APPROACH TO LOWER SECONDARY CHEMISTRY PAPER ONE FACILITATION 2024

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Second element of construct: **The learner appreciates the application of chemistry in daily life.**

Basis of assessment	***Detergents***	***Food additives***	***Nuclear processes***	***Medicine and drugs***
Category/type	• ***Soapy detergent*** • ***soapless detergent.***	***Food additives***. Divided into natural and artificial food additives. Examples include. • Food preservatives • Antioxidants • Flavouring agents • Stabilizers • Food colours or dyes	• ***Nuclear fission*** • ***Nuclear fusion***	***Medicines.*** Divided into traditional and modern medicines. Composed of: • Antibiotics • Analgesics or painkiller's
How the product /process works/function/ Suitability.	A soap molecule contains two parts, the hydrophilic head and the hydrophobic tail. During washing soap lowers the surface tension between water and oil or dirt. The hydrophobic tail becomes attached to the oil or dirt while the hydrophilic head dissolves in water, with constant agitation the dirt or oil is pulled off the cloth fabric. The cloth is then rinsed several times and dried.	**Food preservatives**, extend or increase the shelf-life of food by inhibiting the growth of moulds, bacteria and other microorganisms in food. **Food colours**, enhance or improve the colour of food therefore improving its visual appearance, meeting the consumers expectations. **Flavours**, enhance or improve the aroma and taste of food. **Antioxidants,** prevent the oxidation of fats and oils in food therefore maintaining its colour and texture.	**Nuclear fission** is a process that involves the splitting of a heavy nucleus when it is bombarded by a fast-moving neutron to form a smaller nucleus with release of energy. The energy released is used in: **nuclear reactors** to generate electricity and in **atomic bombs** **Nuclear fusion** is a process that occurs when nuclei combine together at high	**Antibiotics**, treat bacterial infections by killing or limiting the growth of bacteria in the body. **Analgesics**, reduce or relieve pain and inflammation

			velocity resulting to formation of a heavy nucleus.	
Side effects of the product(s) + Explanation + Mitigation.	i. Phosphates in detergents can lead to growth of algal blooms in water bodies thus lowering the oxygen levels in water therefore death of aquatic organisms like fish. ii. Some dyes used in detergents are toxic to aquatic animals. iii. Some detergents are non-biodegrable thus accumulate in water causing water pollution. iv. Some detergents can irritate the nose, eyes, lungs and skin. **Mitigation:** • use biodegradable detergents. • Wear gloves when working with strong	Some food additive can cause reactions like: i. Nervous disorders resulting to insomnia, hyperactivity and irritability. ii. Digestive disorders resulting to diarrhoea and stomach pains. iii. Respiratory problems resulting to sinusitis and asthma. iv. Skin problems leading to itching, rashes and swellings **Mitigation:** i. use recommended amounts of food additives. ii. **UNBS** should approve any additive before it is used thus protecting the public against health hazards. iii. Food manufacturers a required to	**Side effects**: i. Radiations emitted result to DNA mutation resulting to hereditary defects and diseases. ii. Radiation cause burns on the skin, damage of the liver and reduced fertility. **Mitigation:** • Proper dispose of radio active wastes e.g. in bankers or buried under ground. • Putting on personal protective cloths for people working in radio active areas.	Some medicines cause: • Skin rashes, blood disorders and acute inflammation of the pancreas. • Brain and liver damage • Allergic reactions. • Diarrhoea. • Headache mainly antibiotics. **Mitigation**. • Avoid self-medication. • Always check for the expiry date of the medicine or drug. • Follow the doctor's instruction for taking medicine.

	detergents to protect your hands and skin. • use appropriate amounts of detergents.	test all food additives and prove that they are self for human consumption. iv. Limited use of food additives. v. Always check expiry dates.		
Evaluation: One difference and similarity.	**Similarities:** i. Both are effective cleansing agents in soft water. ii. Both are salts of organic acids of long carbon chain. **difference:** Soapy detergents are Biodegradable while soapless are non-biodegradable. Soapy detergents form scum with hard water while soapless do not form scum with any form of water.	***Note:*** *depending on the scenario given* **Similarities:** Both preserve food. Both improve aroma and taste of food. Both improve the colour and visual appearance of food. **Difference:** Natural food additives have fewer side effects compared to synthetic food additives. Natural food additives are derived from natural sources like plants and animals while artificial additives are synthesized from the laboratory.	**Similarities:** i. Both processes release energy. **Difference:** Nuclear fission splints heavy nuclei to lighter nuclei while nuclear fusion combines lighter nuclei to for a heavy nucleus. Nuclear fission occurs at ordinary temperatures while fusion occurs at high temperatures.	***Note:*** *depending on the scenario given.* **Similarities:** • Both are antibiotics. • Both are analgesics. **Difference:** • Traditional medicines take a long time to act while modern medicines have a fast response action. • Traditional medicines have fewer side effect compared to modern medicines.