



EXAM PAPERS PRACTICE

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Practice questions created by actual examiners and assessment experts

Detailed mark scheme

Suitable for all boards

Designed to test your ability and thoroughly prepare you

2002

XVIII

1583

Time allowed
32 Minutes

Score

/27

Percentage

%

CHEMISTRY

AQA
AS & A LEVEL

Topic Questions

3.3 Organic chemistry

1. The number of structural isomers of molecular formula C_4H_9Br is

- A 5
- B 4
- C 3
- D 2

(Total 1 mark)

2.

Summarised directions for recording responses to multiple completion questions			
A (i), (ii) and (iii) only	B (i) and (iii) only	C (ii) and (iv) only	D (iv) alone

Isomers of the ester $HCOOCH_2CH_2CH_3$, include

- (i) ethyl ethanoate
- (ii) methyl propanoate
- (iii) butanoic acid
- (iv) butyl methanoate

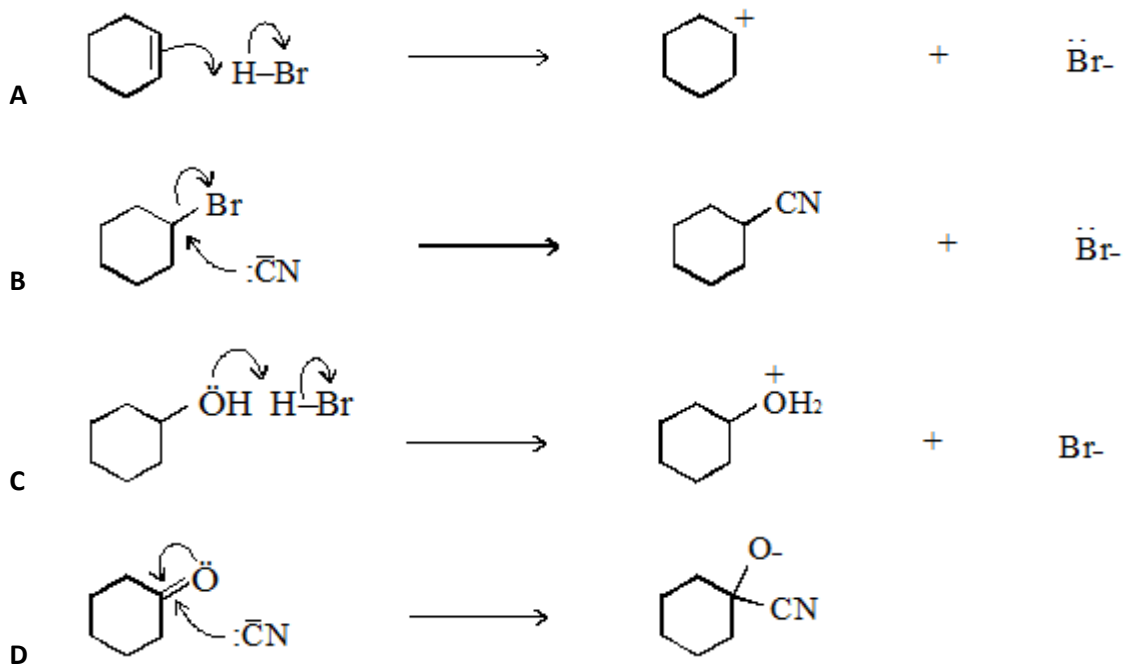
(Total 1 mark)

3. CH_2O is the empirical formula of

- A methanol
- B methyl methanoate
- C ethane-1,2-diol
- D butanal

(Total 1 mark)

4. In which one of the following are the curly arrows **not** used correctly?



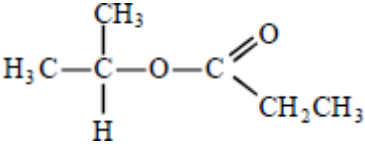
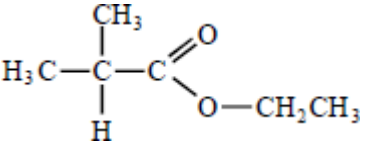
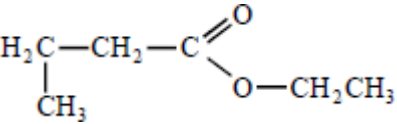
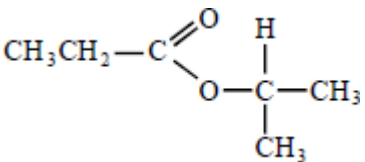
(Total 1 mark)

