

Unit 305: Understand the Principles of Animal Biology

This unit introduces the biology of animals, including:

- cells
- tissues
- skeletal systems
- sensory organs

You will complete **4 tasks** in this unit.

TASK A

Know the Functions of the Main Animal Cell Organelles

What you need to do

You will create a poster about:

- animal cells
- cell organelles
- mitosis
- meiosis

Your poster should be suitable for display and clearly organised.

Your poster must include:

1. Diagram of an Animal Cell

You must:

- draw or insert a labelled diagram
- identify the main organelles

Include:

- nucleus
- cytoplasm
- cell membrane
- mitochondria
- ribosomes
- endoplasmic reticulum
- Golgi apparatus
- lysosomes
- vacuoles

2. Functions of Organelles

Explain what each organelle does.

For example:

- nucleus controls the cell
- mitochondria release energy
- ribosomes make proteins

3. Cell Division

You must describe:

- mitosis
- meiosis

Include:

- stages of each process
- what happens during each stage
- differences between them

Presentation ideas

You can include:

- colour coding
- diagrams
- flow charts
- tables
- labelled images

How to achieve higher grades

Pass

- Correctly label organelles
- Briefly explain functions
- Include stages of mitosis and meiosis

Merit

- Explain functions clearly and accurately
- Show understanding of cell division

Distinction

- Detailed scientific explanations
- Excellent presentation
- Strong comparison between mitosis and meiosis

TASK B

Understand the Structure and Function of the Main Animal Tissue Types

What you need to do

You will identify and describe the four main tissue types in animals.

You may use:

- microscope images
- specimen photographs
- tissue slides

The four tissue types are:

1. Epithelial tissue
2. Connective tissue
3. Nervous tissue
4. Muscle tissue

For each tissue you must:

1. Identify the Tissue

Correctly name the tissue type.

2. Describe the Structure

Explain:

- what the cells look like
- how the tissue is arranged
- key features visible

3. Explain the Function

Describe what the tissue does in the body.

Examples:

- protection
- movement
- communication
- support

4. Link Structure to Function

Explain how the structure helps the tissue perform its job.

Evidence required

You may complete:

- record sheets
- written descriptions
- labelled diagrams
- tissue identification activities

How to achieve higher grades

Pass

- Correctly identify tissues
- Give at least one structural feature and one function

Merit

- Give several structural features and functions
- Explain links between structure and function

Distinction

- Detailed scientific explanations
- Strong understanding of tissue adaptation and function

TASK C

Know the Structure and Function of Animal Skeletal Systems

What you need to do

You will study animal skeletons and compare how they are adapted to different environments.

You must use **three different animal skeletons**.

Examples:

- horse
- bat
- whale

You must identify bones including:

- skull
- atlas
- axis
- vertebrae
- scapula
- humerus
- radius
- ulna
- pelvis
- femur
- tibia
- fibula
- carpals
- metacarpals
- phalanges
- and others listed in the assignment

You must also explain:

1. Functions of the Skeleton

Include:

- support
- protection
- movement
- mineral storage
- blood cell production

2. Adaptations

Explain how each skeleton is adapted to:

- movement
- environment
- survival

For example:

- bats for flying
- whales for swimming
- horses for running

3. Links Between Structure and Environment

Explain how the animal's body structure helps it survive.

Evidence required

You may use:

- labelled diagrams
- models
- photographs
- worksheets
- observation records

How to achieve higher grades

Pass

- Correctly identify at least 18 bones
- Describe 3 functions of the skeleton

Merit

- Correctly identify 20+ bones
- Describe 4 functions
- Explain adaptations clearly

Distinction

- Correctly identify 22+ bones
- Detailed explanation of skeletal adaptations
- Confident and accurate scientific terminology

TASK D

Know the Structure and Function of Sensory Organs in Animals

What you need to do

You will produce an illustrated essay about the sensory organs of **two animals**.

Your essay must include:

1. Identification of Sensory Organs

Include:

- eyes
- ears
- nose
- tongue
- skin receptors

2. Structure of Sensory Organs

Explain:

- location
- structure
- important features

Use labelled diagrams where possible.

3. Functions of Sensory Organs

Explain how the organs help animals:

- detect stimuli
- respond to the environment
- survive

4. Comparison Between Animals

Compare:

- similarities
- differences
- special adaptations

Examples:

- night vision
- hearing range
- smell sensitivity
- whiskers
- heat detection

You should also explain:

- how signals travel to the brain
- how animals respond to stimuli

How to achieve higher grades

Pass

- Correctly identify and describe sensory organs
- Include diagrams and explanations

Merit

- Explain sensory responses clearly
- Compare the two animals accurately

Distinction

- Detailed scientific understanding
- Strong comparison and analysis
- Excellent use of diagrams and research