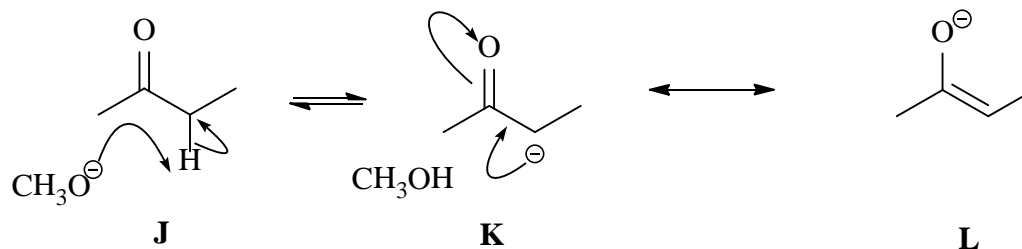


Marks
6

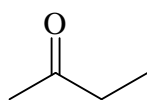
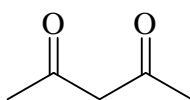
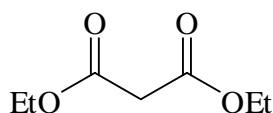
- Protons next to a carbonyl group can be removed by alkoxide bases as shown below.



Apply your understanding of resonance to propose a structure **L** that explains how the carbonyl group increases the acidity of these hydrogens.

Add curly arrows to the reaction scheme above to complete a mechanism for the deprotonation of **J** to give **K**, and the stabilisation of **K** by resonance.

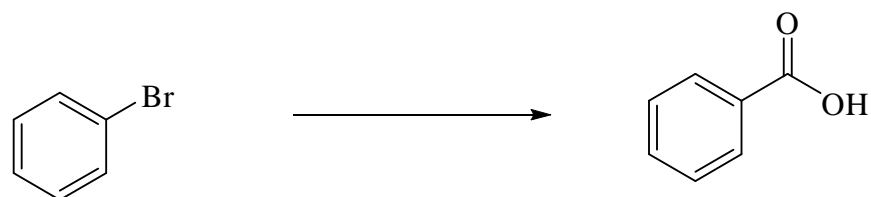
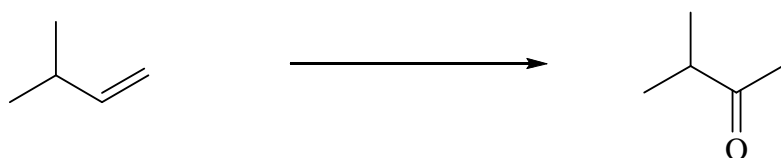
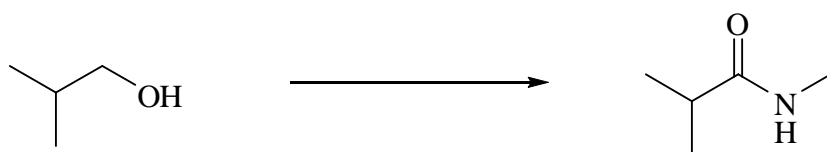
The pK_a values of compounds **J**, **M** and **N** are 9, 13 and 19, but not in that order. Match each compound with the correct pK_a , and explain your answer.

**J****M****N**

pK_a values:

