系組：應用化學研究所碩士班　　日期節次：98 年 3 月 21 日第 3 節 13:30-15:00

科目：有機化學與分析化學[2221]

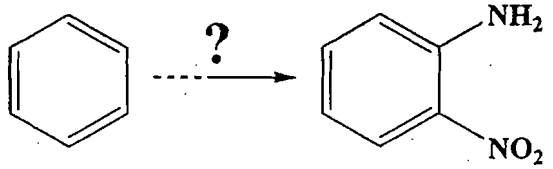
一、 (I) Define the following terms: (10 %) (5 points each)

(a) *Organic Chemistry*

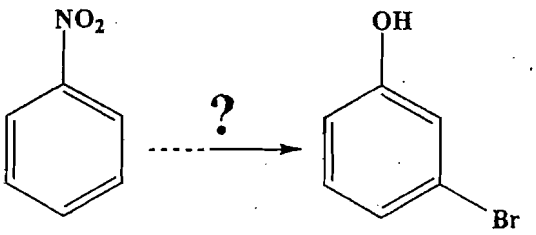
(b) *Aliphatic* Compounds and *Aromatic* Compounds

(II) (10 %) (5 points each)

(a)

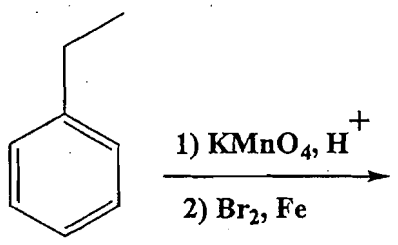


(b)



(III) Give the strustures of the major organic products of the following reactions : 3 points each

(1)



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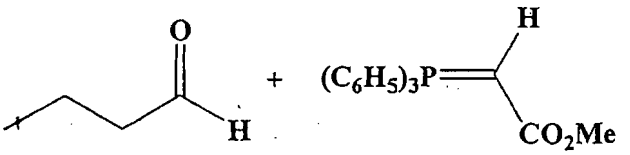

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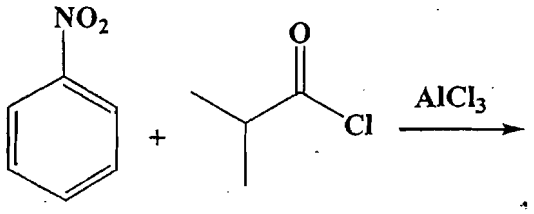

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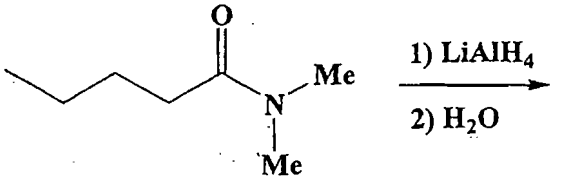

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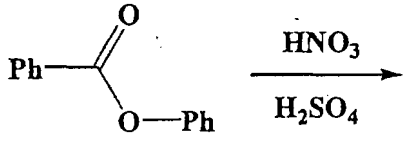

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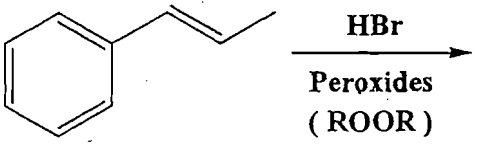

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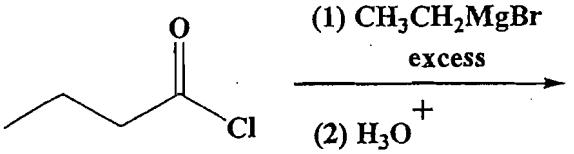

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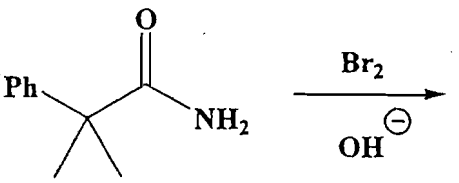
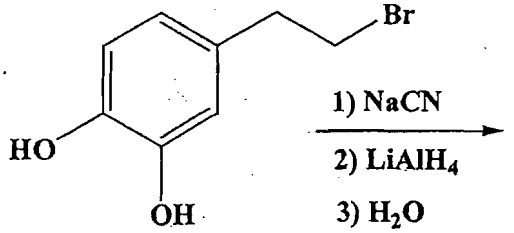
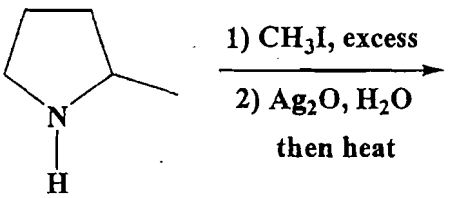


(9)



(10)



本試題採双面印刷

系組：應用化學研究所碩士班 日期節次：98 年 3 月 21 日第 3 節 13:30-15:00

科目：**有機化學與分析化學[2221]**

二、分析化學部分

1. (10%)The density of a solution containing 292.0 g of $Mg(NO_3)_2$ (molecular weight 148.3g/mole) in 880 g of H_2O is 1.108 g/ml. The molarity of the solution is _____ M.

2. (8%)Filling in the missing information in the following table:

	PH	POH	$[H^+]$	$[OH^-]$	acid base or neutral ?
Solution	5.64	___	___	___	_____

3. (10%)The K_{sp} for lead iodide (PbI_2) is 1.4×10^{-8}. Calculate the solubility of lead iodide in each of the following. (a). water. (b). 0.01 M $Pb(NO_3)_2$.

4. (10%)The measured voltage of the cell:

$$Pt(s) \mid H_2(1.0\ atm) \mid H^+(aq) \parallel Ag^+(1.0\ M) \mid Ag(s)$$

is 1.02 V at 25°C. Given E^0_{cell} is 0.80 V,
calculate the $[H^+]$ of the solution and its pH.

5. (12%) 當你決定再進修前,你熟知的化學分析儀器有那些?請列述其名稱和功用;若你進入研究所後,你的興趣領域是什麼?將會用到那些化學分析儀器,請列述其名稱和功用.