5. How many structural isomers, which are esters, have the molecular formula $C_4H_8O_2$?

- A 2
- B 3
- C 4
- D 5

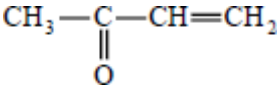
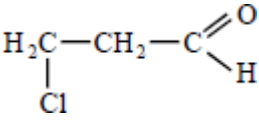
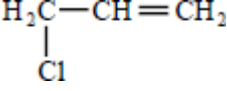
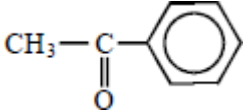
(Total 1 mark)

6. The structural formula of ethyl 2-methylpropanoate is

- A 
- B 
- C 
- D 

(Total 1 mark)

7. Which one of the following can react both by nucleophilic addition and by nucleophilic substitution?

- A 
- B 
- C 
- D 

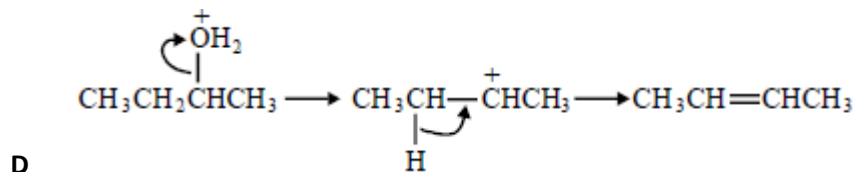
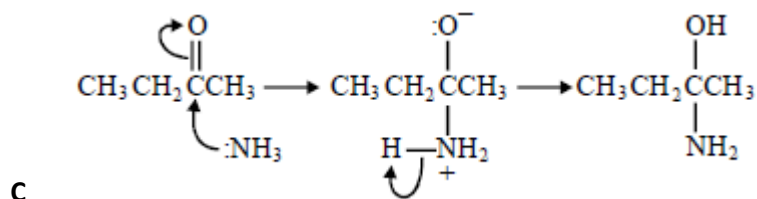
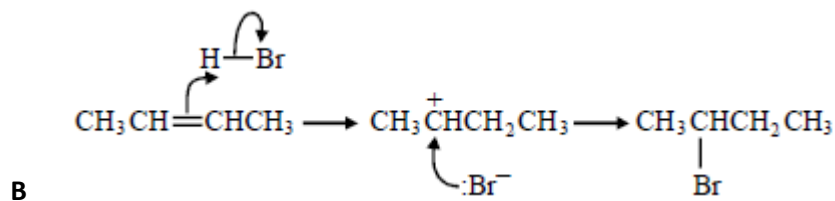
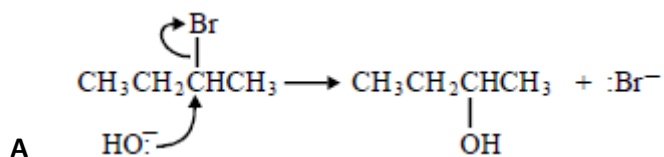
(Total 1 mark)

8 Which one of the following is the correct name for $\begin{array}{c} \text{CH}_3\text{C}=\text{CBrCH}_3 \\ | \\ \text{CH}_2\text{CH}_3 \end{array}$?

- A 2-bromo-3-methylpent-2-ene
- B 2-bromo-3-ethylbut-2-ene
- C 3-bromo-2-ethylbut-2-ene
- D 4-bromo-3-methylpent-3-ene

(Total 1 mark)

9 In which of the following is a curly arrow used incorrectly?



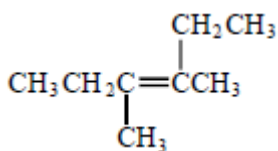
(Total 1 mark)



10 How many structural isomers, which are aldehydes, have the molecular formula $C_5H_{10}O$?

- A 2
- B 3
- C 4
- D 5

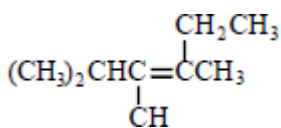
(Total 1 mark)



11 The correct systematic name for is

- A 2,3-diethylbut-2-ene
- B 2-ethyl-3-methylpent-2-ene
- C 4-ethyl-3-methylpent-3-ene
- D 3,4-dimethylhex-3-ene

(Total 1 mark)

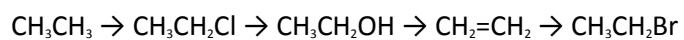


12 The correct systematic name for is

- A 2-ethyl-3,4-dimethylpent-2-ene
- B 4-ethyl-2,3-dimethylpent-3-ene
- C 2,3,4-trimethylhex-3-ene
- D 3,4,5-trimethylhex-3-ene

(Total 1 mark)

13 Which one of the following mechanisms is **not** involved in the reaction sequence below?



- A electrophilic addition
- B electrophilic substitution
- C nucleophilic substitution
- D free-radical substitution

