SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES COIMBATORE

CASE STUDY BASED PUZZLE

BP502T: INDUSTRIAL PHARMACY I

TOPIC: CHEMICAL PROPERTIES

Case Study 1: Hydrolysis

Observation:

A liquid ester-based drug was stored in a poorly sealed container in a warm and humid environment. After a few weeks, chemical analysis showed the formation of two new compounds: an acid and an alcohol.

Questions:

1. Identify the chemical property responsible for the change observed.
2. Explain why moisture accelerates this reaction.
3. Mention one precaution that could prevent this change during storage

Case Study 2: Oxidation

Observation:

A bottle of cooking oil was left open and exposed to air and sunlight. After some time, it developed a foul smell and unpleasant taste.

Questions:

1. Which chemical reaction is responsible for this change?
2. What role does oxygen play in this process?
3. Suggest one method to slow down this reaction

Case Study 3: Racemisation

Observation:

A chiral drug with high optical activity was stored for a long period. Later tests showed that its optical rotation decreased, even though no change in molecular formula was detected.

Questions:

1. Name the chemical property involved in this change.
2. What happens to the enantiomers during this process?
3. How does this affect the biological activity of the drug?

Case Study 4: Polymerization

Observation:

Small unsaturated organic molecules were heated under controlled conditions in the presence of a catalyst. The final product obtained was a solid material with high strength and durability.

Questions:

1. Identify the chemical process involved.
2. Why does the product have a much higher molecular mass than the reactants?
3. State one industrial use of the product formed.

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Case Study 5: Reduction

Observation:

Inside the human body, a toxic compound was converted into a less harmful substance by gaining hydrogen atoms before being excreted.

Questions:

1. Which chemical reaction is involved in this process?
2. How does this reaction help in detoxification?
3. Is this reaction the opposite of oxidation? Explain briefly.