

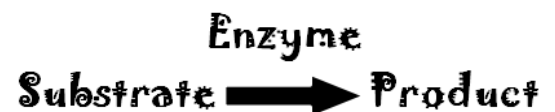


CATALYST

1. State the definition of a catalyst: A **CATALYST** speeds up chemical reactions.
2. State the **PROPERTIES** of catalysts:
- Catalysts take part in reactions but **remain unchanged** at the end of the reaction they catalyse.
 - Catalysts can be **used again** at the end of the experiment.

ENZYME

3. State the definition of an enzyme:
ENZYMES are **BIOLOGICAL CATALYSTS**



4. State that **ENZYMES** are found in **every** living cell e.g **CATALASE**.
5. State that an enzyme is **SPECIFIC** as it will only speed up one reaction.
6. State that the substance that an enzyme acts on is called the **SUBSTRATE**.
7. State that a **PRODUCT** is formed at the end of a reaction between an enzyme and a substrate.

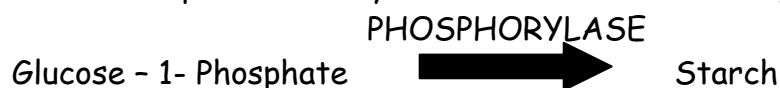
ENZYME ACTION

8. Describe the role of enzymes involved in reactions:
State that some enzymes **BREAK DOWN** large molecules into smaller ones.
State that some enzymes **BUILD UP** small molecules into larger ones.

9. Give an example of an enzyme that **BREAKS DOWN** a large molecule:

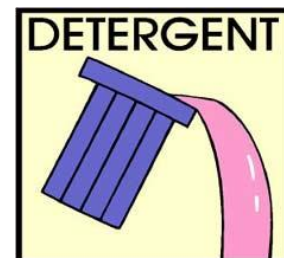


10. Give an example of an enzyme that **BUILDS UP** a larger molecule:





DETERGENTS



- ☐ 1. State the definition of a detergent:
A **DETERGENT** means "something that cleans".
- ☐ 2. Explain that a **BIOLOGICAL** detergent contains **ENZYMES** but a **NON- BIOLOGICAL** does not contain any enzymes.
- ☐ 3. State that **ENZYMES** are enclosed in **HARMLESS COATINGS** in biological washing powders to prevent **ALLERGIC REACTIONS**, which can cause **SKIN RASHES** and **ECZEMA**.
- ☐ 4. Explain the advantages of using **BIOLOGICAL** washing powder is that enzymes digest the stains at **MODERATE TEMPERATURES**, this saves **ENERGY** and causes less damage to **FABRICS**.
- ☐ 5. State a disadvantage of using **BIOLOGICAL** washing powder is that some people may have an **ALLERGIC** reaction to them.
- ☐ 6. State the advantage of **NON-BIOLOGICAL** washing powder is that people with **SENSITIVE** skin can use it.
- ☐ 7. State the disadvantage of **NON-BOLOGICAL** washing powder is that it may **NOT** digest stains as well as biological washing powders.
- ☐ 8. Explain that manufacturers of detergents are **REDUCING ENERGY NEEDS** by initiating programmes to **REDUCE WEIGHT** and **VOLUME** of packaging, encourage recycling programmes and encourage safe disposal practices.
- ☐ 9. Explain that **PHOSPHATES** in detergents are released into rivers can encourage plant growth. Algal bloom occurs, bacteria feed on decomposing plant material causing an **BACTERIA INCREASE IN NUMBER** using up **OXYGEN** supply and having a **NEGATIVE** effect on local environment.



ST NINIAN'S HIGH SCHOOL
NATIONAL 4 BIOLOGY
LEARNING OBJECTIVES



UNIT 1: CELL BIOLOGY

SECTION 4(C) ENZYMES IN INDUSTRY

RENNET

- ☐ 1. State that **RENNET** is an enzyme involved in the manufacture of **CHEESE**.
- ☐ 2. Explain that rennet **CLOTS MILK PROTEINS** to make **CURDS**, the solid part, and **WHEY**, the liquid part.
- ☐ 3. Explain that **UPGRADING** a substance is converting it from a waste product into a useful product.
- ☐ 4. State that the process **PASTEURISATION** is when milk is heated to **72 °C** for **10-15** seconds.
- ☐ 5. State that **SEMI-SKIMMED MILK** has had around half of the **FAT** removed where as **SKIMMED MILK** has had nearly all the fat removed.
- ☐ 6. State that an advantage of **CALF RENNET** is that it is from a natural source but a disadvantage is that it involved the **KILLING** of animals.
- ☐ 7. State that an advantage of **FUNGAL RENNET** is that it is cheap to produce but a disadvantage is that a poor **FLAVOUR** develops.
- ☐ 8. State that an advantage of **GENETICALLY MODIFIED RENNET** is that does not involve the killing of animals but a disadvantage is that many people think it is **UNNATURAL** to eat genetically modified food.