測驗題標準答案

考試名稱： 99年公務人員高等考試三級考試暨普通考試
類科名稱： 化學工程
科目名稱： 有機化學概要（試題代號：2407）
題　　數： 25題
標準答案：

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

題序	21	22	23	24	25
答案	B	C	C	B	B

備　　註： 無更正紀錄。

99 年公務人員普通考試試題

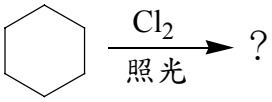
類　　科：化學工程
科　　目：有機化學概要
考試時間：1 小時 30 分　　座號：_____

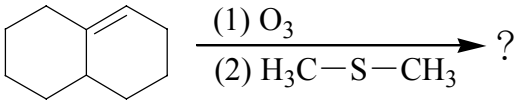
※注意：禁止使用電子計算器。

甲、申論題部分：（50 分）

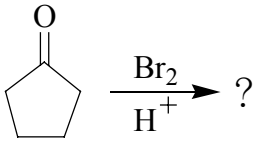
㈠不必抄題，作答時請將試題題號及答案依照順序寫在申論試卷上，於本試題上作答者，不予計分。
㈡請以藍、黑色鋼筆或原子筆在申論試卷上作答。

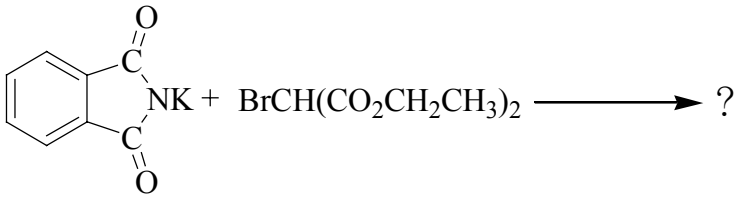
一、寫出下列反應式主要產物的結構。（每小題 2 分，共 20 分）

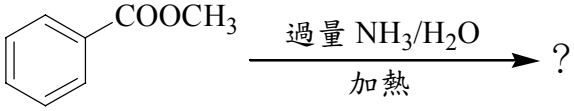
㈠ 

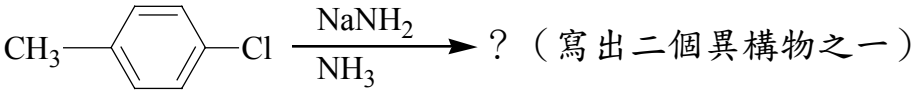
㈡ 

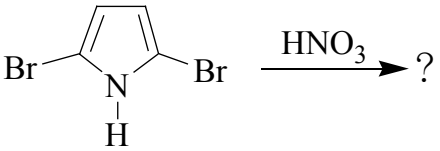
㈢ $CH_3CH_2CH_2CH_2OH$ $\xrightarrow[\text{(2) NaCN}]{\text{(1) } CH_3SO_2Cl}$?

