D) 1. $Na_2Cr_2O_7/H_2SO_4$; 2. $SOCl_2$; 3. $2(CH_3)_2CHMgBr$; 4. H_3O^+.
(E) none of the above

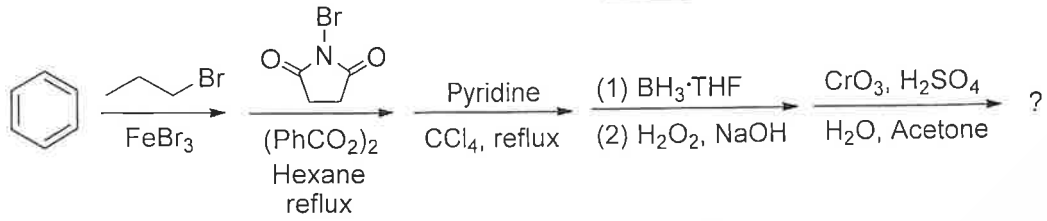
16. Provide the structure of the major product in the reaction below.

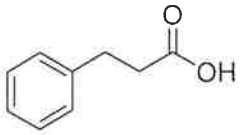


(A) 
(B) 
(C) 
(D) both A and B

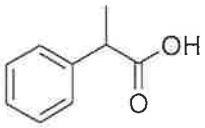
17. Provide the final product of the sequence of steps below?

背面有題，請繼續作答。

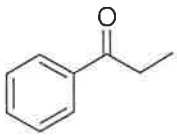




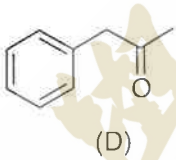
(A)



(B)

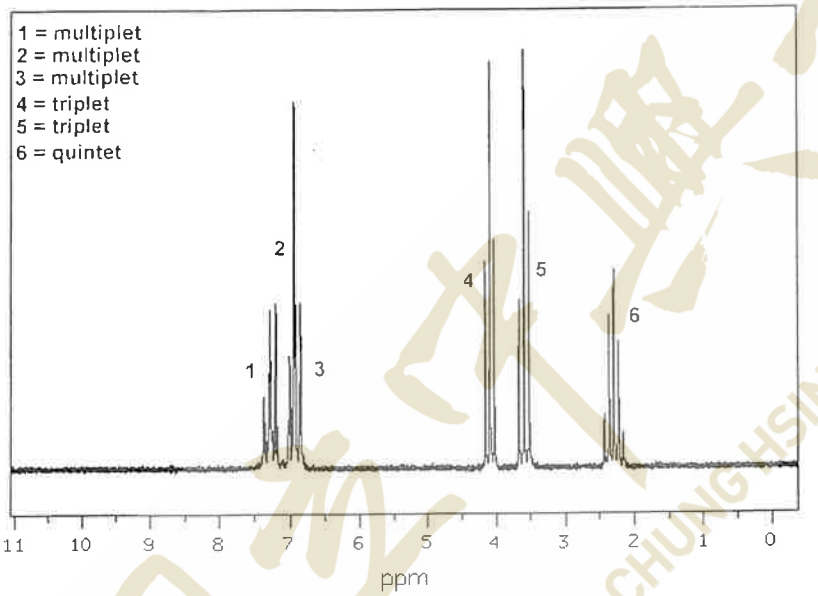


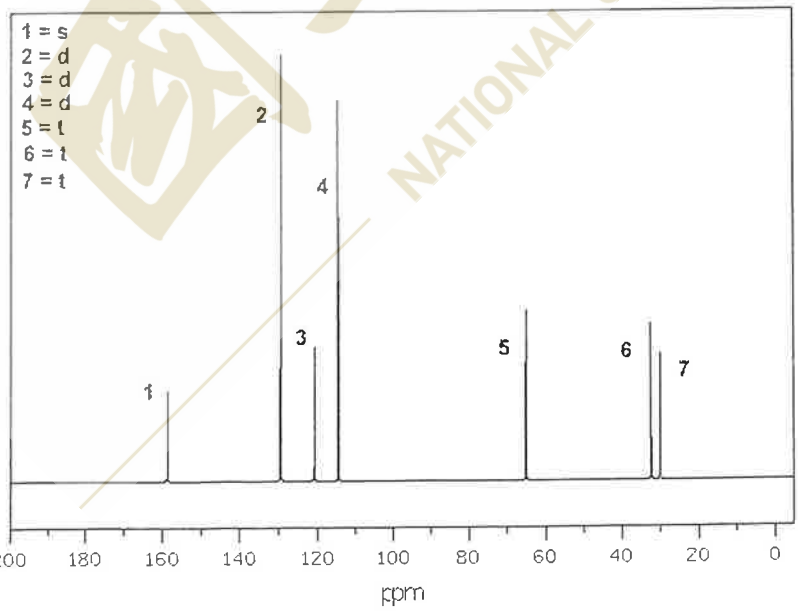
(C)



