

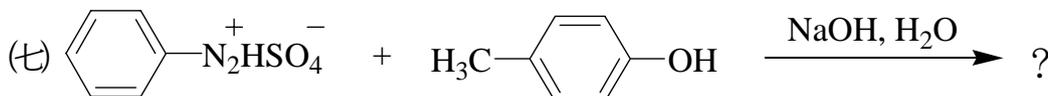
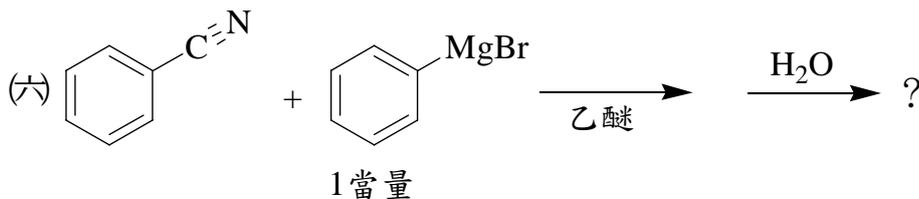
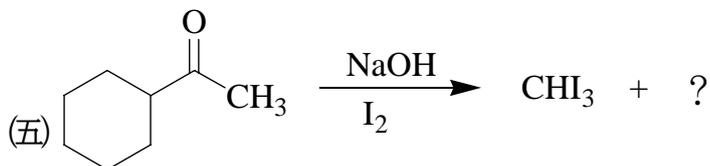
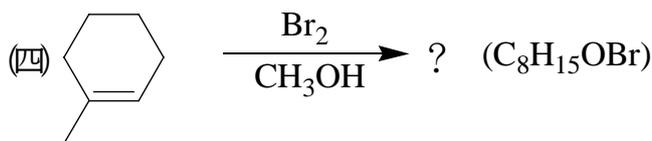
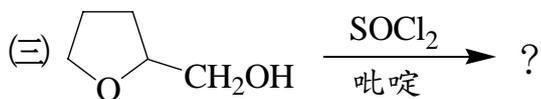
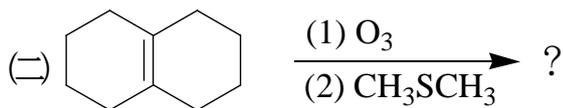
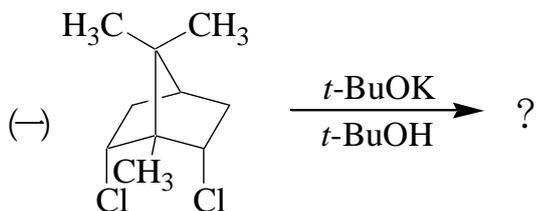
等 別：四等考試  
類 科：化學工程  
科 目：有機化學概要  
考試時間：1 小時 30 分  
※注意：禁止使用電子計算器。

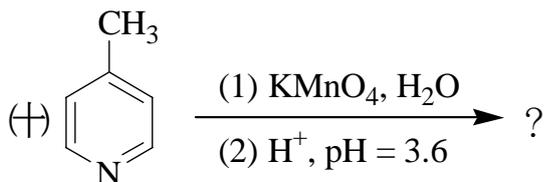
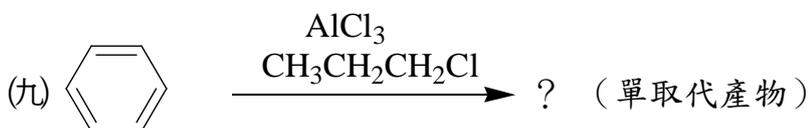
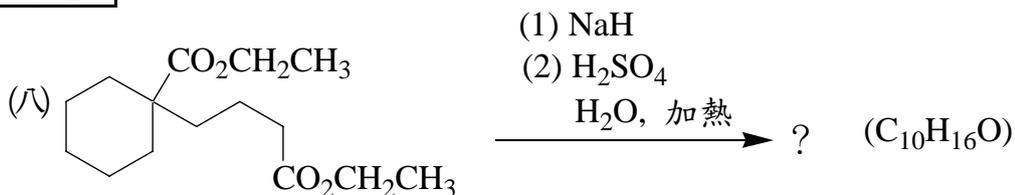
座號：\_\_\_\_\_