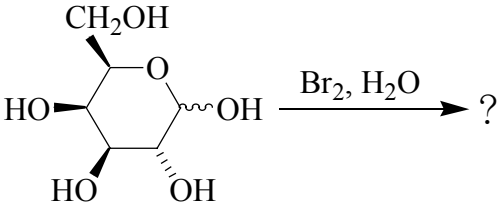
㈣ 

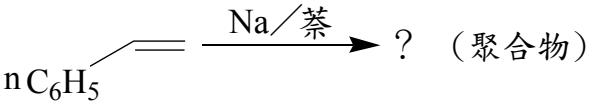
㈤ 

㈥ 

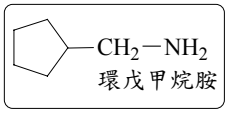
㈦ 

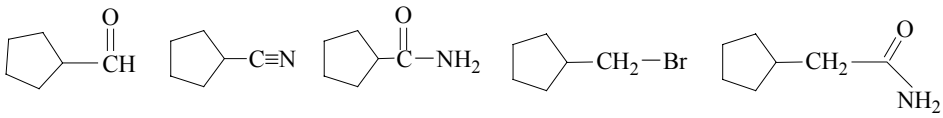
㈧ 

㈨ 

㈩ 

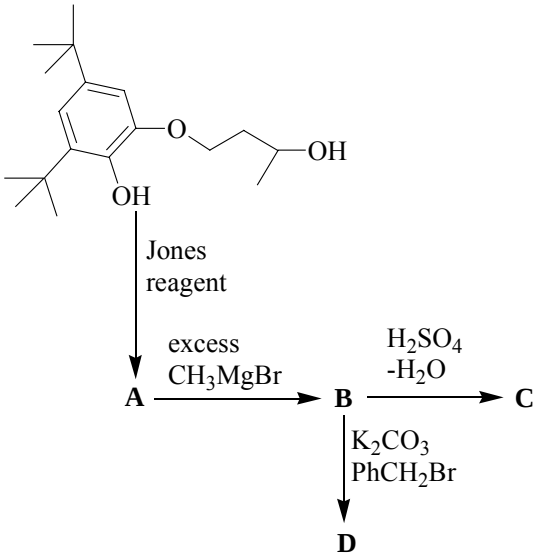
二、環戊甲烷胺（cyclopentylmethanamine）可由化合物 **A** 至 **E** 轉化製備得到，請提供各轉化所需的反應試劑。（20 分）





A **B** **C** **D** **E**

三、提供適當的產物結構 **A** 至 **D** 來完成下列的多步驟合成。（10 分）



乙、測驗題部分：（50 分） **代號：2407**

㈠本試題為單一選擇題，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。
㈡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。

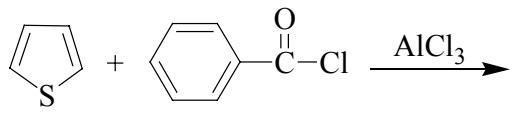
1 何者是 DNA 的二級結構？
(A) α-螺旋（an α-helix） (B)雙螺旋（a double helix） (C)摺疊結構 (D)無規線團

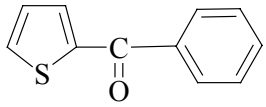
2 胜肽（Peptide）的端胺基（terminal amino group）可用下列何物反應而確認之：
(A)氟化氫 (B) 2, 4-二硝基氟苯
(C)斐林試液（Fehling's solution） (D)硝基苯

3 下列何者不是單糖？
(A)葡萄糖 (B)甘露糖 (C)乳糖 (D)果糖

4 還原糖（reducing sugar）可與下列何物作用產生沈澱？
(A)氯仿 (B)醋酸
(C)斐林試液（Fehling's solution） (D)氨

5 何者爲下列反應的主產物？



(A)


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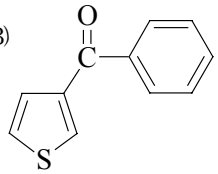
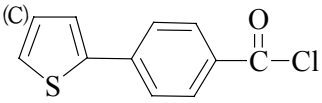
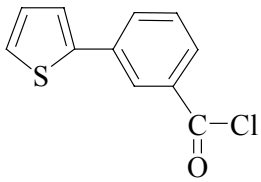
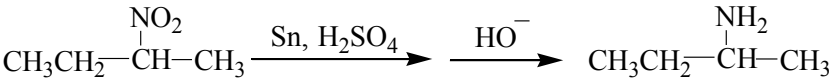
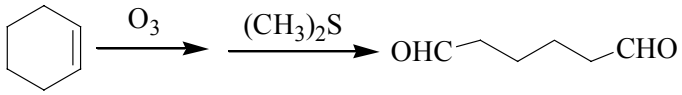


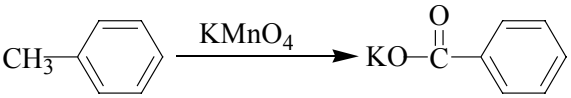
(C)