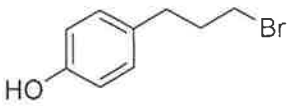
(D)

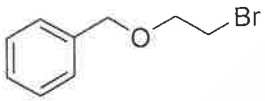
18. Which of the structures shown below is consistent with the C-13 NMR (off resonance splitting for each peak is shown as a table within the figure) and H-NMR spectra? (formula = $C_9H_{11}OBr$)

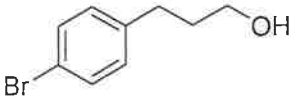


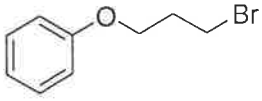


(A) 

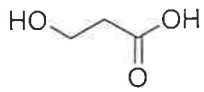
(B) 

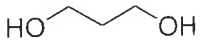
(C) 

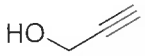
(D) 

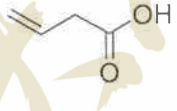
(E) 

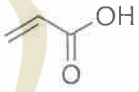
19. Provide the final product of the sequence of steps below?

(A) 

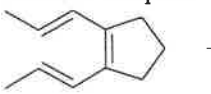
(B) 

(C) 

(D) 

(E) 

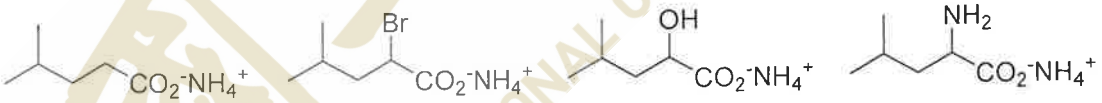
20. Predict the product of the following reaction, including stereochemistry.



(A)　(B)　(C)　(D)

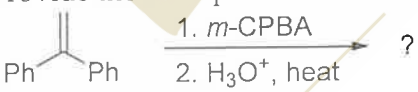
21. Provide the final product of the sequence of steps below?

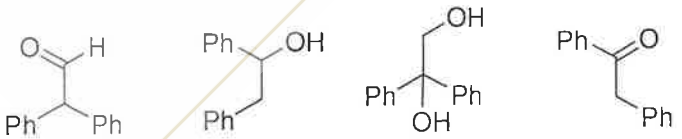
4-methylpentanoic acid $\xrightarrow[3.\ \text{excess } NH_3]{1.\ Br_2/PBr_3,\ 2.\ H_2O}$?



(A)　(B)　(C)　(D)

22. Provide the final product of the sequence of steps below?

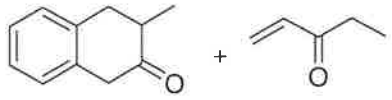


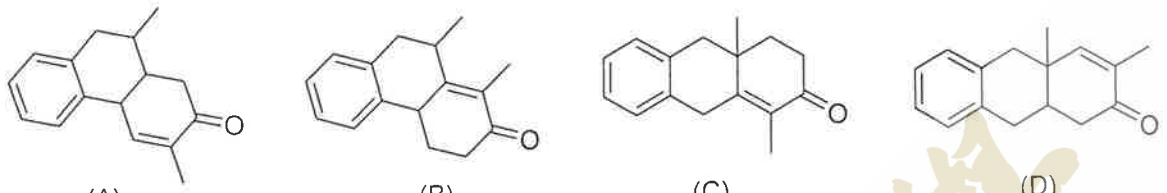


(A)　(B)　(C)　(D)

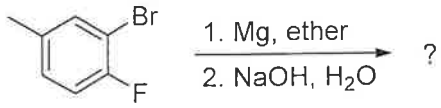
23. Predict the major product of the following reaction?