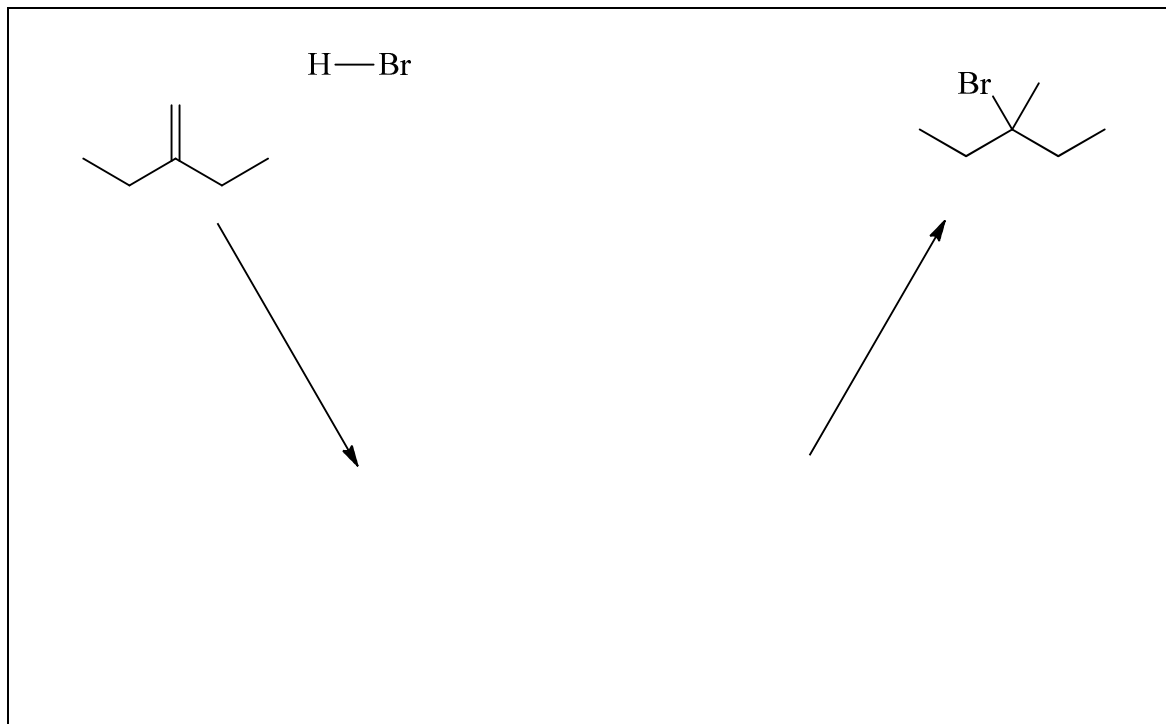
J =	M =	N =
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- Suggest reagents to accomplish the following transformations. More than one step is required in all cases.