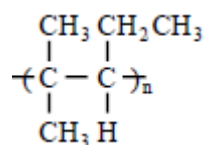
(Total 1 mark)

14 The number of structural isomers of $\text{C}_3\text{H}_2\text{Cl}_6$ is

- A 2
- B 3
- C 4
- D 5

(Total 1 mark)

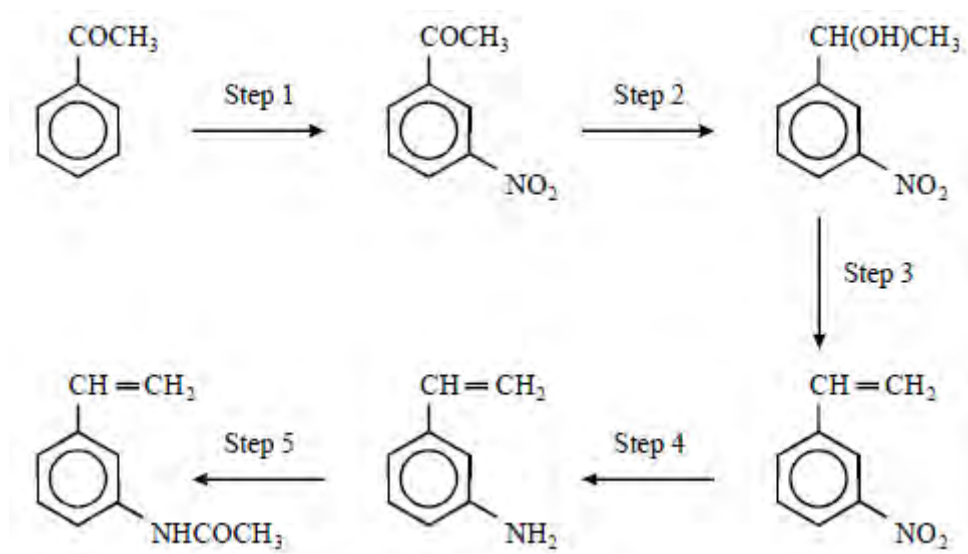
15. The correct name for the alkene monomer which forms the polymer shown below is



- A 2-methyl-3-ethylpropene
- B 2-methylpent-2-ene
- C 2-methylpent-3-ene
- D 4-methylpent-2-ene

(Total 1 mark)

16. Refer to the following reaction sequence:

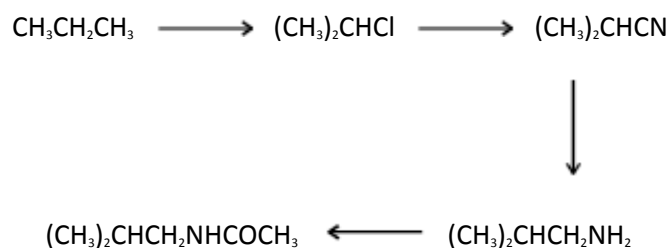


Which one of the following types of reaction mechanism is **not** involved in the above sequence?

- A electrophilic addition
- B electrophilic substitution
- C addition-elimination
- D elimination

(Total 1 mark)

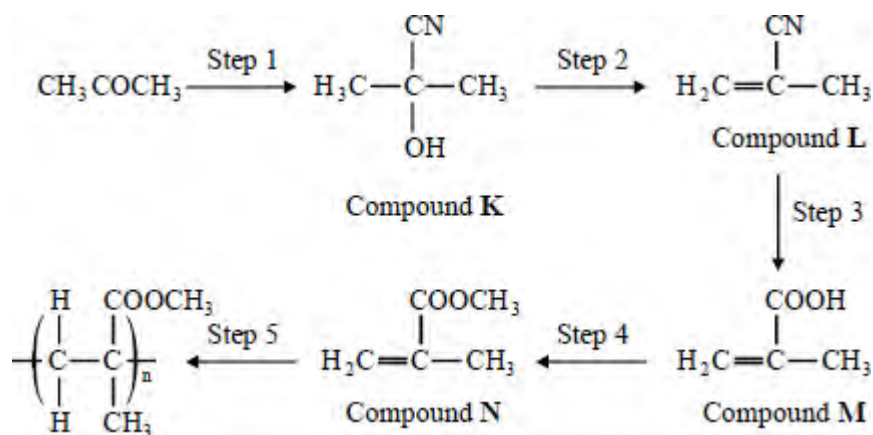
17. Which one of the following types of reaction mechanism is **not** involved in the above sequence?