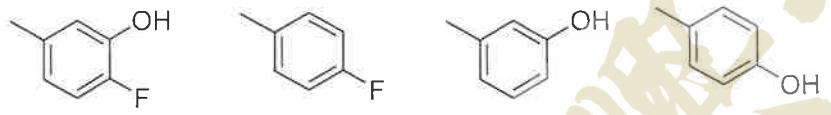
背面有題，請繼續作答。





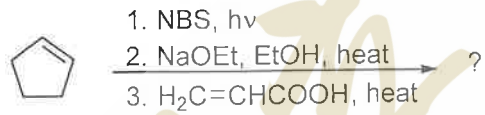
24. Predict the products of the following reaction.

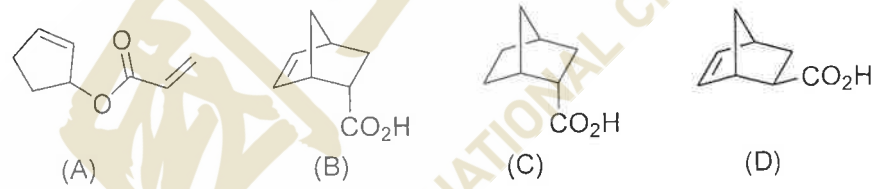




(A) both (a) and (b)
(B) both (b) and (c)
(C) both (c) and (d)
(D) both (b) and (d)

25. Predict the major product of the following reaction?





26. What is the point group of BIClF (chlorofluoroiodoborane)?
(A) C_{2v} (B) C_{3v} (C) D_{3h} (D) C_s (E) C_i

27. Consider the calculation:
$52.00 + 1.001 - 13.1 + 1.3129 =$
Which of the following is the correct answer for the number of significant figures for this question?
(A) 41 (B) 41.2 (C) 41.21 (D) 41.214 (E) 41.2139

28. Which of the following statements about thermodynamics is/are correct?
I. The first law of thermodynamics is the Law of Conservation of Energy

II. A perfect crystalline structure, will have no entropy (S) at 0 °C.
III. The Second Law of Thermodynamics states that all spontaneous changes keep the conservation in the entropy of the universe.
IV. The first law of thermodynamics defines the internal energy (E) as equal to the difference between the heat transfer (Q) into a system and the work (W) done by the system.
(A) I, II (B) I, III (C) I, II, III (D) I, IV (E) I, II, III, IV

29. Consider the structure of bicarbonate ion CO_3^{-2}. Which of the following statements is false?
(A) All the charges of three O ions are equivalent.
(B) One C-O bond is shorter than the other two at room temperature.
(C) The carbon atom possess three sp^2 hybridized orbitals.
(D) The geometric shape is trigonal planar.
(E) More than one Lewis structure is allowed.

30. The naming of chemical compounds, including ions and molecules is important in chemistry and other scientific fields. Indicate which one of the compound names is incorrect.
(A) K_2O is potassium oxide (B) $Mn(OH)_2$ is magnesium(II) hydroxide (C) CO is carbon monoxide
(D) sulfur hexafluoride is SF_6 (E) NH_3 is ammonia

31. Calcium is a metal, and sulfur is a nonmetal. They are in a different family of the periodic table. When they become ions, Ca^{2+} and S^{2-}, which characteristic of the following would be the correct relation between Ca^{2+} and S^{2-} ions?
(A) isomeric (B) isotopic (C) isoelectronic (D) isochromatic (E) isobaric

32. The van't Hoff factor (i) express the effective concentration of particles for a solute. In comparison with NaCl aqueous solution, what properties of the solution of $MgSO_4$ may be lower than those of $NaCl_{(aq)}$ as these two solutions are identical in concentration?
(A) boiling point, osmotic pressure
(B) freezing point, osmotic pressure
(C) osmotic pressure
(D) vapor pressure, osmotic pressure
(E) boiling point, freezing point

33. The orbital wavefunction for the state (n =3, l = 1, and m_l = 0) of the hydrogen atom, is expressed as

$$\Psi_{3p_z} = \frac{\sqrt{2}}{81\sqrt{\pi}}\left(\frac{Z}{a_0}\right)^{\frac{3}{2}}(6\sigma - \sigma^2)e^{-\sigma/3}cos\vartheta$$

Where $\sigma = r/a_0$ and a_0 is the Bohr radius. How many nodal surfaces will appear in the wave function?
(A) 0 (B) 1 (C) 2 (D) 3 (E) 4

