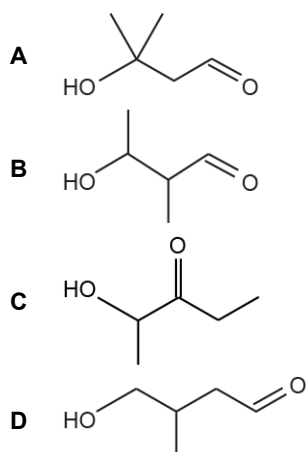


Carbonyl Compound (MCQ)

1. Which compound can be refluxed with acidified potassium dichromate (VI) to form an organic product with molecular formula $C_5H_8O_2$?



Your answer

[1]

2. A carbonyl compound is reacted with $NaBH_4$.
Which compound(s) could be formed?

- 1 2-Methylpentan-2-ol
- 2 2-Methylpentan-1-ol
- 3 3-Methylpentan-2-ol

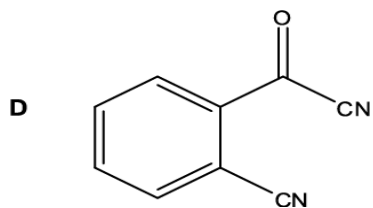
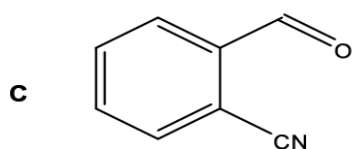
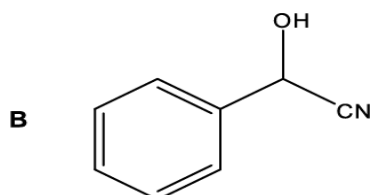
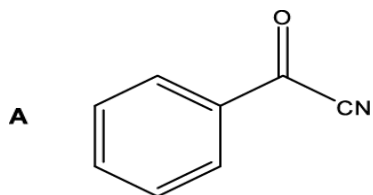
- A** 1, 2 and 3
B Only 1 and 2
C Only 2 and 3
D Only 1

Your answer

[1]

3. Benzaldehyde, C_6H_5CHO , reacts with $NaCN(aq)/H^+(aq)$.

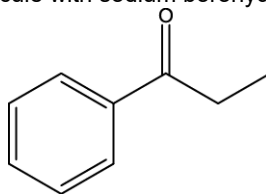
What is the organic product of this reaction?



Your answer

[1]

4. A chemist reacts the following molecule with sodium borohydride, $NaBH_4$.



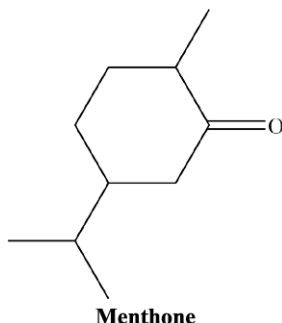
Which functional group is formed in the reaction?

- A. Carboxylic acid
- B. Secondary alcohol
- C. Primary alcohol
- D. Aldehyde

Your answer

[1]

5. Carbonyl compounds have distinctive smells.
Menthone smells of peppermint.



Menthone is reacted in a two-step synthesis shown below.

Step 1: A sample of menthone is added to hot acidified aqueous dichromate(VI) ions.

Step 2: The resulting mixture from **Step 1** is added to NaBH_4 in water.

What happens to the smell of the reaction mixture during the process?

	Step 1	Step 2
A	Smell of peppermint remains	Smell of peppermint is lost
B	Smell of peppermint is lost	Smell of peppermint returns
C	Smell of peppermint remains	Smell of peppermint remains
D	Smell of peppermint is lost	Smell of peppermint does not return

Your answer

[1]

6. CN^- ions react with haloalkanes and with carbonyl compounds.

Which row gives the correct mechanisms for the reactions?

	Reaction of CN^- with haloalkanes	Reaction of CN^- with carbonyl compounds
A	Electrophilic substitution	Electrophilic addition
B	Electrophilic substitution	Nucleophilic addition
C	Nucleophilic substitution	Electrophilic addition
D	Nucleophilic substitution	Nucleophilic addition

Your answer

[1]

7. The functional group in an organic compound, **W**, was identified by carrying out two chemical tests.
The results of the tests are shown below.

Heating with acidified sodium dichromate(VI)(aq)	Addition of 2,4-dinitrophenylhydrazine(aq)
orange solution turns green	yellow / orange precipitate formed

Which compound could be **W**?

- A. $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$
- B. CH_3COCH_3
- C. $\text{CH}_3\text{CH}(\text{OH})\text{CH}_3$
- D. $\text{CH}_3\text{CH}_2\text{CHO}$

Your answer

[1]

END OF QUESTION PAPER

Mark scheme – Carbonyl Compounds (MCQ)

Question			Answer/Indicative content	Marks	Guidance
1			C	1 (AO2.3)	
			Total	1	
2			C	1 (AO 1.2)	<u>Examiner's Comments</u> This question discriminated well, with the higher ability candidates correctly selecting C. The most common incorrect response was A.
			Total	1	
3			B	1	
			Total	1	
4			B	1	
			Total	1	
5			A	1	
			Total	1	
6			D	1	
			Total	1	
7			D	1	
			Total	1	