

THIRD TERM E-LEARNING NOTE

SUBJECT: BIOLOGY

CLASS: SS 2

SCHEME OF WORK

WEEK	TOPIC
1.	Excretion in Lower Organisms
2.	Excretory System in Vertebrates and Plants
3.	Male and Female Reproductive Structures
4.	Sexual Reproduction
5.	Reproduction in Plants
6.	Pollination
7.	Ecological Succession
8.	Overcrowding and Food Shortage
9.	Balance in Nature
10.	Family Planning

REFERENCES

- Modern Biology for Senior Secondary Schools by S.T. Ramalingam
- Essential Biology by M.C Michael
- New School Biology by H. Stone and Cozen
- SSCE Past Questions and Answers
- New System Biology by Lam and Kwan
- College Biology by IdodoUmeh
- UTME and Cambridge Past Questions and Answers
- Biology Practical Textbook

WEEK ONE

EXCRETION AND EXCRETORY SYSTEM

CONTENT

- Excretion
- Types of Excretory structures and Taste
- Excretory Structures in some Organisms

EXCRETION

Excretion is the process by which metabolic waste products are removed from the body of all living things. Excretion is different from egestion which is the removal of solid waste (undigested food substances i.e. faeces) through the anus. Excretion is necessary for the following reasons:

- To avoid or prevent any harm that would be caused by any excretory product.
- Some excretory products are poisonous to the body and should be removed.
- To maintain water balance in the body (homeostasis).
- To avoid interference of waste products with normal metabolic activities in the body.

EXCRETORY STRUCTURES AND WASTE IN ORGANISMS

Organism	Excretory Structure	Excretory Waste Product
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Protozoa	Contractile vacuole	C0 ₂ , ammonia and water
Flatworm	Flame cells	C0 ₂ , ammonia and water
Earthworm	Nephridia	C0 ₂ , ammonia and water
Crustacean	Green glands	C0 ₂ , ammonia and water
Insect	Malpighian tubules	C0 ₂ , ammonia and uric acid
Fish	Kidney	C0 ₂ , ammonia and water
Amphibian(toad)	Kidney	H ₂ O and salt
Reptiles	Kidney	H ₂ O and salt
Birds	Kidney and lungs	C0 ₂ and water vapour
Mammals	Kidney, lungs, skin and liver	C0 ₂ , water, urea
Flowering plants	Stomata, lenticels and leaves	H ₂ O, C0 ₂ , O ₂ . tannins, gum, alkaloids, oil and latex

EVALUATION

1. List five excretory structures adapted to aquatic habitat
2. Mention four excretory waste in plants

TYPES OF EXCRETORY SYSTEMS

CONTRACTILE VACUOLE IN PROTOZOA

Contractile vacuole is a simple structure found in the cell of fresh water protozoa. Water constantly enters the cell of a protozoan through the selectively permeable membrane because the cell is hypertonic to its environment. As water enters the cell, a contractile vacuole is formed which collects the water and expands, when it reaches the maximum size, it contracts and discharges the water through a temporary break in the cell membrane at interval. Excretion of carbon dioxide and ammonia is by diffusion through the cell membrane

FLAME CELL IN FLATWORMS

The excretory system consists of two longitudinal...