

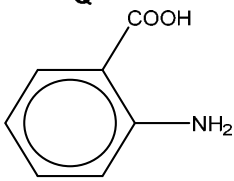
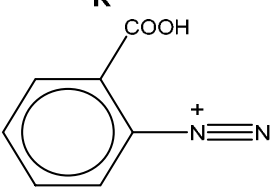
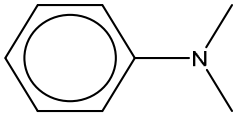
Unit Test 单元测验

A-Level Chemistry · Unit 36 Organic synthesis

29 marks · 30 minutes

Part 1 · Vocabulary answer key. Sections A and C are marked on exact spelling; Section B accepts any listed Chinese form.

Question	Answer	Marks
1	condensation polymerisation	1
2	polyamide	1
3	dye	1
4	dipeptide	1
5	racemic mixture	1
6	bidentate	1
7	ligand exchange	1
8	fragment	1
9	亲电取代	1
10	聚乙烯	1

7(a)(i)	2-nitrobenzoic acid OR 2-nitrobenzenecarboxylic acid
7(a)(ii)	hot / reflux / heat AND (alkaline / acidified / neutral) MnO_4^- / KMnO_4
7(a)(iii)	COOH / carboxyl group is electron-withdrawing / electronegative AND 3- and 5- / meta- directing
7(b)(i)	Q  R  S 
7(b)(ii)	M1 step 1: Fe / Sn, conc. HCl M2 step 2: HNO_2 OR NaNO_2 AND HCl M3 step 1: heat / reflux / hot AND step 2: $\leq 10^\circ\text{C}$

9(a)	organic starting material	reagent and conditions	
	1-butyl halide, e.g. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{Br}$	NH_3 under pressure or heated in sealed tube	[1] + [1]
	butanenitrile $\text{CH}_3\text{CH}_2\text{CH}_2\text{CN}$	H_2 and Ni or Pt / LiAlH_4 / Na + ethanol	[1] + [1]
	butanamide $\text{CH}_3\text{CH}_2\text{CH}_2\text{CONH}_2$	LiAlH_4 / Na + ethanol	[1] + [1]
9(b)	M1 butylamine > ammonia > phenylamine [1] M2 basicity related to ability of lp to accept proton / H^+ [1] M3 butylamine is stronger because of positive inductive effect of alkyl group / C_4H_9 [1] M4 phenylamine is weaker because lp on N is delocalised into ring [1]		