甲、申論題部分：(50 分)

(一)不必抄題，作答時請將試題題號及答案依照順序寫在申論試卷上，於本試題上作答者，不予計分。  
(二)請以藍、黑色鋼筆或原子筆在申論試卷上作答。

一、寫出下列反應式中主要產物的結構。(每小題 2 分，共 20 分)

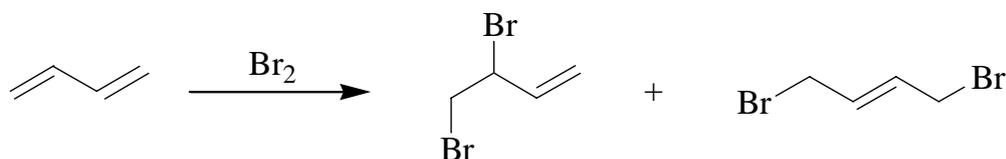




二、(一)試寫出萘 (Naphthalene) 的三個共振式。(6分)

(二)萘的(C-1)-(C-2)鍵為何比其(C-2)-(C-3)鍵短，試以共振結構說明之。(4分)

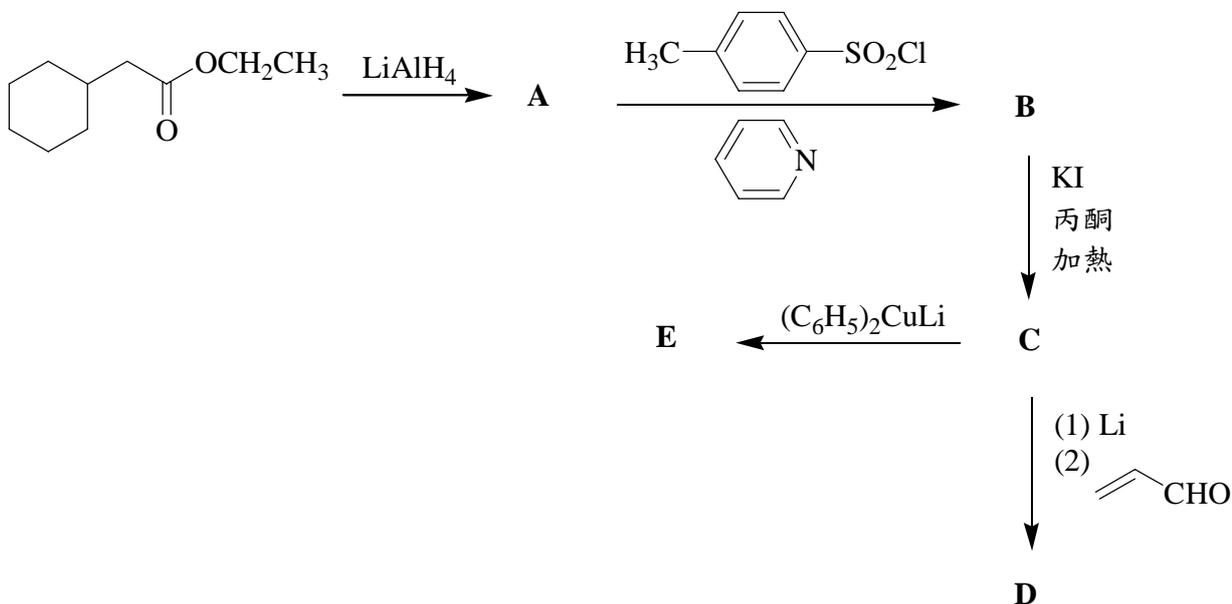
三、將Br<sub>2</sub>加成到 1,3-丁二烯時，反應的選擇性與反應的溫度有關，請闡述其原因。(10分)



-78°C 時： 主產物                      副產物

25°C 時： 副產物                      主產物

四、試寫出產物 A, B, C, D, E 的結構式：(10分)



