AQA – Organic Synthesis – A2 Chemistry P3

1. June/ 2020/Paper_3/No.22

Which has *E*-*Z* isomers?

[1 mark]

A $C_2H_2Br_2$ ⬭

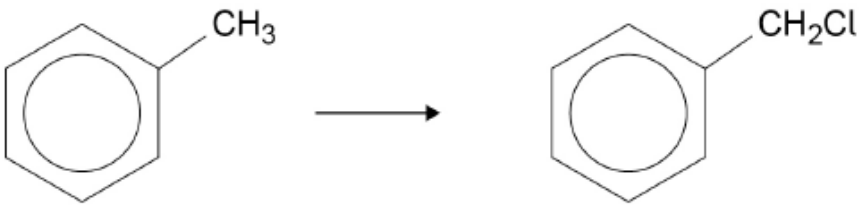
B C_2H_3Br ⬭

C $C_2H_4Br_2$ ⬭

D C_2H_5Br ⬭

2. June/ 2020/Paper_3/No.23

Which is the mechanism for this conversion?



[1 mark]

A Addition-elimination ⬭

B Electrophilic substitution ⬭

C Free-radical substitution ⬭

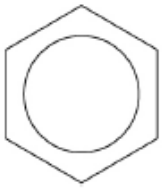
D Nucleophilic substitution ⬭

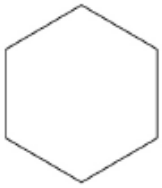
3. June/ 2020/Paper_3/No.24

Which compound decolourises bromine water in the absence of sunlight?

[1 mark]

A $CH_3CH_2CH_2Br$ ⬭

B  ⬭

C  ⬭

D $CH_3CH_2CHCH_2$ ⬭

4. June/ 2020/Paper_3/No.26

Which does **not** contain an asymmetric carbon atom?

[1 mark]

A $CH_3CH(CH_3)CH_2CH_3$ ⬭

B $CH_3CH_2CH(CH_3)CH_2CH_2CH_3$ ⬭

C $CH_3CH(OH)CH_2OH$ ⬭

D $CH_3CH_2CHClCH_3$ ⬭

5. June/ 2020/Paper_3/No.27

Which reaction involves addition-elimination?

[1 mark]

A $(CH_3)_2CHBr + KOH \rightarrow CH_3CH{=}CH_2 + KBr + H_2O$ ⬭

B $CH_3COCl + C_6H_5OH \rightarrow CH_3COOC_6H_5 + HCl$ ⬭

C $CH_3CH{=}CH_2 + Cl_2 \rightarrow CH_3CHClCH_2Cl$ ⬭

D $CH_3CH_2CH_2Br + NaOH \rightarrow CH_3CH_2CH_2OH + NaBr$ ⬭

6. June/ 2020/Paper_3/No.28

Which compound reacts with hydrogen bromide to give 2-bromo-3-methylbutane as the major product?

[1 mark]

A $(CH_3)_2C=CHCH_3$ ⬭

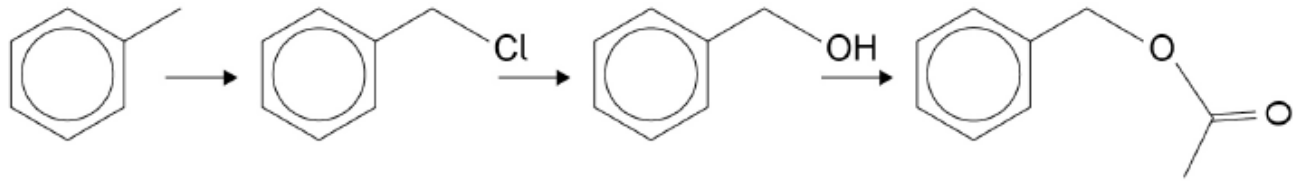
B $CH_3(CH_2)_2CH=CH_2$ ⬭

C $CH_3CH_2C(CH_3)=CH_2$ ⬭

D $(CH_3)_2CHCH=CH_2$ ⬭

7. June/ 2019/Paper_3/No.21

A possible synthesis of a compound found in jasmine flower oil is shown.



Which mechanism is **not** used in this synthesis?

[1 mark]

A Electrophilic substitution ⬭

B Nucleophilic substitution ⬭

C Free-radical substitution ⬭

D Nucleophilic addition-elimination ⬭

8. June/ 2019/Paper_3/No.23

Three reagents are added separately to four organic compounds.

Which row shows the correct observations?

[1 mark]

		Sodium hydrogen carbonate	Acidified potassium dichromate(VI)	Tollens' reagent	
A	**Propan-1-ol**	effervescence	orange solution turns green	no visible change	⬭
B	**Propanal**	no visible change	orange solution turns green	silver mirror	⬭
C	**Propanone**	no visible change	no visible change	silver mirror	⬭
D	**Propanoic acid**	effervescence	no visible change	silver mirror	⬭

9. June/ 2019/Paper_3/No.32

In the UK industrial ethanol is now produced by the direct hydration of ethene. This process has largely replaced the fermentation method.

Which is a likely reason for this change of method?

[1 mark]

A The direct hydration route produces purer ethanol. ⬭

B The direct hydration route employs milder conditions. ⬭

C The direct hydration route does NOT use a catalyst. ⬭

D The direct hydration route produces ethanol by a slower reaction. ⬭

10. June/ 2019/Paper_3/No.33

Which alkene reacts with hydrogen bromide to give 2-bromo-3-methylbutane as the major product?

[1 mark]

A $(CH_3)_2C=CHCH_3$ ⬭

B $CH_3CH_2CH=CHCH_3$ ⬭

C $CH_3CH_2C(CH_3)=CH_2$ ⬭

D $(CH_3)_2CHCH=CH_2$ ⬭

11. June/ 2019/Paper_3/No.34

Which compound can be purified by forming a hot aqueous solution that recrystallises on cooling?

[1 mark]

A Cyclohexene ⬭

B Ethanoic acid ⬭

C Phenylamine ⬭

D Benzoic acid ⬭