34. Redox reaction includes oxidation and reduction simultaneously. Balance the following redox reaction in the basic solution

$$Cr_2O_7^{2-}(aq) + Cl^-(aq) \rightarrow Cr^{3+}(aq) + Cl_2(aq)$$

Indicate how many water molecules will exist in the balanced ionic equation
(A) 14 (B) 7 (C) 12 (D) 6 (E) none

35. How many types of oxidation numbers are for the hydrogen atom in the following compounds? H_2O_2, CH_4, H_2O, $NaBH_4$, H_2, HNO_3, CaH_2, and NH_3
(A) 1 (B) 2 (C) 3 (D) 4 (E) 5

36. Which statement of the following about hydrogen bonding is *not true*?
(A)Hydrogen bonds can be intermolecular (occurring between separate molecules) or intramolecular (occurring among parts of the same molecule)
(B) Hydrogen atom in molecules is attached by a highly electronegative atom (N, O , F)
(C) An unpaired electron at least resides on the highly electronegative atom (N, O, F)
(D) Due to the higher boiling point of H_2O than HF, a H-bond between two H_2O molecules is stronger than a H-bond between two H-F molecules.
(E) The interactive way of the hydrogen bond is the same as that of dipole-dipole intermolecular interaction

37. According to the solubility rules, how many of the following spices should be *soluble* in water?
Hg_2Cl_2, Ag_2S, Ag_2CO_3, $PbSO_4$, Na_2S
(A) 0 (B) 1 (C) 2 (D) 3 (E) 4

38. Construct a table of Crystal Field Stabilization Energy (CFSE) for all d^n electronic configurations in tetrahedral complexes under a strong field, Which d^n configuration could be diamagnetic?
(A) d^1 (B) d^2 (C) d^4 (D) d^6 (E) d^8

39. Reactions of a series of substituted pyridines with BF_3 shows the order of Lewis basicity: Pyridine > 2-methylpyridine > 2,6-dimethylpyridine > 2-t-butylpyridine.Which of the following effects induces this order?
(A) I-strain (B) B-strain (C) F-strain (D) inductive effect (E) leveling effect

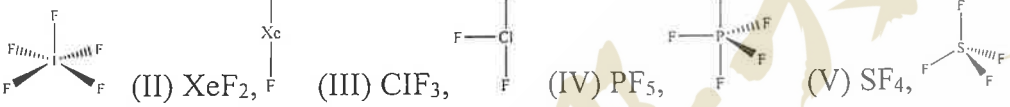
40. Consider the following reactions, which one of the following will have the smallest equilibrium constant at 298 K?
(A) $CaO(s) + CO_2(g) \rightarrow CaCO_3(s)$ $\Delta G° = -131.1$ kJ
(B) $2Hg(g) + O_2(g) \rightarrow 2HgO(s)$ $\Delta G° = -180.8$ kJ
(C) $3O_2(g) \rightarrow 2O_3(g)$ $\Delta G° = +326$ kJ
(D) $2H_2O(aq) \rightarrow 2H_2(s) + O_2(g)$ $\Delta G° = +475.4$ kJ
(E) More information is needed to determine.

41. Regarding the "Quantum Mechanics and Atomic Structure", which one of the following statements is *incorrect*?
(A) The discovery of "Blackbody Radiation" paves a foundation for scientists to find the quantization of atomic energy.
(B) The "Aufbau principle" states that the proper way of placement of electrons in atomic orbitals is from the lowest energy level up and shall also obey Hund's rule.
(C) The "Zero Point Energy" states that the energy level is lowest in this state of the atomic orbitals. However, it is not equal to zero.
(D) The "Heisenberg Indeterminacy Principle: states that one can't make a completely accurate measurement of both the position (x) and its moment (mv) of a particle.

(E) "Hund's rule" implies that while electrons place into degenerated orbitals, they will pair each other first.

42. Which one of the following statements is *incorrect* for "Kinetics"?
(A) The orders for the reactions in Kinetics have nothing to do with the coefficient of the reaction.
(B) It is possible that a non-integer reaction order can be found in a reaction.
(C) The derivation of the first-order reaction leads to $C = C_0e^{-kt}$. (C_0: initial concentration; C: concentration at moment t; t: reaction time)
(D) A rather useful concept of "half-life ($t_{1/2}$)" can be derived from the concept of the zero-order reaction.
(E) The relative stabilities of the reactant and product have nothing to do with the reaction rate.