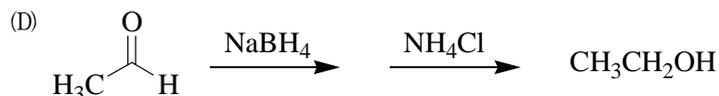
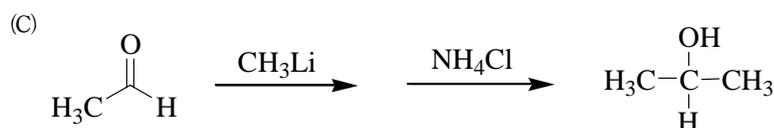
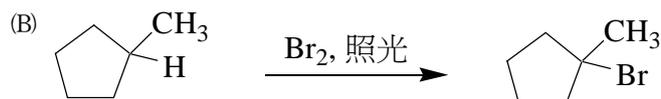
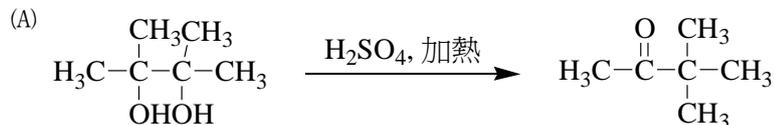
乙、測驗題部分：(50分)

代號：3438

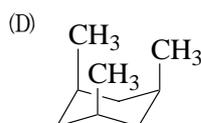
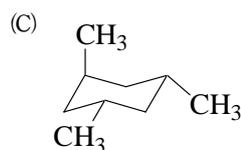
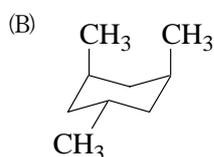
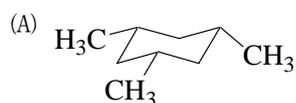
(一)本測驗試題為單一選擇題，請選出一個正確或最適當的答案，複選作答者，該題不予計分。

(二)共 25 題，每題 2 分，須用 2B 鉛筆在試卡上依題號清楚劃記，於本試題或申論試卷上作答者，不予計分。

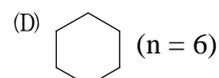
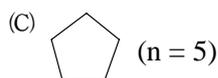
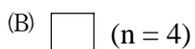
1 下列反應何者經自由基中間體？



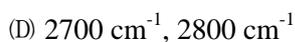
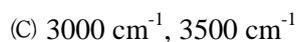
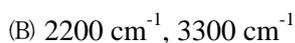
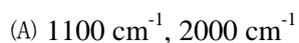
2 下列結構中何者最穩定？



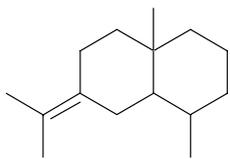
3 下列各化合物中每一個碳的莫耳燃燒熱 ( $\Delta H/n$ ) 何者最大？



4  $\text{RC}\equiv\text{CH}$  在紅外線光譜中之特定吸收為：

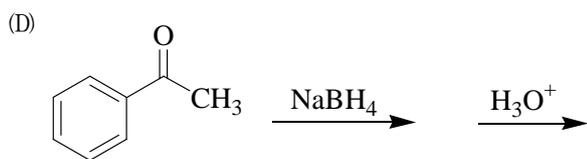
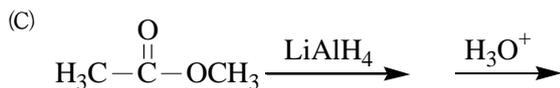
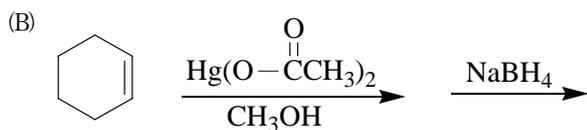
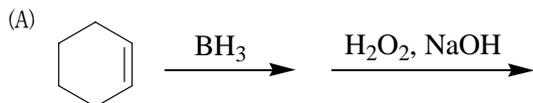


5 下列化合物屬於那一種萜類？



- (A)單萜 (B)倍半萜 (C)雙萜 (D)三萜

6 下列反應何者產物不為醇化合物？



7 形成  $\sim\text{CH}_2\text{CH}(\text{CN})\text{CH}_2\text{CH}(\text{CN})\sim$  高分子的單體是：