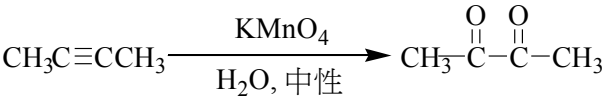
(D)


6 下列反應中何者是還原反應？

(A) 

(B) 

(C) 

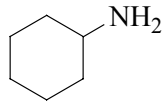
(D) 

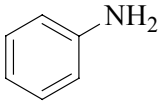
7 下列化合物的 C＝O 伸張振動頻率，何者最小？
(A)$CH_3CH_2CH_2CO_2CH_3$ (B)$CH_3CH_2CH_2CHO$
(C)$CH_3CH_2COCH_3$ (D)$CH_3CH_2CH_2CONH_2$

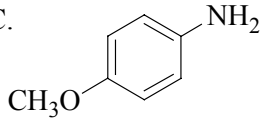
8 下列氯化醯（Acid chioride）與親核性試劑（nucleophile）之反應性，何者最大？
(A) $(CH_3)_3CCOCl$ (B) $(CH_3)_2CHCOCl$ (C)CH_3CH_2COCl (D)CH_3COCl

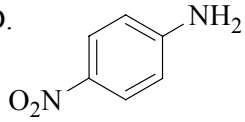
9 烷基胺進行亞硝基化（Nitrosation）時會產生：
(A)碳陽離子中間體 (B)穩定的烷基重氮離子（alkyl diazonium ion）
(C)烷基偶氮化合物 (D)亞硝酸酯

10 下列化合物之鹼性強度排列順序為：

A. 

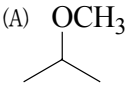
B. 

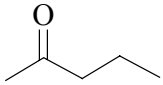
C. 

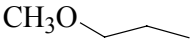
D. 

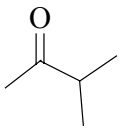
(A) D＞B＞C＞A (B) B＞C＞A＞D (C) A＞C＞B＞D (D) A＞D＞B＞C

11 下列何種化合物之紅外光譜有一 1700 cm^{-1}吸收峰，且核磁共振光譜在 δ 1.1 (d, 6H), 2.1 (s, 3H), 2.3-2.8 (m, 1H) 有共振訊號峰？

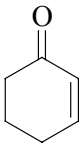
(A) 

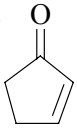
(B) 

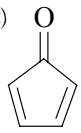
(C) 

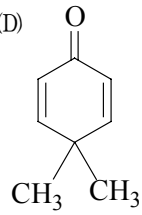
(D) 

12 下列環狀酮類化合物中，何者最不安定？

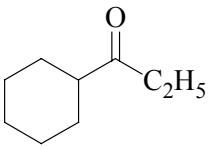
(A) 

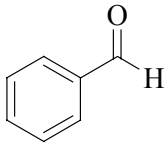
(B) 

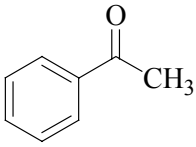
(C) 

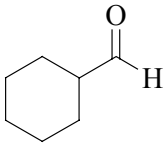
(D) 

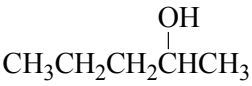
13 下列羰基化合物，何者會與I_2, NaOH在水中反應生成黃色固體？

(A) 

(B) 

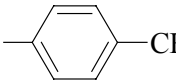
(C) 

(D) 

14 下列何者為一級醇：
(A) 

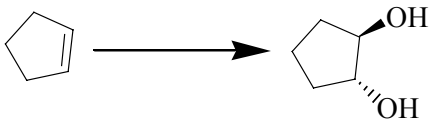
(B) $(CH_3)_3CCH_2OH$ (C) $(CH_3)_3COH$ (D) $CH_3(CH_2)_5—CHOH$
CH_3

