12	**(a)**		$X \sim B(600, 0.02)$	**M1**	**3.3**	soi, eg H_0: $p = 0.02$ and $B(600, p)$. Allow $n = 600$, $p = 0.02$
			Attempt $P(X \geq n)$ for $17 \leq n \leq 20$	**M1**	**2.1**	May be implied by 0.0991 or 0.0202 or 0.9798 or 0.9009 or correct values
			$(P(X \geq 18) =)$ 0.0610 or 0.061 **(2 sf)**	**A1**	**3.4**	or $(P(X \leq 17) =)$ 0.939 or 0.94 **(2 sf)**
			$(P(X \geq 19) =)$ 0.0359 or 0.036 **(2 sf)**	**A1**	**1.1**	or $(P(X \leq 18) =)$ 0.964 or 0.96 **(2 sf)** These two probabilities seen imply M1M1A1A1 Condone errors such as $P(X > 18) = 0.0610$
			P(concludes claim incorrect) = 0.0359 **(3 sf)**	**A1**	**2.2a**	Ignore hypotheses and/or "Reject H_0" or similar

Question			Answer	Mark	AO	Guidance
				[5]		Unsupported answers; 0.0359: M1M1A1A0A0 Critical region is $X \geq 19$ M1M1A0A0A0
12	**(a)**	**ctd**	**Alternative method (normal with no cc)** $X \sim N(600\times0.02, 600\times0.02\times0.98)$ or $X \sim N(12, 11.76)$ Attempt $P(X \geq n)$ for $17 \leq n \leq 20$ $P(X \geq 17) = 0.0724$ or 0.072 **(2 sf)** $P(X \geq 18) = 0.0401$ or 0.040 **(2 sf)** P(concludes claim incorrect) = 0.0401	 **M1** **M1** **A1** **A1** **A0**		 soi. Can be scored either for N(12, 11.76) or B(600, 0.02) $P(x > a) = 0.05 \Rightarrow a = 17.64$ only gets M1 if a probability is calculated
			Alternative method (normal with cc) $X \sim N(600\times0.02, 600\times0.02\times0.98)$ or $X \sim N(12, 11.76)$ Attempt $P(X \geq n)$ for $17 \leq n \leq 20$ $P(X \geq 18) = P(X \geq 17.5) = 0.054$ **(2 sf)** $P(X \geq 19) = P(X \geq 18.5) = 0.0290$ **(2 sf)** P(concludes claim incorrect) = 0.0290	 **M1** **M1** **A1** **A1** **A0**		 soi. Can be scored either for N(12, 11.76) or B(600, 0.02)
12	**(b)**		(Incorrect because eg:) You have to consider $P(X \geq 18)$ or18 is in the acceptance region (for 5% test) or critical region is ≥ 19, or CV is 19	 **B1** **[1]**	**2.3**	 or 18 is under the significance level Allow You have to do a proper hypothesis test No other answers acceptable