- (A)  $\text{CH}_3\text{CH}_2\text{CN}$  (B)  $\begin{array}{c} \text{CH}_2\text{CH}_2 \\ | \quad | \\ \text{CN} \quad \text{CN} \end{array}$  (C)  $\begin{array}{c} \text{H} \quad \quad \text{H} \\ \diagdown \quad \diagup \\ \text{C} = \text{C} \\ \diagup \quad \diagdown \\ \text{NC} \quad \quad \text{CN} \end{array}$  (D)  $\begin{array}{c} \text{H}_2\text{C} = \text{CH} \\ | \\ \text{CN} \end{array}$

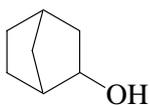
8  $\text{C}_4\text{H}_{10}\text{O}$ 有幾個醚類的同分異構物？

- (A) 1 (B) 2 (C) 3 (D) 4

9 已知(S)-2-丁醇之比旋光 (specific rotation) 為  $+13.52^\circ$ ，現有一(R), (S)-2-丁醇混合物測得其比旋光為  $-6.76^\circ$ 。請問此混合物中相對比例(R)-2-丁醇：(S)-2-丁醇之值為若干？

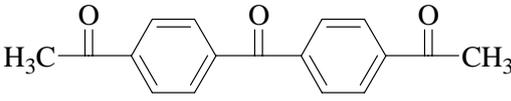
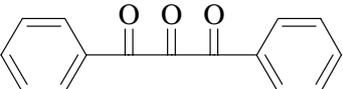
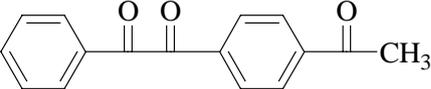
- (A) 2 : 1 (B) 1 : 2 (C) 3 : 1 (D) 1 : 3

10 有關下列結構式之敘述何者正確？

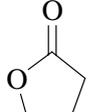
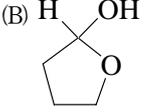
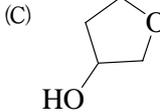


- (A)具有 2 個不對稱性碳 (B)具有 3 個不對稱性碳  
(C)具有 3 對鏡象異構物 (6 個立體異構物) (D)具有 4 對鏡象異構物 (8 個立體異構物)

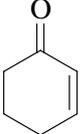
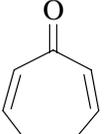
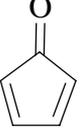
11 二苯丙三酮的結構式為：

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

12 下列化合物何者為半縮醛 (hemiacetal) ？

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

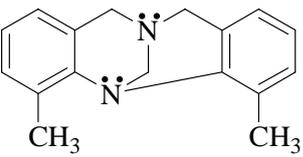
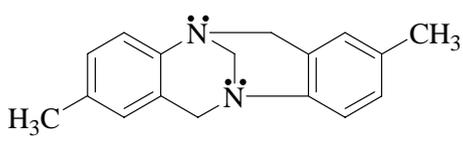
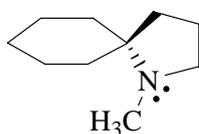
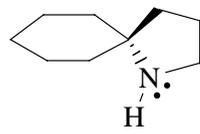
13 下列環狀酮類化合物中，何者最不安定？

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

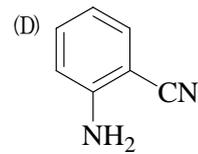
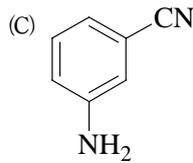
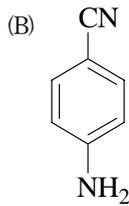
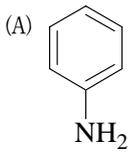
14 下列反應試劑中，何者較不適用於將硝基苯還原成苯胺？

- (A)  $\text{H}_2, \text{Pt}$                       (B)  $\text{Fe}, \text{HCl(aq)}$                       (C)  $\text{LiAlH}_4$                       (D)  $\text{Sn}, \text{HCl(aq)}$

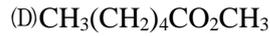
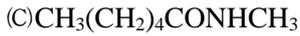
15 下列化合物中何者具有光學活性？

