Question			Answer	Marks	AO	Guidance	
12	(a)		$H_0 : p = 0.097$	**B1**	**1.1**	Must be stated in terms of parameters	
			$H_1 : p > 0.097$ where p is the proportion of patients experiencing side effects within a year	**B1**	**2.5**	Undefined p **B1B0**	
			$X \sim B(450, 0.097)$ and $X = 50$	**M1**	**3.3**	Stated or implied	Only 0.138 seen without parameters/distribution
			$P(X \geq 51) = 1 - 0.862 = 0.138$ (3 s.f.)	**A1**	**3.4**	BC	**M1AO**
			Comparison with 0.1	**A1**	**1.1**		
			Do not reject H_0	**M1**	**1.1**		
			No evidence (at 10% level) that proportion under new treatment greater than under standard treatment	**A1**	**2.2b**	In context, not definite, e.g. Proportion not greater **A0**	FT their 0.138, but not comparison with 0.1
				[7]			
12	(b)		E.g. The patients could be treated together so they are not independent, so the binomial model is not valid. E.g. The 450 patients are not a random sample from the population, so the binomial model is not valid. E.g. It is not known whether the proportion of patients experiencing side effects under the standard treatment is 9.7%, so the binomial model used may not be valid.	**B1**	**3.5a**	In context, referring to independence or random sampling. Must include a comment on appropriateness.	
				[1]			