

Structure {Paper02}

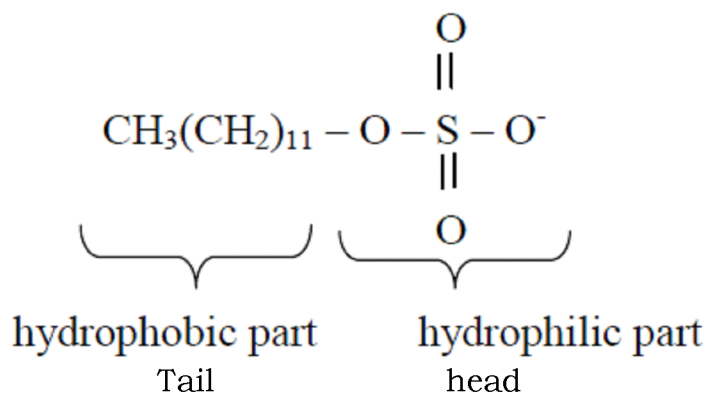
[MRSM10-01c]

(c) (i) Sodium stearate

(ii) saponification

(iii) Hard water contain Mg^{2+} ions and Ca^{2+} ions, [1]
that will combine with negative ions of soap that produce scum, insoluble salt. [2]**[SBPTrial2010-02b]**(b) (i) 1. Sulphonation
2. Neutralisation

(ii)

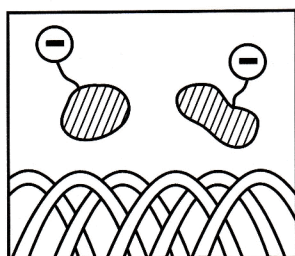
(iii) 1. Hard water contains calcium ions and magnesium ions
2. React with soap to form scum // React with detergent to form soluble substance/ do not form scum**[SPM07-01]**

- a) i) Saponification
ii) Glycerol
iii) To **reduce the solubility** of soap in water or **to precipitate** the soap
- b) i) J : Soap
K : Detergent
ii) The insoluble **precipitate formed** when **soap** react with magnesium and calcium ions (hard water)
iii) 1. Magnesium ion
2. Calcium ion
iv) J is biodegradable

[SPM05-02]

- a) Saponification
- b) i) Ester
ii) COO^-
- c) **Concentrated** potassium hydroxide
- d) i) Hydrophobic part or hydrocarbon part
ii) - Detergent ions reduce the surface tension of water
- Hydrophilic dissolves in water
- Hydrophobic dissolves in grease
- Mechanical agitation or scrubbing helps pull the grease free
(Refer to Chemistry Text Book Pg 185)

iii)



Detergent ions reduce the surface tension of water

- Hydrophilic dissolves in water
- Hydrophobic dissolves in grease
- Mechanical agitation or scrubbing helps pull the grease free

[SBPtrial09-01]

- | | | | |
|-----|-------|---|--------|
| (a) | (i) | Saponification | 1 |
| | (ii) | Ester | 1 |
| | (iii) | To reduce the solubility of soap in water //
To precipitate the soap | 1 |
| | (iv) | Potassium hydroxide | 1 |
| (b) | (i) | Water that contains calcium / magnesium ions | |
| | (ii) | Soaps form scum
Detergents do not form scum | 1
1 |
| (c) | (i) | Function: To slow down/ prevent the growth of bacteria and fungi/
microorganisms
Type: Antioxidants | 1
1 |
| | (ii) | Headache/ nausea/ thirsty/ chest pain/ difficulty breathing | 1 |

[MRSM10-01b]

- (i) Preservatives
(ii) Ascorbic acid // citric acid

[MRSM09-01]

- (a) (i) preservatives // prevents the growth of moulds, yeast and bacteria
 (ii) preservatives // prevents the growth of moulds, yeast and bacteria

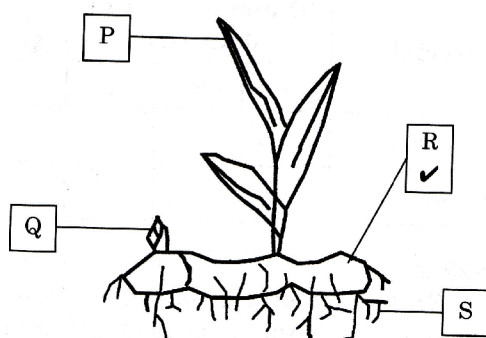
(iii)

Name	Function	Type of food additives
		...thickening agents...
		...flavouring agents...

- (b) (i) Analgesics
 (ii) Relieve the pains // as painkiller // to reduce fever
- (c) (i) Hard water
 (ii) Container P
 (iii) Negative ions soap can react with grease and clean the cloth

[SPM06-01]

a) i)



- ii) Stomach pain due to wind in stomach
 iii) Extract the juice from the rhizome and drink

- b) i) X : Analgesics
 Y : Antibiotics
 Z : Psychotherapeutic medicine

- ii) Can cause bleeding in the stomach
 iii) The bacteria becomes immune to medicine
 iv) Get rid of anxiety

[SPM04-02]

- a) i) Sodium hydroxide/potassium hydroxide solution.
 ii) To **reduce the solubility** of soap in water or **to precipitate** the soap formed.

- b) Procedure of the experiment :
1. Two beakers are **filled** with hard water
 2. Soap is **added** to one beaker and detergent is added to another beaker
 3. The socks are dipped into each of the beakers and wash by scrubbing or **agitated**

Observation :

Detergent in hard water	Soap in hard water
1. Socks is clean easily	1. Socks still dirty
2. No formation of scum	2. Scum forms
3. The water turns dirty	3. Water is less dirty

Conclusion :

Detergent cleans stains **more effectively** compared to soap in hard water. Detergent can still performed its cleansing action and more effective than soap in hard water.

- c) i) To **calm down patients** so that they can sleep easily//
As a sedative or to calm or relax.
- ii) Paracetamol
- iii) $C_9H_8O_4$
- iv) Molecular mass
 $= (12 \times 9) + (8 \times 1) + (4 \times 16)$
 $= 108 + 8 + 64$
 $= 180$

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