Question Number	Scheme	Marks
1	H_0 : The aptitude test result is independent of the test centre H_1 : The aptitude test result is not independent of the test centre	B1
	Observed / Pass / Fail / Total Centre A / 60 / 30 / 90 Centre B / 80 / 30 / 110 Total / 140 / 60 / 200	M1
	Expected / Pass / Fail Centre A / $\frac{140\times90}{200}[=63]$ / $\frac{60\times90}{200}[=27]$ Centre B / $\frac{140\times110}{200}[=77]$ / $\frac{60\times110}{200}[=33]$	M1
	$\sum\frac{(O-E)^2}{E}=\frac{(60-63)^2}{63}+\frac{(80-77)^2}{77}+\frac{(30-27)^2}{27}+\frac{(30-33)^2}{33}$ or $\sum\frac{O^2}{E}-200=\frac{60^2}{63}+\frac{80^2}{77}+\frac{30^2}{27}+\frac{30^2}{33}-200$	dM1
	$=0.8658\ldots$ awrt 0.866	A1
	$\nu=(2-1)(2-1)=1$	B1
	$\chi^2_2(0.05)=3.841$	B1ft
	[Do not reject H0/not significant/not in the CR] There is insufficient evidence that aptitude test result differs by test centre	dA1ft
		(8)

	Notes	Total 8
	B1	both hypotheses correct with result and centre (Condone aptitude test and test centre). May be written in terms of association
	M1	for a correct contingency table. May be implied by awrt 0.866
	M1	attempt at $\frac{\text{row total}\times\text{column total}}{\text{total}}$ (can be implied by at least one correct expected value)
	dM1	dependent on previous M1. For using $\sum\frac{(O-E)^2}{E}$ or $\sum\frac{O^2}{E}-200$ (There must be 4 values of $\sum\frac{(O-E)^2}{E}$ or $\sum\frac{O^2}{E}$ calculated)
	A1	awrt 0.866
	B1	$\nu=1$
	B1ft	3.841 (or better) allow ft from their stated degrees of freedom
	dA1ft	dependent on 3rd M1 and 3rd B1. For a correct contextual conclusion. Must include result and centre. (Condone aptitude test and test centre)