Question Number	Scheme	Marks
5 (a)	$\left[m = \frac{3085}{50} \Rightarrow \right] \quad m = 61.7$	B1
	$v = \frac{190457.2 - 50(61.7)^2}{50-1} \quad = 2.3$	M1 A1
		(3)
(b)	$H_0 : \mu_A - \mu_B = 10$ $H_1 : \mu_A - \mu_B > 10$	B1
	$z = \frac{72.2 - '61.7' - 10}{\sqrt{\frac{6.4}{50} + \frac{'2.3'}{50}}}$	M1 M1
	$= 1.1986...$ awrt 1.20	A1
	One tailed c.v. $Z = 1.6449$ **or** CR: $Z \geqslant 1.6449$	B1
	Not in CR/Not significant/Do not reject H_0	M1
	No significant evidence to support the **head of department's claim**	A1
		(7)
(c)	Assume that $s^2 = \sigma^2$ for **both** samples	B1
	Assume sample sizes are large enough so that **CLT** applies or the **CLT** allows us to assume that the distributions of the sample means are (approximately) normal	B1
		(2)

	Notes	**Total 12**
(a)	**B1**	Cao
	M1	for a full attempt at s^2 ft their $\bar{x}$
	A1	Cao
(b)	**B1**	for both hypotheses correct in terms of μ_A and μ_B Allow equivalent rearrangements. Allow other letters as long it is clear which is professor A and which is professor B. Must be attached to H_0 and H_1
	M1	for $z = \frac{a - b - 10}{\sqrt{\frac{c}{50} + \frac{d}{50}}}$ with at least 2 of a, b, c or d correct (allow ±) ft their 61.7 and their 2.3
	M1	for $z = \frac{72.2 - '61.7' - 10}{\sqrt{\frac{6.4}{50} + \frac{'2.3'}{50}}}$ (allow ±) ft their 61.7 and their 2.3
	A1	awrt 1.20
	B1	for CV = ±1.6449 and compatible sign with their test statistic
	M1	for correct statement consistent with their test statistic and CV (no contradictory non-contextual comments) May be implied by correct contextual comment on its own
	A1	for a contextual conclusion that is consistent with their test statistic and their CV. Must mention head of department's claim
(c)	**B1**	for one correct assumption. Must mention **both** samples.
	B1	for a second correct assumption. Must mention **both** samples.