

Worksheet 9.3

Esters, amides, polyesters and polyamides

NAME:

CLASS:

INTRODUCTION

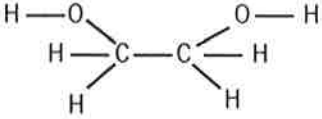
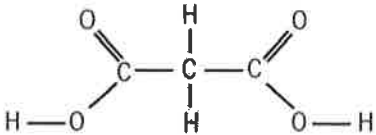
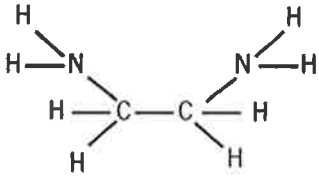
Polyesters and polyamides are both important synthetic fibres in our modern world. Their formation occurs by condensation polymerization of carboxylic acids with alcohols or amines.

No	Question	Answer
1	Draw the structures of: a ethanol b propanoic acid c ethylpropanoate.	
2	In the condensation reaction between an alcohol and a carboxylic acid, another molecule is formed. State the formula of the functional group in that molecule.	
3	Explain how the name of an ester is derived from the alcohol and the carboxylic acid from which it is formed.	
4	Write the equation for the condensation reaction that results in the formation of propyl methanoate.	

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No	Question	Answer
5	Draw the structures of: a methanamine b propanoic acid c <i>N</i> -methylpropanamide.	
6	Write the equation for the condensation reaction that results in the formation of <i>N</i> -ethylpropanamide.	
7	Name the starting materials required to produce each of the following compounds: a methyl butanoate b <i>N</i> -propyl methanamide c <i>N,N</i> -dimethyl ethanamide d ethyl ethanoate e propanamide	<i>K</i>
8	Explain how the reaction of some amines and carboxylic acids can produce polyamides.	
9	Name the product formed when a diol reacts with a dicarboxylic acid.	

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No	Question	Answer
10	<p>Draw the equations for the condensation reactions between two molecules of each of the following:</p> <p>a ethane-1,2-diol and propanedioic acid</p> <p>b ethanediamine and propanedioic acid</p> <div style="text-align: center;"><p>ethane-1,2-diol</p></div> <div style="text-align: center;"><p>propanedioic acid</p></div> <div style="text-align: center;"><p>ethanediamine</p></div>	