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

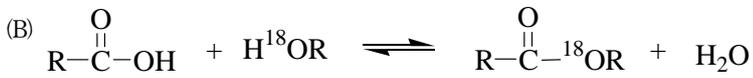
16 下列各苯胺化合物的共軛酸中，何者的 $pK_a$ 值最小？



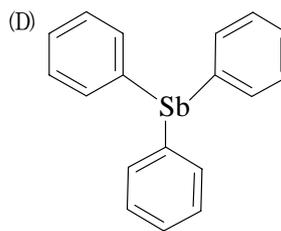
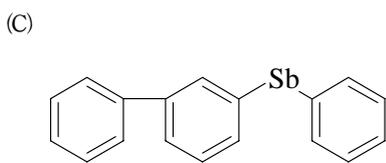
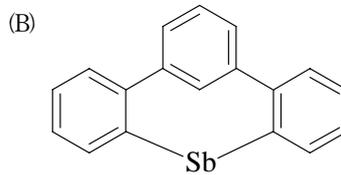
17 下列化合物中，何者與 $LiAlH_4$ 反應的主要產物不是正己醇？



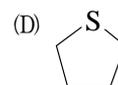
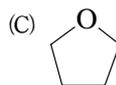
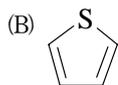
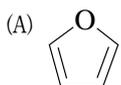
18 當含 $^{18}O$ 之醇類用於酯化反應時，下列平衡式何者正確？



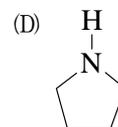
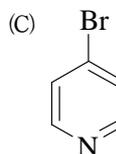
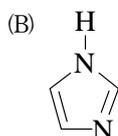
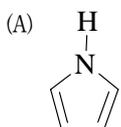
19 三苯銻的結構式為：



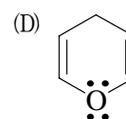
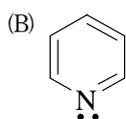
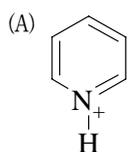
20 下列何者為四氫呋喃？



21 下列化合物中何者鹼性最強？



22 下列何者不具芳香族性 (aromaticity) ?



23 環戊烷有幾個可能的單碘衍生物? (不考慮光學異構物)

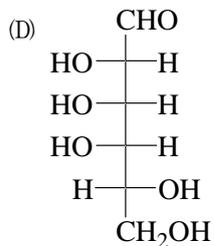
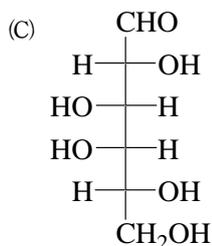
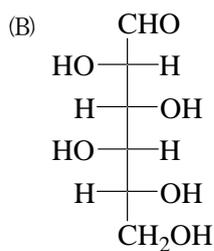
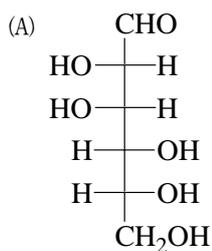
(A) 1

(B) 2

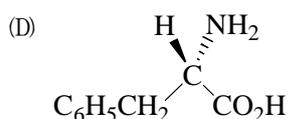
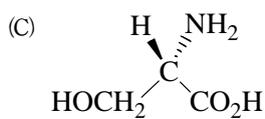
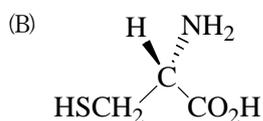
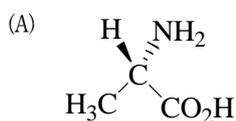
(C) 3

(D) 4

24 下列何者與  $\text{NaBH}_4$  反應後會產生一非光學活性的糖?



25 下列諸胺基酸何者為 R 構形 (configuration) ?



# 測驗式試題標準答案

考試名稱：100年特種考試地方政府公務人員考試

類科名稱：化學工程

科目名稱：有機化學概要（試題代號：3438）

題數：25題

標準答案：

題號	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
答案	B	A	A	B	B	B	D	C	C	B	C	B	C	C	B	D	C	B	D	C

題號	21	22	23	24	25															
答案	D	D	A	C	B															

題號																				
答案																				

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答案																				

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備註：