Oxford Cambridge and RSA

AS Level Chemistry A

H032/01 Breadth in chemistry

Question Set 6
4.2 Alcohols, haloalkanes and analysis

Multiple Choice Questions

→ dehydration / elimination

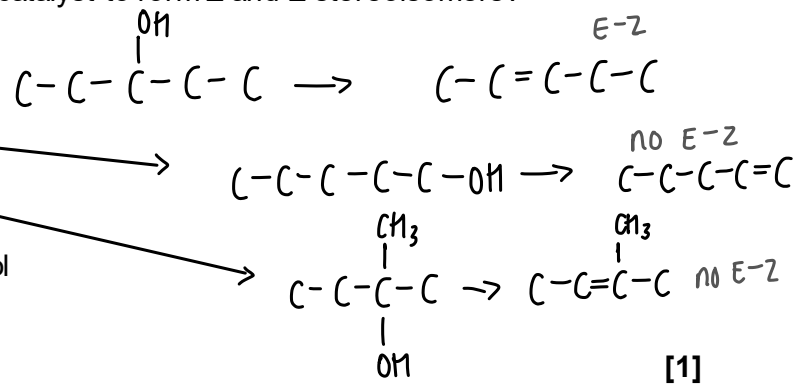
1. Which alcohol reacts with an acid catalyst to form *E* and *Z* stereoisomers?

A pentan-3-ol

B pentan-1-ol

C 2-methylbutan-2-ol

D 2,2-dimethylpropan-1-ol

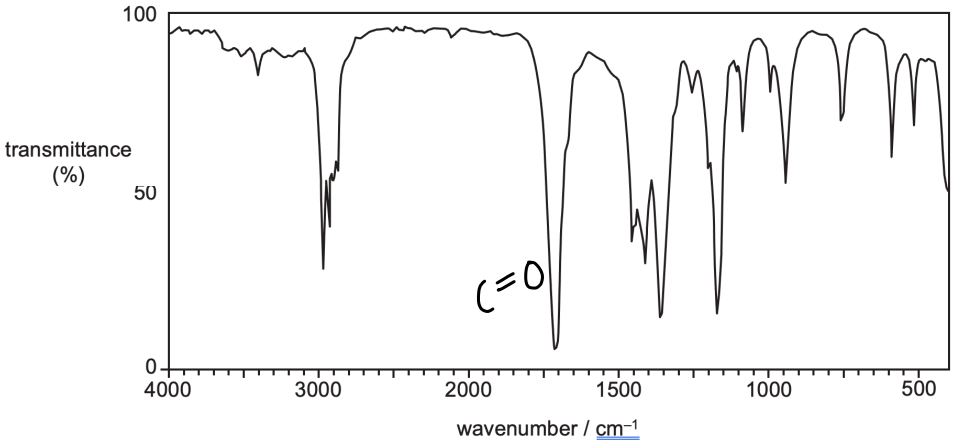


Your answer A

[1]

2. An alcohol **A** is heated under reflux with sulfuric acid and potassium dichromate(VI).

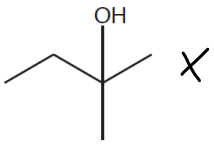
The organic compound formed produces the infrared spectrum below.



Which compound could be alcohol **A**?

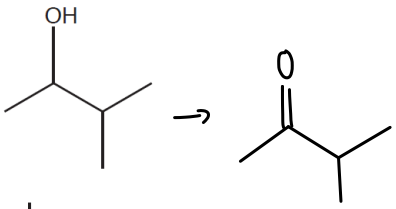
- organic compound must be aldehyde or ketone
  - ↓ 1° alcohol
  - ↓ 2° alcohol
- must be ketone as heating under REFLUX would oxidise an aldehyde to a carboxylic acid, but there is no O-H (acid) peak in the spectrum.

A

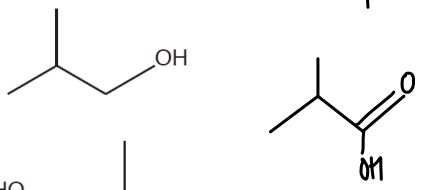


X

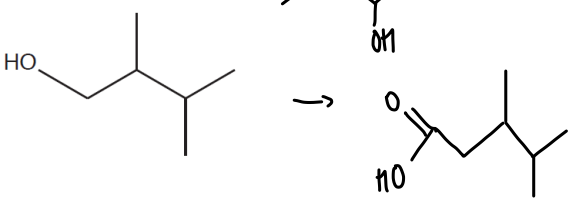
B



C



D



Your answer B

[1]