43. Pick the *correct* molecular structure(s) as predicted by the VSEPR theory?



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

44. Pick the *correct* one from the following statements about the electrochemical cell described below?
$Sn \mid Sn^{2+}(aq) \parallel Li^{+}(aq) \mid Li$
$Sn^{2+}(aq) + 2e^{-} \rightarrow Sn(s)$; $E° = -0.14$ V
$Li^{+}(aq) + e^{-} \rightarrow Li(s)$; $E° = -3.04$ V
(A) The cell reaction is spontaneous with a standard cell potential of 3.18 V.
(B) The cell reaction is spontaneous with a standard cell potential of -2.90 V.
(C) The cell reaction is nonspontaneous with a standard cell potential of -2.90 V.
(D) The cell reaction is nonspontaneous with a standard cell potential of -3.18 V.
(E) The cell is at equilibrium.

45. When pure water (pH = 7 at 25 °C) is heated, it will induce:
(A) $[H^+] > [OH^-]$
(B) The water is not neutral.
(C) pH is still 7
(D) $[H^+] < [OH^-]$
(E) None of these.

46. Which of the following statements about the ^1H NMR (Nuclear Magnetic Resonance) experiment is *incorrect*?
(A) The energy difference between the two spin states ($m_I = +1/2$ and $m_I = -1/2$) depends on the strength of the magnetic field.
(B) When energy absorption takes place, the electrons are excited by the electromagnetic radiation to obtain the NMR signal.
(C) When aligned with the magnetic field, the energy of a proton with spin of $m_I = +1/2$ is lower than that with $m_I = -1/2$ when aligned against it.
(D) The relative population of the upper spin state, N_{upper}, and of the lower spin state, N_{lower}, is given by the Boltzmann equation ($N_{upper} / N_{lower} = e^{-\Delta E/kT}$).

(E) The energy needed to flip the spin of a proton is within the radio frequency range of the electromagnetic spectrum.

47. Which of the following compounds *does not* exhibit an optical isomer? (en: $NH_2CH_2CH_2NH_2$)
(A) *cis*-$[Co(en)_2(Cl)_2]^+$ (B) $[Co(en)_3]^{3+}$ (C) *cis*-$[OsCl_2(CO)_4]$ (D) isobutanol (E) *trans*-$[Co(en)_2Cl_2]^+$

48. Which of the following statements is *incorrect* regarding molecules of an ideal gas?
(A) Molecules of an ideal gas undergo many collisions with each other and the container walls.
(B) The molecules of an ideal gas are relatively far apart.
(C) Molecules of greater mass have a lower average speed than that of less mass at the same temperature.
(D) The average speed of molecules from samples of different "ideal" gases is the same at the same temperature.
(E) All molecules of an ideal gas have the same average kinetic energy at a constant temperature.

49. The proposed mechanism for the reaction of $H_2O_2 + 2H^+ + 2I^- \rightarrow I_2 + 2H_2O$ is as follows.:

(1) $H_2O_2 + I^- \rightarrow HOI + OH^-$ *Slow*

(2) $OH^- + H^+ \rightarrow H_2O$ *Fast*

(3) $HOI + H^+ + I^- \rightarrow I_2 + H_2O$ *Fast*

Based on the proposed mechanism, determine the order of H^+ in this reaction by identifying the rate law that is consistent with it.
(A) 4 (B) 3 (C) 2 (D) 1 (E) 0

50. Determine the pH of a buffered solution containing 0.15 M NH_3 ($K_b = 1.8 \times 10^{-5}$) and 0.35 M NH_4Cl.
(A) 4.7 (B) 5.1 (C) 6.3 (D) 7.2 (E) 9.1

科目：化學

題號	答案	題號	答案	題號	答案	題號	答案	題號	答案	題號	答案	題號	答案
1.	B	16.	C	31.	C	46.	B	61.		76.		91.	
2.	D	17.	B	32.	A	47.	C	62.		77.		92.	
3.	B	18.	E	33.	D	48.	D	63.		78.		93.	
4.	C	19.	E	34.	B	49.	E	64.		79.		94.	
5.	C	20.	C	35.	C	50.	E	65.		80.		95.	
6.	C	21.	D	36.	D	51.		66.		81.		96.	
7.	B	22.	A	37.	B	52.		67.		82.		97.	
8.	E	23.	B	38.	C	53.		68.		83.		98.	
9.	A	24.	C	39.	C	54.		69.		84.		99.	
10.	A	25.	B	40.	D	55.		70.		85.		100.	
11.	D	26.	D	41.	E	56.		71.		86.			
12.	C	27.	B	42.	D	57.		72.		87.			
13.	D	28.	D	43.	D	58.		73.		88.			
14.	A	29.	B	44.	C	59.		74.		89.			
15.	B	30.	B	45.	E	60.		75.		90.			