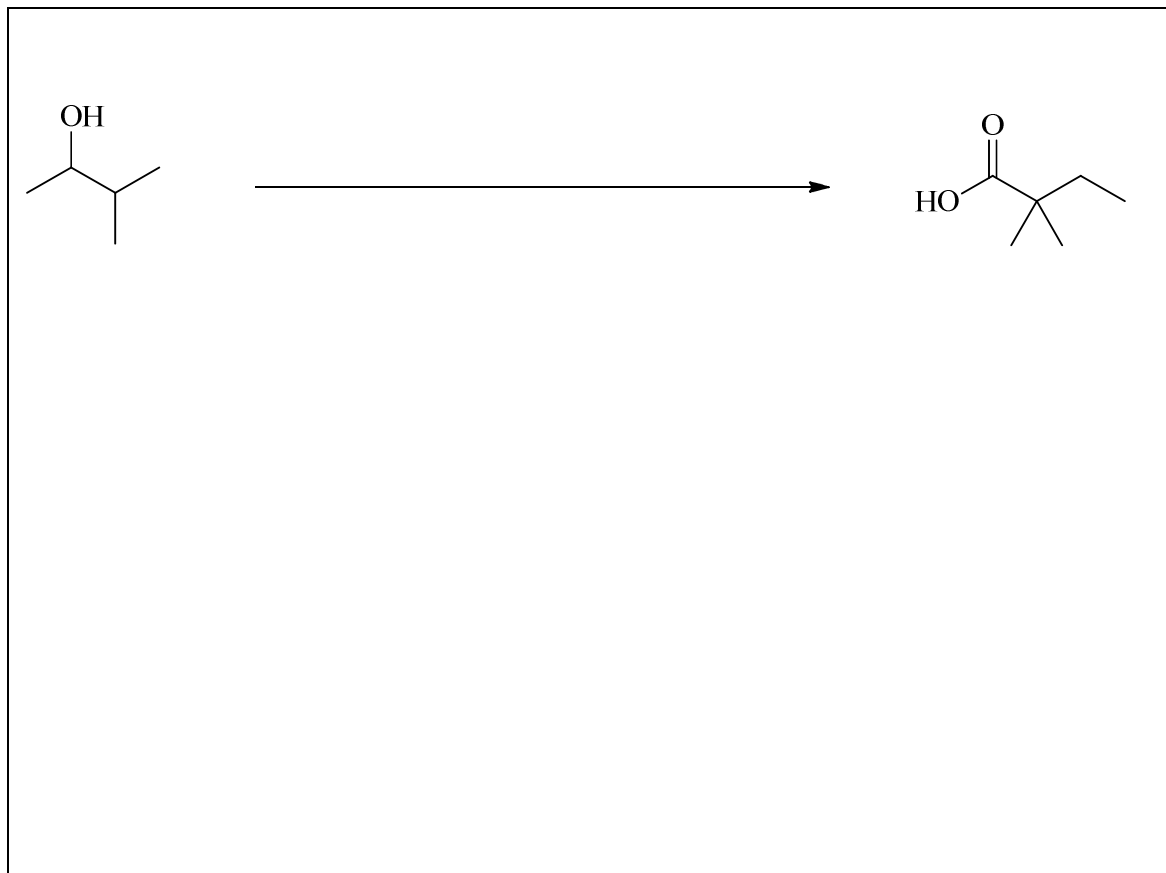
Marks
6

Marks
4

- Complete the two-step mechanism for the reaction given below. Draw partial charges, curly arrows and intermediate structures as appropriate to illustrate the bonding changes that take place.



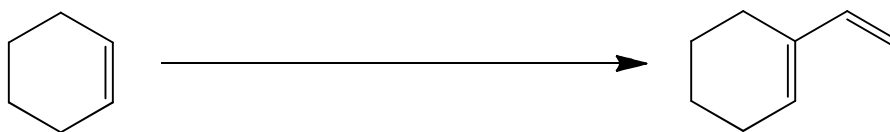
- Show clearly the reagents you would use to carry out the following chemical conversion.