3. Which alcohol is **not** likely to have a fragment ion at $m/z = 43$ in its mass spectrum?

A $CH_3CH_2CH(OH)CH_3$ → $CH_3-CH_2-C(OH)(H)-CH_3$ → $CH_3CH_2CH_2^+$ (43)

B $CH_3CH_2CH_2CH_2OH$

C $CH_3CH(OH)CH_2CH_2CH_3$ → $CH_3CH_2CH_2^+$ (43)

D $(CH_3)_2CHCH_2OH$ → $(CH_3)_2CH^+$ (43)

Your answer A

[1]

4. Which alcohol is likely to have a fragment ion at $m/z = 31$ in its mass spectrum?

A $CH_3CH_2CH(OH)CH_3$

B $CH_3CH_2CH_2C(OH)(CH_3)_2$

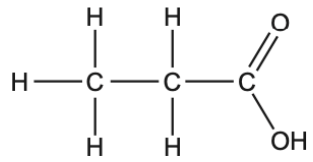
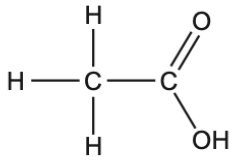
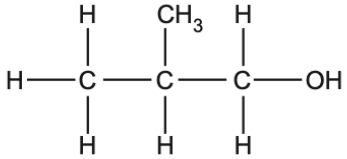
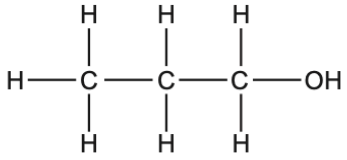
C $CH_3CH(OH)CH_2CH_2CH_3$

D $(CH_3)_2CHCH_2OH$ → $HOCH_2^+$

Your answer D

[1]

5. Which compound is **not** likely to have a fragment ion at $m/z = 43$ in its mass spectrum?

A	
B	
C	
D	

Your answer B

[1]

6. Which statement about infrared radiation is **not** correct?

A The energy from IR radiation causes some covalent bonds to vibrate more.

B Absorption of IR radiation by some atmospheric gases is linked by some scientists to global warming.

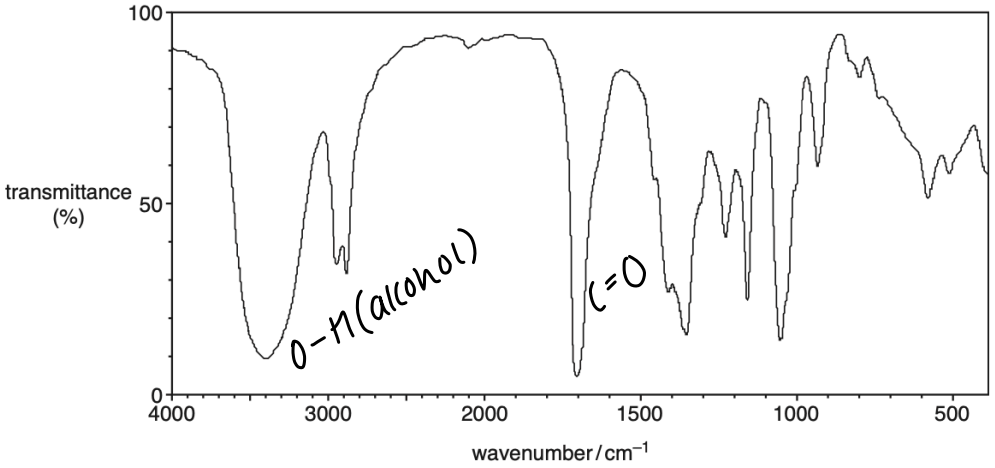
C IR radiation is used to monitor gases causing air pollution.

D The action of IR radiation on CFCs in the upper atmosphere leads to the formation of chlorine radicals.

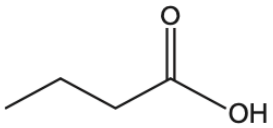
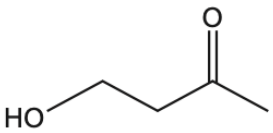
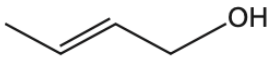
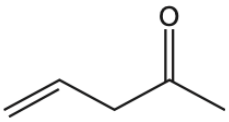
Your answer D

[1]

7. An unknown compound produces the infrared spectrum below.



Which compound could have produced the infrared spectrum?

A	
B	
C	
D	

Your answer B

[1]

Total Marks for Question Set 6: 7