國立中興大學 112 學年度學士後醫學系招生考試

試題參考答案疑義釋疑公告

科目	題號	疑義答覆	釋疑結果
英文	32	本題重點為測試考生篇章結構能力，第 4 段開頭的句子倒數第 2 個字是否誤植，並不影響答案為 D 的明確性，本題問題為“Where does the following sentence best belong?”, 故考生應在所列選項中選出最適合的選項，又因“Often the diagnosis is straightforward.”無法放置於篇章當中第四段以外的其他段落，因此不變更參考答案。	維持原答案(D)

科目	題號	疑義答覆	釋疑結果
物理	1	考題為單選題，且一般而言，汽車的質量(~1000-1500 公斤)跟兩個人的質量差(<30 公斤)相差很多，若把此誤差考慮進去，答案還是(C)。	維持原答案(C)
	6	$F=m*R*\varpi^2$ $m=900[N]/10[m/s^2]=90kg$ $F=1000[N]$ $R=F/(m*\varpi^2)=1000/(90*(2\pi*100/3600)^2)\approx360$ 答案為(B)。	維持原答案(B)
	10	答案會因取重力加速度的不同有所不同，但答案(B)誤差在範圍之內，且其他答案已設計與(B)有很大的差距，故維持正確原答案(B)。	維持原答案(B)
	15	本題未提供聲速 344m/s，本題送分。	本題送分
	38	The key sentence is “the volume charge density does **increase** with distance from the sphere center”. From Gauss’s law: $4\pi r^2 \cdot E(r) = \frac{1}{\epsilon}\int_0^r 4\pi r'^2 dr' \rho(r')$ Therefore, outside the sphere, the E field falls like the square of the distance from the center. By Gauss’ law, if the charge distribution were constant, then the E field would rise linearly from the center (Qenc $\propto r^3$and E = kQenc /r^2). However, here the volume charge density increases with distance from the center, therefore the enclosed charge rises more slowly from the center, which is described only by (D).	維持原答案(D)
	39	Electric potential difference is defined as the potential difference between **two points.**	維持原答案(D)

物理		However, problem 39 is not the case, it asked for a general form of electric potential, and no any two points were mentioned.	
	49	本題為正確答案誤植，答案更正為(B)。	答案更正為(B)

科目	題號	疑義答覆	釋疑結果
化學	33	根據題意上說明，正確答案應為(C)而非(D)。	答案更正為(C)
	47	根據題意上說明，正確答案應為(C)或(D)或(E),三者任一皆可給分。	答案更改為(C)或(D)或(E)

科目	題號	疑義答覆	釋疑結果
普通生物及生化概論	8	2,3-BPG 是 Hb 的 inhibitor，會抑制 Hb 結合氧氣。新生胎兒的 Hb 的 His143 易突變為 Ser，造成新生兒 Hb 對 2,3-BPG 結合力下降，反而會造成新生兒 Hb 對氧氣的親和力上升。	維持原答案(B)
	9	一般來說，Keratin 5 及 14 蛋白突變會發生 Epidermolysis bullosa，但近年文獻指出 Keratin K18 突變會造成 cystic fibrosis.	答案更改為(A)或(C)
	10	在無氧呼吸(anaerobic respiratory)的狀態下，葡萄糖會先經過 Glycolysis 轉換成 pyruvate，並產生兩個 ATP 分子。隨後 pyruvate 會被 LDH 酵素催化還原成 lactate，並產生氧化態 NAD+。LDH 也會逆向反應將 lactate 氧化成 pyruvate，但前提是 NAD+及 lactate 的濃度夠高的狀態，此過程的條件並非是氧氣濃度高所造成。故第 10 題答案仍維持(C)。	維持原答案(C)
	11	slope 單位分子分母寫反，故此題無正確答案。	本題送分
	16	phospholipids, sphingolipids, and cholesterol 為兩性分子，並且皆存在於細胞膜。	答案更改為(A)或(C)
	19	AChR 可以分為 nAChR 及 mAchR，前者為 channel，後者為 GPCR。	答案更改為(A)或(B)
	20	本題 D 選項的敘述，最大的問題點在於 G protein 在訊息傳遞的機制中，會停留在細胞膜上，不是扮演細胞內訊號分子(intracellular signalling molecules)的角色。故不選 D。	維持原答案(C)
	31	根據所提供之課本圖例下方之說明（1）已	維持原答案(A)

