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Good day my dear students.

As you are studying towards your external examinations (WASSCE and NECO), bear it in mind that your Biology paper consists of (1) Practical, (2) Theory and objectives. The practical paper carries 80marks out of 200 marks, theory 60marks and objectives 60marks.

Many students didn't answer the question on classification of animals and plants correctly in the mock examination. Today, I want us to study taxonomy of some important specimens.

A. Vertebrates- animals that have backbones and internal skeleton.

Characteristics of vertebrates.

1. They have jointed internal skeletons of bone and cartilage.
2. They are bilaterally symmetrical.
3. They have a well-developed sense organs.
4. They have a pair of kidneys and gonads.
5. They have closed blood systems.
6. Most vertebrates have paired fore and hind limbs.

The vertebrates are grouped into 5 classes.

1. PISCES- The fishes e.g. tilapia and shark.
2. AMPHIBIA- The amphibians e.g. toad and frog.
3. REPTILIA- The reptiles e.g. snake, lizard, turtle and crocodile.
4. AVES- The birds e.g. pigeon, duck, wood-pecker and parrot.
5. MAMMALIA- The mammals e.g. goat, bat, rabbit, rat, dog and man.

Note that the specimens are classified into kingdom, phylum, class etc.

Let us classify the following specimens: tilapia fish, toad, lizard, pigeon and rat.

	Kingdom	Phylum	Class
1) Tilapia	Animalia	Chordata	Pisces
2) Toad	Animalia	Chordata	Amphibia
3) Lizard	Animalia	Chordata	Reptilia
4) Pigeon	Animalia	Chordata	Aves
5) Rat	Animalia	Chordata	Mammalia

Note: Candidates are expected to use capital letter to start the name of each class e.g. **Amphibia** not **amphibia**.

Another important groups of specimens are **Arthropoda**.

ARTHROPODS (Phylum ARTHROPODA)

Characteristics

- 1) They have jointed appendages/legs
- 2) Their bodies are metamerically segmented.
- 3) They have three body layers or triploblastic.
- 4) Their skins are covered by an exoskeleton of chitin
- 5) The phylum arthropoda is subdivided into the following classes:
 - I) CRUSTACEA- The crustaceans e.g. crabs, prawns and crayfish.
 - II) ARACHNIDA- The arachnids e.g. spider, tick and scorpion.
 - III) MYRIAPODA- The myriapods e.g. millipede and centipede.
 - IV) INSECTA- The insects e.g. cockroach, housefly, mosquito, termite and grasshopper.

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PRACTICAL

Specimen B- small mammal (e.g. rat, guinea pig, mice).

Specimen C- toad or frog.

1. To which class of animals do specimens B and C belong?
2. Mention (i) three structural similarities and
(ii) two structural differences between specimens B and C.

Specimen B (rat)	Specimen C (toad)
1. pinna present	1. pinna absent
2. hair present	2. hair absent
3. tail present	3. tail absent
4. whiskers present	4. whiskers absent
5. toes not webbed	5. toes webbed
6. poison gland absent	6. poison gland present

CLASSIFICATION OF INVERTEBRATES

Animals without backbone.

- Sponges
- Coelenterates e.g. Jelly fish
- Platyhelminthes (flat worms) e.g. Tapeworm
- Nematodes (roundworms)
- Annelids (ringed worms) e.g. earthworms
- Arthropods
 - Crustaceans e.g. Crab, Prawn
 - Arachnids e.g. Spider, Tick
 - Myriapods e.g. Millipede
 - Insects e.g. Termites, Mosquito
- Mollucs e.g. Snail
- Echinoderms e.g. Starfish

Classification of Plants into 5 Kingdoms.

- 1) Monera: Single-celled and microscopic organisms with no definite nucleus e.g. bacteria.

2) Protista: Single-celled organisms with a definite nucleus e.g. Amoeba, Paramecium, Euglena.

3) Fungi: Non-green Plants (they lack chlorophyll) e.g. Yeast, Mushroom, Rhizopus.

4) Plantae: Green plants (they have chlorophyll).

Thallophytes e.g. Spirogyra

Bryophytes e.g. Mosses

Tracheophytes e.g. ferns _____ seed bearing [Gymnosperms e.g. Cones, Pines.]

Plants [Angiosperms__ Monocot ---- Dicot

e.g. grass water leaf