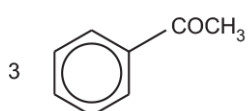
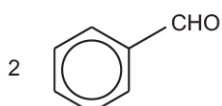
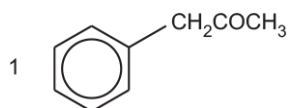


Aromatic Compounds

1. Which compound(s) could be prepared by reacting benzene with an acyl chloride in the presence of a halogen carrier?



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

Your answer

[1]

2. Which one of the following reacts with ethanoic acid **and** with phenol?

- A** Aqueous potassium hydroxide
B Bromine
C Calcium carbonate
D Methanol and an acid catalyst

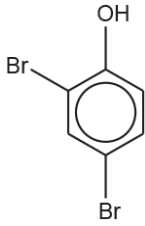
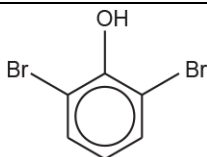
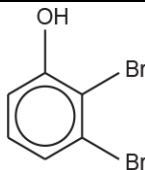
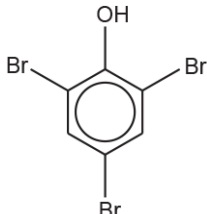
Your answer

[1]

6.1.1 Aromatic Compounds MCQ

3. Phenol reacts with bromine.

Which is the **least** likely organic product?

A	
B	
C	
D	

Your answer

[1]

4. Which chemical(s) can react with phenol?

- 1 Potassium hydroxide
- 2 Ethanoyl chloride
- 3 Nitric acid

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

Your answer

[1]

6.1.1 Aromatic Compounds MCQ

5. Which statement(s) support(s) the delocalised model for the structure of benzene?

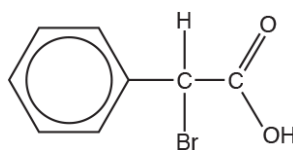
- 1 All carbon-carbon bonds have the same length.
- 2 The enthalpy change of hydrogenation of benzene is less exothermic than expected.
- 3 Bromine reacts with benzene less readily than with cyclohexene.

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

Your answer

[1]

6. 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

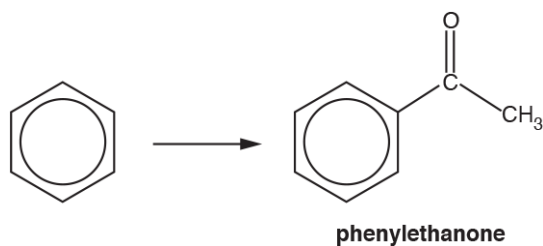
- A** 1, 2 and 3
B Only 1 and 2
C Only 2 and 3
D Only 1

Your answer

[1]

6.1.1 Aromatic Compounds MCQ

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



Which organic reagent is required?

- A $\text{CH}_3\text{CH}_2\text{OH}$
- B CH_3CHO
- C CH_3COCl
- D CH_3COOH

Your answer

[1]

8. Which reagent could be used to distinguish between $\text{CH}_3\text{CH}_2\text{OH}$ and $\text{C}_6\text{H}_5\text{OH}$?

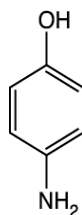
- A $\text{AgNO}_3(\text{aq})$ in ethanol
- B CH_3COCl
- C $\text{Na}_2\text{CO}_3(\text{aq})$
- D Bromine water

Your answer

[1]

6.1.1 Aromatic Compounds MCQ

9. The compound shown below can be prepared from phenol.



Which reagent(s) is/are required?

- A Concentrated NH₃
- B Dilute NH₃
- C Dilute HNO₃ and then concentrated HCl / Sn
- D Dilute HNO₃ and then NaBH₄

Your answer

[1]

10. What is the number of sigma bonds in a benzene molecule?

- A 3
- B 6
- C 9
- D 12

Your answer

[1]

11. A student adds bromine water to a solution of phenol.

What would the student see during this reaction?

- A. Bromine water goes from orange to green.
- B. Bromine water goes from orange to colourless and a white precipitate is formed.
- C. There is no reaction.
- D. Bromine water goes from orange to colourless and the solution fizzes.

Your answer

[1]

6.1.1 Aromatic Compounds MCQ

12. What is the mechanism for the nitration of benzene?

- A. Nucleophilic addition
- B. Nucleophilic substitution
- C. Electrophilic addition
- D. Electrophilic substitution

Your answer

[1]

13. Which of the following support(s) the delocalised model for benzene rather than the Kekulé model?

- 1: Benzene is less reactive than cyclohexene
 - 2: A benzene molecule has a planar, hexagonal structure
 - 3: The enthalpy change of hydrogenation of benzene is more exothermic than predicted from the Kekulé structure
- A. 1, 2 and 3
 - B. Only 1 and 2
 - C. Only 2 and 3
 - D. Only 1

Your answer

[1]

14. Bromine is reacted separately with nitrobenzene and phenylamine.

Which organic products are likely to form?

	Product from nitrobenzene	Product from phenylamine
A	2-bromonitrobenzene	2-bromophenylamine
B	2-bromonitrobenzene	3-bromophenylamine
C	3-bromonitrobenzene	2-bromophenylamine
D	3-bromonitrobenzene	3-bromophenylamine

Your answer

[1]

15. Two chemical tests are carried out on an aqueous solution of an aromatic organic compound **Y**.
The results of the tests are shown below.

Test	Br ₂ (aq)	Na ₂ CO ₃ (aq)
Observation	decolourised	effervescence

What is the minimum number of C atoms in **Y**?

- A. 6
- B. 7
- C. 8
- D. 9

Your answer

[1]

END OF QUESTION PAPER

Mark scheme – Aromatic Compounds (MCQ)

Question			Answer/Indicative content	Marks	Guidance
1			C	1 (AO1.2)	
			Total	1	
2			A	1 (AO1.1)	
			Total	1	
3			C	1 (AO 1.2)	
			Total	1	
4			A	1 (AO 1.1)	<p><u>Examiner's Comments</u></p> <p>This question proved difficult. Many candidates correctly deduced that all three chemicals would react with phenol and selected A. Some candidates did not recognise that phenol would react with HNO³ without the need for a catalyst and selected B. Other candidates did not consider the weak acidity of phenol and selected C.</p>
			Total	1	
5			A	1	<p><u>Examiner's Comments</u></p> <p>The bonding in benzene is well known by candidates at this level and most correctly selected A as their response.</p>
			Total	1	
6			B	1	<p><u>Examiner's Comments</u></p> <p>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.</p>
			Total	1	
7			C	1	<p><u>Examiner's Comments</u></p> <p>Almost all candidates identified C</p>

6.1.1 Aromatic Compounds MCQ

					(CH ₃ COCl) as the reagent required for this reaction.
			Total	1	
8			D	1	
			Total	1	
9			C	1	
			Total	1	
10			D	1	
			Total	1	
11			B	1	
			Total	1	
12			D	1	
			Total	1	
13			D	1	
			Total	1	
14			C	1	
			Total	1	
15			B	1	
			Total	1	