

**Mark Scheme 2815/02  
June 2005**

Abbreviations, annotations and conventions used in the Mark Scheme		
	/	= alternative and acceptable answers for the same marking point
	:	= separates marking points
	NOT	= answers which are not worthy of credit
	( )	= words which are not essential to gain credit
	—	= (underlining) key words which <b>must</b> be used to gain credit
	ecf	= error carried forward
	AW	= alternative wording
	ora	= or reverse argument
Question	Expected Answers	Marks
(1) (a)	<p>Any two from Specific ✓</p> <p>More reactive/effective/faster ✓</p> <p>More sensitive to changes of pH/temperature ✓</p> <p>Milder conditions ✓</p> <p>Cleaner product ✓</p> <p>But not active site. AW in each case.</p>	2
(b)	<p>Allow uncharged structure/zwitterion ✓ for CONH and ✓ for the rest(correct). Must be a genuine attempt to link them.</p> <p><math>\text{HOC}_6\text{H}_4\text{CH}_2\text{CH}(\text{NH}_2)\text{CONHCH}(\text{COOH})\text{CH}_2\text{C}_6\text{H}_4\text{OH}</math></p> <p>Or displayed in part or full.</p>	2
(c)	<p>Phenylalanine – van der Waals ✓ using benzene/phenyl/arene ring. ✓ AW</p> <p>Tyrosine – hydrogen bonding ✓ using the OH/phenol. ✓</p> <p>AW Accept van der Waals again here for 1 mark.</p>	4
	<p>The structural feature mark only follows from a correct attraction.</p> <p>Ignore any reference to ionic attraction using the terminal <math>\text{COO}^-</math> and <math>\text{NH}_3^+</math>.</p>	
(d)	<p>Any 6 marks. AW throughout.</p> <ul style="list-style-type: none"> <li>• Correct use of term transcription/translation. ✓</li> <li>• A different t-RNA, ( with a different amino acid), will be brought up to altered m-RNA triplet. ✓</li> <li>• Example of one transcription eg ATA (in DNA) → UAU ( in m-RNA) Or AAA(in DNA) → UUU (in m-RNA) ✓</li> <li>• Translation of normal RNA eg UAU Tyr ✓</li> <li>• Translation of changed RNA UUU Phe ✓</li> </ul> <p>Do not give the second translation if same acid.</p> <ul style="list-style-type: none"> <li>• New amino acid has a different sidechain ✓</li> <li>• then an important part of the tertiary structure/active site/shape may be changed. ✓</li> </ul> <p>For one of these two marks accept reference to degeneracy of the triplet code. Accept also a base change which results in a new stop code rather than new amino acid</p>	6
	Question total	14