Draw constitutional formulas for any intermediate compounds.
NOTE: More than one step is necessary.

Marks
4

THE REMAINDER OF THIS PAGE IS FOR ROUGH WORKING ONLY.

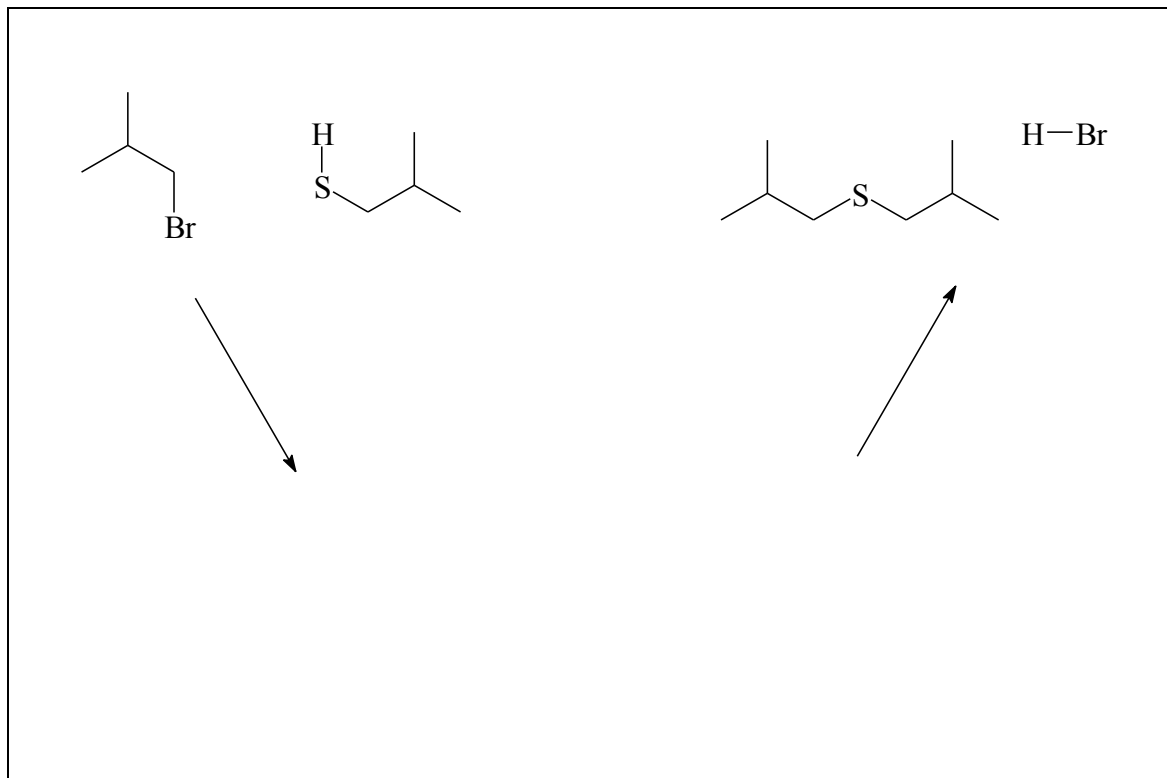
- Show clearly the reagents you would use to carry out the following chemical conversion. Draw constitutional formulas for any intermediate compounds.
NOTE: More than one step is necessary.