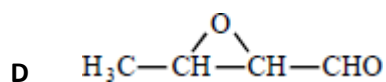
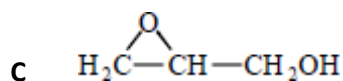
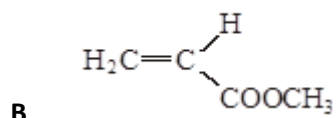
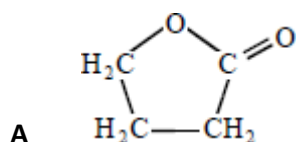
- A free-radical substitution
- B nucleophilic substitution
- C elimination
- D nucleophilic addition-elimination

(Total 1 mark)

18. This question concerns the preparation of the plastic poly(methyl 2-methylpropenoate) (*Perspex*), starting from propanone.

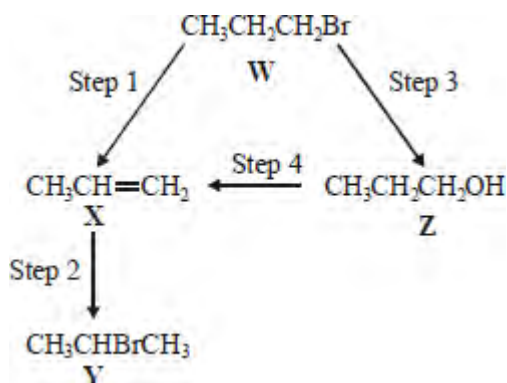


Which one of the following is **not** a structural isomer of Compound **M**?



(Total 1 mark)

19. For this question refer to the reaction scheme below.



Which one of the following statements is **not** correct?

- A **W** and **Y** are structural isomers.
- B **Z** is a primary alcohol.
- C **Y** gives two peaks in its proton n.m.r. spectrum.
- C **X** has geometrical isomers.

(Total 1 mark)

20. Propanone can be reduced to form an alcohol. A functional group isomer of the alcohol formed is

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

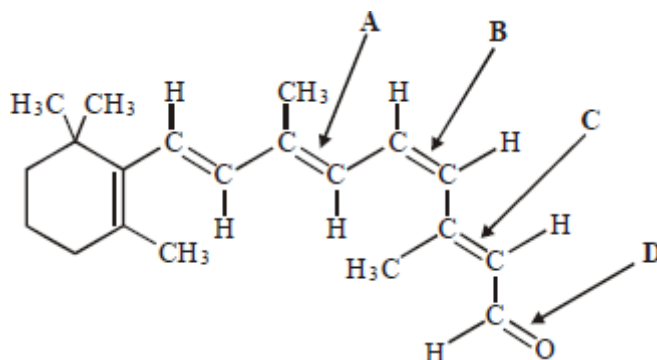
(Total 1 mark)

21. Which one of the following is a pair of functional group isomers?

- A $\text{CH}_3\text{COOCH}_2\text{CH}_3$ and $\text{CH}_3\text{CH}_2\text{COOCH}_3$
- B $(\text{CH}_3)_2\text{CHCH}(\text{CH}_3)_2$ and $(\text{CH}_3)_3\text{CCH}_2\text{CH}_3$
- C $\text{CH}_3\text{CH}_2\text{OCH}_3$ and $(\text{CH}_3)_2\text{CHOH}$
- D $\text{ClCH}_2\text{CH}_2\text{CH}=\text{CH}_2$ and $\text{CH}_3\text{CH}=\text{CHCH}_2\text{Cl}$

(Total 1 mark)

22. The compound *cis*-retinal is shown below.



Which one of the labelled bonds leads to the prefix in the name?

(Total 1 mark)

23. How many different alkenes are formed when 2-bromo-3-methylbutane reacts with ethanolic potassium hydroxide?

- A 2
- B 3
- C 4
- D 5

(Total 1 mark)

24. Which one of the following can exhibit both geometrical and optical isomerism?

- A $(\text{CH}_3)_2\text{C}=\text{CHCH}(\text{CH}_3)\text{CH}_2\text{CH}_3$
- B $\text{CH}_3\text{CH}_2\text{CH}=\text{CHCH}(\text{CH}_3)\text{CH}_2\text{CH}_3$
- C $(\text{CH}_3)_2\text{C}=\text{C}(\text{CH}_2\text{CH}_3)_2$
- D $\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}(\text{CH}_3)\text{C}=\text{CH}_2$

(Total 1 mark)

25. How many secondary amines have the molecular formula $\text{C}_4\text{H}_{11}\text{N}$?

- A 2 ☐
- B 3 ☐
- C 4 ☐
- D 5 ☐

(Total 1 mark)

26. How many structural isomers have the molecular formula C_4H_9Br ?

A 2

☐

B 3

☐

C 4

☐

D 5

☐

(Total 1 mark)

27. How many isomers have the molecular formula C_5H_{12} ?

A 2

☐

B 3

☐

C 4

☐

D 5

☐

(Total 1 mark)