

Question			Answer	Mks	AO	Guidance	
12			$H_0: p = 0.2$ where $p = P(\text{A plant gets disease})$ $H_1: p < 0.2$ (not $p \leq 0.2$) $X \sim B(250, 0.2)$ and $X = 36$ (allow 35) $P(X \leq 36) = 0.0139$ or 0.014 $0.0139 < 0.02$ $\text{Reject } H_0$ (Allow Accept H_1) There is evidence that new method reduces prop of diseased plants	B1 B1 M1 A1 A1f M1 A1f [7]	1.1 2.5 3.3 3.4 1.1 2.2b 3.5a	Allow "possibility" or "proportion". Not $p = \%$ age having disease Undefined p : B1B0 Stated or implied eg by 0.0139 (or 0.00884) cao BC NB dep attempt $P(X \leq 36)$ ft their $P(X \leq 36)$ (< 0.02) Must see this statement NB dep attempt $P(X \leq 36)$ or $P(X < 36)$ and dep comp 0.02, ft their $P(X \leq 36)$, possibly not reject H_0 In context, not definite ft only their $P(X \leq 36)$ or $P(X < 36)$ possibly "no evidence.." Ignore all else $P(X < 36)$: max B1B1M1A0A0M1A1	If 2-tail test: $H_0: p = 0.2$ (defined p) B1 $H_1: p \neq 0.2$ B0 M1 A1 $0.0139 > 0.01$ A1 No more marks