

Topic 5.1: Polymers

<p>Expectation From SACE Subject Outline <i>Note: these can be asked in converse</i></p>	<p>Summary of things I know about this (include tricks for memorising things, etc.)</p>	<p>Example question(s) to practice until I can do under test conditions without help There are likely to be some in the textbook too; also take note of questions you'd like examples of from the teacher</p>
<p>Discuss the advantages and disadvantages of synthetic polymers.</p>		<p>Assignment Q1</p>
<p>Identify the repeating unit of a polymer, given the structural formula of a section of a chain.</p>		<p>Assignment Q4(b) Test Q1(a)</p>
<p>Identify a polymer as being the product of an addition polymerisation or a condensation polymerisation, given its structural formula.</p>		<p>Assignment Q2(a), 4(a) Test Q1(b)</p>
<p>Draw the structural formula of an addition polymer that could be produced from monomers containing one carbon-carbon double bond, given the structural formula(e) of the monomer(s), or vice versa.</p>		<p>Assignment Q2(b) Test Q1(c)</p>
<p>Identify the ester group in a polyester and the amide group in a polyamide.</p>		<p>Assignment Q4(d)</p>
<p>Draw the structural formula(e) of the polyester or polyamide polymers that could be produced from monomers, given the structural formula(e) of the monomer(s), or vice versa.</p>		<p>Assignment Q4(c) Test Q2</p>
<p>Describe the effect on rigidity of increasing the number of primary and secondary interactions between polymer chains.</p>		<p>Assignment Q5</p>
<p>Describe the effects of heating on thermoplastic and thermoset polymers, and the consequent difference in the ease of recycling.</p>		<p>Assignment Q6 Test Q3</p>

Topic 5.2: Silicates

<i>Expectation</i>	<i>Summary of things I know about this</i>	<i>Example question(s) to practice</i>
Write the formula of the anion in a silicate or aluminosilicate, given its formula.		Assignment Q1 Test Q4(a)
Identify the SiO_4 structural unit in diagrams of silicate anions.		Assignment Q3(a)
Draw the repeating unit and write the formula of an extended silicate anion, given its structural formula.		Assignment Q3(b) Test Q4(b)
State the charge on a silicate anion, given the Si:O ratio.		Assignment Q4
Write the formula of a silicate mineral, given the structural formula of the silicate anion and the metal ions present.		Assignment Q6 Test Q4(d)
State the charge of an aluminosilicate ion, given its formula.		Assignment Q7
Explain how cations held on the surface of soil silicates are made available to plants.		Assignment Q8(a) Test Q5
Describe the effect of acid rain in releasing cations from soil silicates.		Assignment Q8(b)
Explain the use of aluminium ions in flocculating clay particles suspended in water.		Assignment Q9
Explain the use of silicates in water softeners.		Assignment Q10

Topic 5.3: Cleaning Agents

<i>Expectation</i>	<i>Summary of things I know about this</i>	<i>Example question(s) to practice</i>
Describe the use of non-polar solvents to dissolve non-polar materials and the use of polar solvents to dissolve polar materials.		Assignment Q1 Test Q6
Describe and explain how soaps and synthetic sulfonate detergents remove grease.		Assignment Q2(a)
Write equations for the alkaline hydrolysis of triglycerides.		Assignment Q3 Test Q7
Write an equation for the formation of magnesium or calcium precipitate from soap, given the structural formula of the soap anion.		Assignment Q2(b)
Describe how the reaction of soap with hard water differs from that of synthetic detergents.		Assignment Q2(c)
Draw the structural formula of the PO_4^{3-} ion.		Assignment Q4(a)
Draw the structural formulae of linear and cyclic triphosphate ions.		Assignment Q4(b),(c) Test Q9(c)

Explain how tripolyphosphate ions keep: calcium and magnesium ions in solution; clay particles in suspension; and pH mildly alkaline.		Assignment Q5(a) Test Q9(a)
Explain the importance of the actions of tripolyphosphate ions.		Assignment Q5(a)
Describe the advantages and disadvantages of the use of phosphate fertilisers and polyphosphates in detergent formulations.		Assignment Q5(c) Test Q9(b)
Explain the effect of lowering pH on the decomposition of hypochlorites to chlorine.		Assignment Q6
Describe the use of enzymes in detergents and explain why they are sensitive to changes in pH and temperature.		Assignment Q7
Use the change in oxidation number of oxygen to show hydrogen peroxide and oxygen acting as oxidising agents.		Assignment Q8(a) Test Q10
Describe how solid oxygen bleaches release oxidising agents when dissolved in water.		Assignment Q8(a)
Explain why the effectiveness of solid oxygen bleaches is affected by changes in temperature.		Assignment Q8(b)