15 下列何種化合物不存在？
(A)甲醚 (B)甲醛 (C)甲酮 (D)甲酸

16 化合物  的中文名稱為：

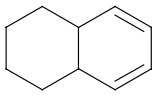
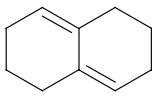
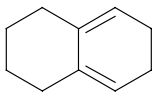
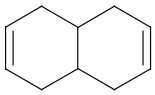
(A)對苯甲醚甲醇　(B)對甲醚苯甲醇　(C)對甲氧苄醇　(D)甲醇苯甲基醚

17 下列那一組試劑最適合用於完成下述反應？



(A)$KMnO_4$, ^-OH　(B) (1) MCPBA, (2) H_3O^+　(C)OsO_4, H_2O_2, H_2O　(D) (1) H_2O, Br_2, (2) NaOH

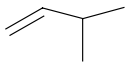
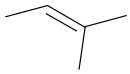
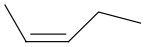
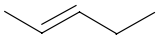
18 於紫外線光譜圖中，下列何種化合物之吸收波長（$\lambda_{\pi\to\pi^*}$）最長？

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

19 $CH_3CH{=}CH_2 \xrightarrow[H_2O]{Cl_2}$ ？

(A) $CH_3-\underset{HO}{CH}-\underset{Cl}{CH_2}$　(B) $CH_3-\underset{Cl}{CH}-\underset{OH}{CH_2}$　(C) $CH_3-\underset{Cl}{CH}-\underset{Cl}{CH_2}$　(D) $CH_3-\underset{HO}{CH}-\underset{OH}{CH_2}$

20 下列烯類化合物中何者最穩定？

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

21 下列化合物，最多可與多少莫耳的氫作用？

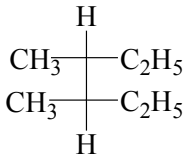
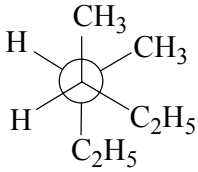
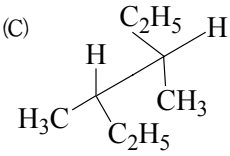
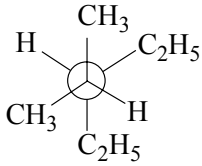
$CH_3-CH{=}CH-C{\equiv}CH$

(A) 1　(B) 3　(C) 6　(D) 8

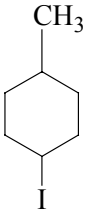
22 烷類化合物（C_nH_{2n+2}）中具掌性（chiral）者其分子量最小為若干？

(A) 72　(B) 86　(C) 100　(D) 114

23 下列各分子何者具旋光性？

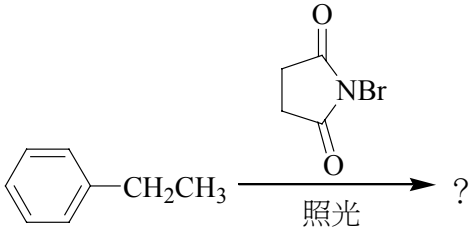
(A) 
(B) 
(C) 
(D) 

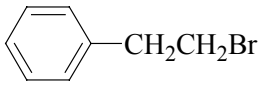
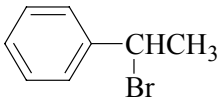
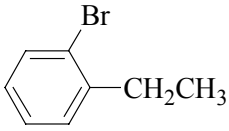
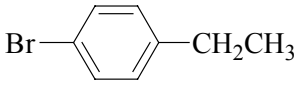
24 下列結構之國際標準命名（IUPAC）為：



(A) 1-甲基-4-碘環戊烷　(B) 1-碘-4-甲基環己烷　(C) 1-碘-3-甲基環戊烷　(D) 1-碘-3-乙基環己烷

25 下列反應之主產物為何？



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