Carbon-Carbon Bond Formation (MCQ)

1. Which of the following reactions produce propan-1-ol?

1 The alkaline hydrolysis of 1-chloropropane.
2 The acid hydrolysis of propyl methanoate.
3 The acid hydrolysis of propanenitrile.

A 1, 2 and 3
B Only 1 and 2
C Only 2 and 3
D Only 1

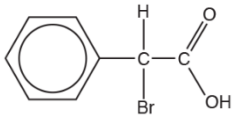
Your answer ☐ **[1]**

2. Which of these reagent(s) will **not** react with $HOCH_2CH_2CH_2COOH$?

A NaCN in ethanol
B C_2H_5OH in the presence of an acid catalyst
C $(CH_3CO)_2O$
D concentrated H_2SO_4

Your answer ☐ **[1]**

3. Which of the following could react with the compound below to form a carbon–carbon bond?

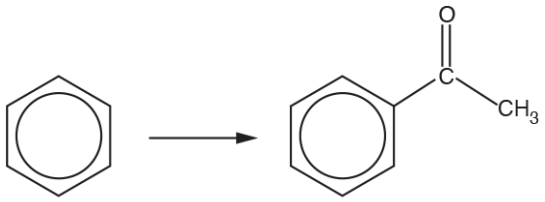


1 CH_3Cl and $AlCl_3$
2 KCN in ethanol
3 CH_3OH and H_2SO_4

A 1, 2 and 3
B Only 1 and 2
C Only 2 and 3
D Only 1

Your answer ☐ **[1]**

4. Benzene reacts with an organic reagent in the presence of a halogen carrier to form phenylethanone.



phenylethanone

Which organic reagent is required?

A CH_3CH_2OH
B CH_3CHO
C CH_3COCl
D CH_3COOH

Your answer ☐ **[1]**

END OF QUESTION PAPER

Mark scheme – Carbon-Carbon Bond Formation (MCQ)

Question			Answer/Indicative content	Marks	Guidance
1			**B**	1 (AO2.3)	
			Total	**1**	
2			**A**	1 (AO1.1)	
			Total	**1**	
3			**B**	**1**	**Examiner's Comments** Candidates found this question difficult, presumably as it involved reactions of different functional groups within the same compound. Many candidates identified B as the correct response. The most common incorrect responses were C and D.
			Total	**1**	
4			**C**	**1**	**Examiner's Comments** Almost all candidates identified C (CH_3COCl) as the reagent required for this reaction.
			Total	**1**	