普通生物及生化概論		經很清楚的註明為 cytosol 了，所以答案（B）並無不妥，因此答案仍維持為所公布之參考答案（A）為唯一選項。	
	46	本題所列選項嚴格來說並無正確的答案 由於亦無以上皆非之選項，所以本題建議送分。	本題送分
	55	選項 B DNA duplication occurs during prophase before mitosis and meiosis I，DNA 複製發生在 interphase，此選項非正確答案。故此題無正確答案。	本題送分
	59	選項 C 異形核子通常不具有貧血的病徵，僅有在極端環境，如高海拔才會影響血紅素攜帶氧氣的能力。因而，一般情形下，異形核子通常不會患有鐮刀型貧血症並且可以正常生活。此外，sickle cell trait 並非一種疾病，而是泛指帶有鐮刀型貧血症基因的異形核子族群。故選項 C 非正確答案。 選項 E 鐮刀型貧血患者如果有嚴重貧血，通常會在年輕的時候因為貧血緣故早逝。因而選項 E 並非答案。鐮刀型貧血患者並非全部患有嚴重貧血，患者可能會隨著年紀增長貧血情形漸趨嚴重。就 E 選項敘述 severe symptoms lead to death at the elderly population，先決條件是假設患有嚴重貧血的話，患者通常無法活到老年，而是在年輕就病逝，因而 E 選項並非正確答案。	維持原答案(B)
	60	選項(D) a useful tool for specific gene knockdown，綜觀期刊論文研究，利用 CRISPR-Cas9 進行 gene knockdown 是可行的。在細胞模式中有其他方法可以取代 CRISPR-Cas9 來執行 gene knockdown，可以利用 siRNA 或是 shRNA 達到一樣的效果。現行 CRISPR-Cas9 為一有效率進行基因剔除 (gene knockout) 的方法，並且為大多數人所利用，但 CRISPR-Cas9 在 gene knockdown 研究也提供一種新的方式進行此實驗。但就效率而言，CRISPR-Cas9 需要花費較久的時間，對比 siRNA 或是 shRNA 則是可以快速達到 gene knockdown 的	答案更正為(E)

普通生物及生化概論		目的。就實驗目的而言，CRISPR-Cas9 是針對 genome 進行改造，而 siRNA 及 shRNA 的目標是 mRNA，所以就僅有 CRIPSR-Cas9 系統改造過後的細胞能夠保有 gene knockdown 特徵的遺傳物質，不會因為細胞複製而喪失。	
	65	基本四大組織為上皮組織、結締組織、肌肉組織以及神經組織。雖然脂肪組織為結締組織的一種，但題目有明確指出下列何者並非四種基本組織，因而選項僅有脂肪組織符合題意所圈選出的答案。	維持原答案(C)
	71	All of the above factors can contribute to genetic variation in a population, making option E the correct answer. (D 負面的影響也是影響)。	維持原答案(E)
	72	Option A is incorrect because seed plants did not evolve from ferns. Instead, both groups evolved from a common ancestor but diverged into distinct lineages.	維持原答案(C)
	73	Answer: E is incorrect because although some fungi are single-celled, others have complex multicellular structures. But Its life cycle is not single-celled.	維持原答案(C)
	76	Answer: B. 0.2 Explanation: The frequency of the resistance gene in the population can be calculated as the number of individuals with the gene divided by the total number of individuals in the population. In this case, there are 10 individuals with the gene, and a total of 50 individuals in the population. Therefore, the frequency of the gene is: Frequency = Number of individuals with gene / Total number of individuals Frequency = 10 / 50 Frequency = 0.2 Therefore, the frequency of the gene in the population is 0.2, or 20%. 未明確說明是「同型合子」或「異型合子」，故 A、B 兩個答案都給分。	答案更正為(A)或(B)
	77	C: It’s not only at the tips of stems and roots	答案更正為(C)或(E)

	78	本題因考題資訊不足，本題送分。	本題送分
	79	題目已經明確告知 A, B 兩物種的染色體數目，而且已告知為單選，故認為仍維持原答案。	維持原答案(C)