Question 3			
		Answer	**Marks**
a)		($C_aH_bN_cO_d \rightarrow a\ CO_2 + b/2\ H_2O + c/2\ N_2$) **d = 2a + b/2** *Award 1 mark for **2a** and 1 mark for **b/2***	2
b)		O balance = $\frac{16 \times (d - 2a - b/2)}{(12a + b + 14c + 16d)} \times 100\%$ *Allow 1 mark if correct but* 'x 100' *missing*	2
c)		O balance = - [100 × (3 × 16) / 222.14] = -21.6% *Award 1 mark for correct sign, 1 mark for magnitude.* *Allow ecf (both number and sign) from expression in (a).*	2
d)		$C_7H_5N_3O_6 \rightarrow 3\ CO + 3\ C + CO_2 + 3/2\ H_2 + 3/2\ N_2 + H_2O$ *Allow 1 mark if equation is incorrect but correct products are shown and equation is balanced.*	2
e)		Amount of gas = 1/24 mol. Molar ratio TNT: gas = 1:7 [*Allow ecf from (d)*] Amount of TNT = 1/7 × 1/24 mol = 1/168 mol = 0.0060 mol Mass of TNT = 227.14 g mol^{-1} × 1/168 mol = 1.35 g *Award 2 marks for correct answer (with ecf if necessary) without working.*	2

10 marks

Note: Tests are to be taken under controlled conditions. Students must not have access to the information contained in this marking scheme prior to, or during, the test.