Mark scheme

Question			Answer/Indicative content	Marks	Guidance
1			C ✓	1 (AO 1.1)	
			Total	**1**	
2	a		No effect / **AW** ✓	1 (AO 1.1)	**ALLOW** a catalyst just increases the rate of reaction **Examiner's Comments** **Misconception** A common misconception was that using a catalyst would change the position of equilibrium.
	b	i	Yield decreases ✓ (Lower pressure) moves position of equilibrium to the left / favours the backward reaction / **ORA** ✓ As there are more moles or molecules on the LHS / **ORA** ✓	3 (AO 2.1) (2 × AO 1.1)	**ALLOW** yield of CO and H_2 increases **ALLOW** (equilibrium moves) to favour the reactants / to favour CO and H_2 **ALLOW** equilibrium moves to increase the pressure **Examiner's Comments** Many candidates were able to identify that the lower pressure would decrease the yield of methanol, explaining that the position of equilibrium would move to the left as there are more moles/molecules on the left-hand side of the equation. Lower attaining candidates usually explained the lower yield in terms of particle collisions and rate of reaction.
		ii	Idea that the rate of reaction is slow(er) when a lower temperature is used / **ORA** ✓	1 (AO 1.1)	**Examiner's Comments** Most candidates appreciated that the reaction would be slower at 150 °C. Two thirds of candidates were able to respond correctly to this question.

			Total	**5**	
3			**B**	1 (AO 1.1)	
			Total	**1**	