Marks
4



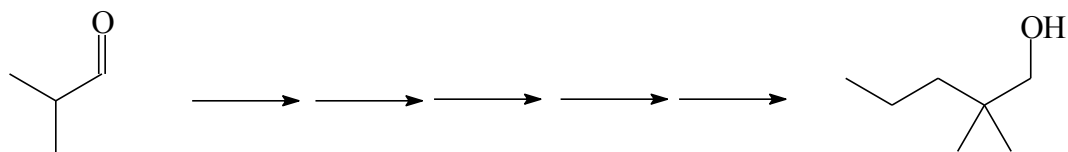
Marks
3

- Complete the two step mechanism for the reaction given below. Draw intermediate structures, curly arrows and partial charges as appropriate to illustrate the bonding changes that take place.

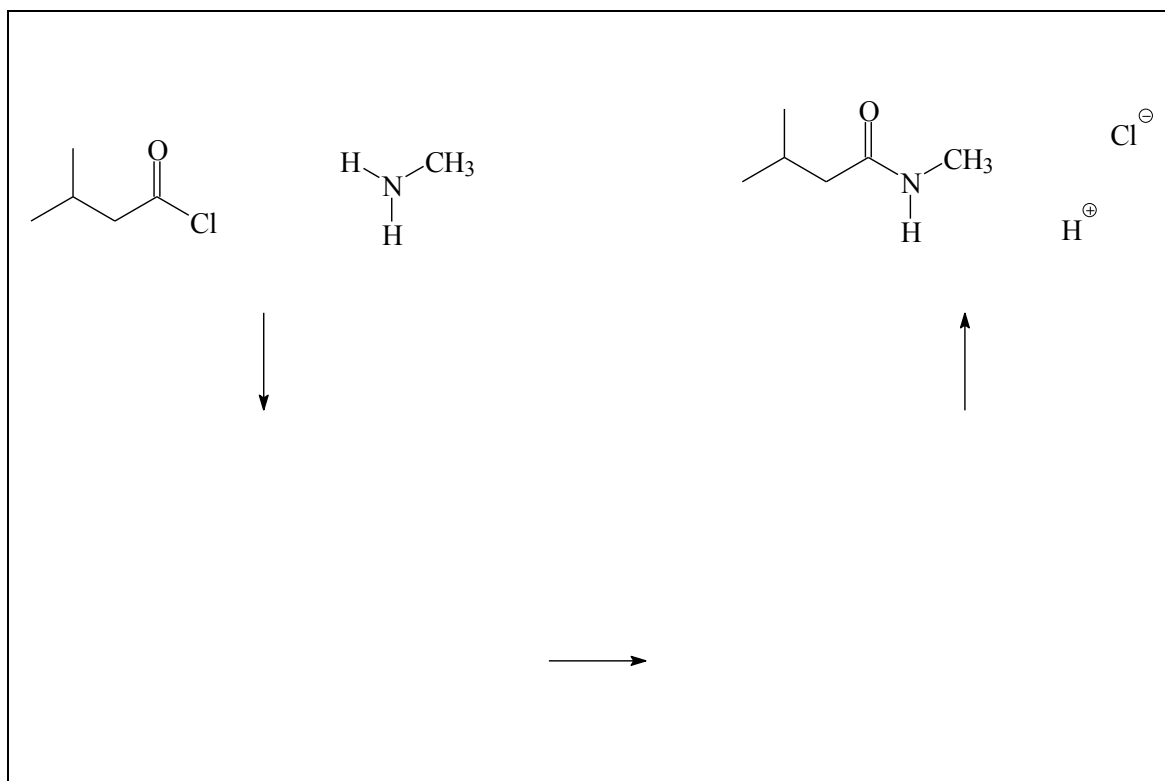


Marks
4

- Show clearly the reagents you would use to carry out the following chemical conversion. Draw constitutional formulas for any intermediate compounds. NOTE: More than one step is necessary.

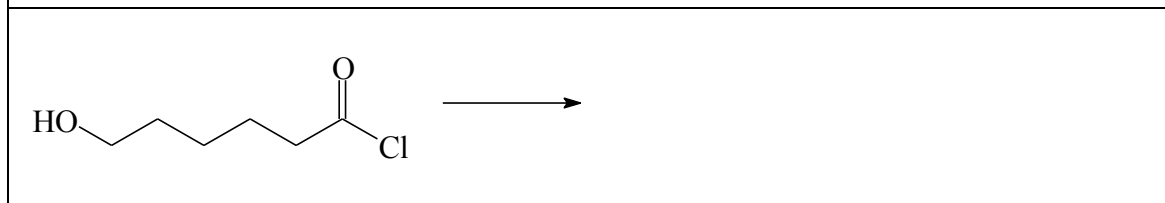
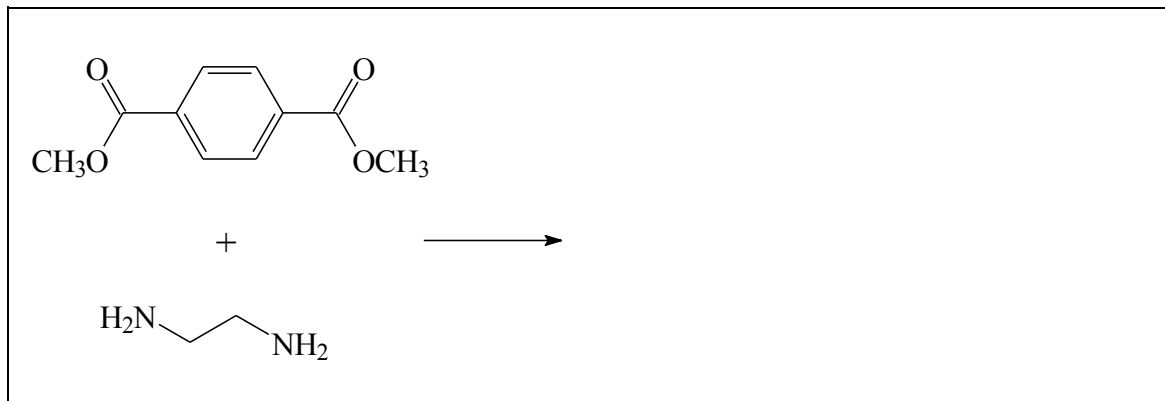


- Complete the three step mechanism for the reaction given below. Draw intermediate structures, curly arrows and partial charges as appropriate to illustrate the bonding changes that take place.



Marks
2

- Draw the repeating unit of the polymer formed in the following reactions.

**4**

- Show clearly the reagents you would use to carry out the following chemical conversion. Draw constitutional formulas for any intermediate compounds. NOTE: More than one step is necessary.

