Question Number	Scheme	Marks
5.		
(a)	$s_A^2 = \frac{1}{39}\left(790258 - 140.4^2 \times 40\right)$ $s_B^2 = \frac{1}{31}\left(581430 - 134.7^2 \times 32\right)$	M1
	= 45.4256…. **awrt 45.4** = 26.4232… **awrt 26.4**	A1 A1
		(3)
(b)	$H_0 : \mu_A - \mu_B = 5$	B1
	$H_1 : \mu_A - \mu_B > 5$	B1
	s.e. = $\sqrt{\frac{45.4256...}{40} + \frac{26.4232...}{32}}$ (= awrt 1.4)	M1
	$z = \frac{\pm(140.4 - 134.7 - 5)}{s.e.}$ = awrt 0.50	dM1 A1
	c.v. = 1.6449	B1
	(Do not reject H_0) Insufficient evidence to support the **greengrocer's belief**. (Insufficient evidence that the **difference** in **weight** between type *A* oranges and type *B* oranges is over 5 grams).	A1ft
		(7)
(c)	Large sample sizes so…	
	Sample means are normally distributed (CLT)	B1
	$s_A^2 = \sigma_A^2$ **and** $s_B^2 = \sigma_B^2$	B1
		(2)
		Total 12
	Notes	
(a)	M1 one correct expression A1 either awrt 45.4 or awrt 26.4 A1 both awrt 45.4 and awrt 26.4	
(b)	B1 Allow equivalent rearrangements. Must use μ B1 Allow equivalent rearrangements. Must use μ. For both hypotheses do not allow e.g. μ_1 and μ_2 unless each has been clearly defined M1 attempt at standard error (allow one slip) ft their (a) dM1 standardising with (140.4 – 134.7 – 5) and their s.e. (dep on previous M1) A1 for 0.5 or awrt 0.50 B1 correct c.v. 1.6449 or better. Allow –1.6449 or better with use of $\mu_B - \mu_A$ Allow p = awrt 0.309 A1ft correct ft conclusion in context with either greengrocer's belief (oe) or difference in weights (oe) **dependent on all B and M marks scored.**	
(c)	B1 must comment on both sample means, $\bar{A}$ and $\bar{B}$ B1 must comment on both variances/standard deviations	