Grade 11 Biology

Term 3 - 54 complete lesson plans

Ready to teach, in the KICD lesson-plan format | 40-minute lessons | PDF and editable Word

ABOUT THIS PACK

54 complete, ready-to-teach Grade 11 Biology lesson plans for Term 3, covering excretion in plants, reproduction in animals, growth and development in animals and excretion and homeostasis in animals.

TOPICS IN THIS PACK

Topic	Name	Lessons
2.3	Excretion in Plants	10
3.1	Reproduction in Animals	16
3.2	Growth and Development in Animals	12
3.3	Excretion and Homeostasis in Animals	16

INSIDE EVERY LESSON PLAN

- The specific learning outcomes, key inquiry question, core competencies, values and PCIs, and the resources needed.
- A timed lesson flow: what the teacher does and what the learners do, from introduction to summary.
- The key content (a worked example, notes or a practical with its expected results), then four practice questions with the answers for the teacher.
- The common mistake to watch for, and ideas for learners who need support and for those ready for more.
- A four-level CBC assessment rubric (EE, ME, AE, BE), homework, and a blank reflection space to fill in after teaching.

A TASTE OF LESSON 1

Meaning of excretion in plants and plant waste products

By the end of the lesson, the learner should be able to: a) explain the meaning of excretion in plants; b) identify waste products of plants

> **Excretion in plants**
> EXCRETION is the removal of the waste products of METABOLISM (chemical reactions in cells). It is different from egestion (removal of undigested food), which plants do not do.

You also receive this pack as an editable Word file, so you can change any lesson to suit your class before you print it. Lessons follow the order of the KICD curriculum design.

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Meaning of excretion in plants and plant waste products

Strand 2.0 Anatomy and Physiology of Plants > Sub-strand 2.3 Excretion in Plants | Lesson 1 of 10 | 40 minutes

SCHOOL	TEACHER	DATE
CLASS / STREAM	TIME	ROLL (B / G)

SPECIFIC LEARNING OUTCOME(S)

By the end of the lesson, the learner should be able to: a) explain the meaning of excretion in plants; b) identify waste products of plants

KEY INQUIRY QUESTION(S)

- How do plants eliminate waste products?
- How do humans use plant excretory products?

CORE COMPETENCIES, VALUES AND PCIS IN THIS LESSON

COMPETENCY	**Learning to learn**	Learners say what they found easy or hard and decide their next step.
COMPETENCY	**Self-efficacy**	Learners attempt each task with confidence and see that effort improves results.
VALUE	**Respect**	Learners listen while others explain and accept correction politely.
VALUE	**Integrity**	Learners record their own honest results and mark work truthfully.
PCI	**Drug and substance abuse**	Developed through the activities in this lesson.
PCI	**Financial literacy**	Examples use shillings and cents, shopping, saving and simple budgets.

LEARNING RESOURCES

Charts and photographs of plant excretory products | Specimens of plant products (gum arabic, rubber, tea leaves, coffee beans, sisal fibre, pyrethrum flowers) | Video clips or digital resources on plant excretion | Notebooks and pencils

ORGANISATION OF LEARNING

Groups of four for set-ups observed over a day; pairs for observation of specimens; whole class discussion of economic uses.

KEY WORDS

excretion | metabolic waste | transpiration | diffusion | stomata | lenticel | deposition | abscission | exudation | guttation | hydathode | latex | resin | gum | tannin | alkaloid

THE LESSON AT A GLANCE

Introduction	Teacher models	Guided practice	On their own	Wrap-up
6 min	9 min	10 min	9 min	6 min

LESSON FLOW

Stage	Minutes	The teacher	The learners
Introduction	6	Greet the class and ask: "Animals have kidneys and lungs to remove wastes. Plants have neither. What wastes do plants make, and where do they go?" Take two or three answers, link them to earlier work, then state today's outcome.	Answer the starter question, recall what they already know and read the outcome aloud.
Step 1: Teacher models	9	Take learners through "Excretion in plants" (key ideas on the next page), explaining as you go. Use charts and photographs of plant excretory products, specimens of plant products (gum arabic, rubber, tea leaves, coffee beans, sisal fibre, pyrethrum flowers), video clips or digital resources on plant excretion. Ask learners to predict what comes next before you show it.	Watch, predict the next step, ask questions and note the key steps in their exercise books.
Step 2: Guided practice	10	Give questions 1 and 2. Move round the groups, ask "How do you know?" and correct errors kindly on the spot.	Work in pairs or small groups, explain each step to a partner and check one another's answers.
Step 3: Independent practice	9	Set questions 3 and 4 for individual work. Mark as you walk round and note who needs help in the next lesson.	Work on their own, then swap books with a partner to check.
Summary and conclusion	6	Ask two or three learners to state the key idea in their own words. Give this exit question and check the answers: "Name two alkaloids produced by plants."	Say the key idea in their own words and answer the exit question in the exercise book.

KEY IDEAS

Excretion in plants

EXCRETION is the removal of the waste products of METABOLISM (chemical reactions in cells). It is different from egestion (removal of undigested food), which plants do not do.

Plant waste products: CARBON DIOXIDE and WATER (from respiration); OXYGEN (from photosynthesis, a by-product); excess mineral ions; nitrogenous wastes (small amounts - plants make proteins only as needed and reuse nitrogen); organic compounds such as TANNINS, ALKALOIDS (caffeine, nicotine, quinine, morphine), RESINS, GUMS, LATEX, essential oils, and crystals of CALCIUM OXALATE.

Plants excrete less than animals because: they make proteins only as needed; they reuse wastes (CO_2 in photosynthesis, O_2 in respiration); they are less active; many wastes are stored harmlessly in dead tissues, vacuoles or leaves that later fall.

PRACTICE QUESTIONS - WITH ANSWERS FOR THE TEACHER

No.	Question	Answer
1	Define excretion.	**The removal of waste products of metabolism from an organism.**
2	Name two gaseous waste products of plants.	**Carbon dioxide and oxygen (also water vapour).**
3	Give two reasons why plants have no special excretory organs.	**For example: they produce fewer nitrogenous wastes; they reuse CO2 and O2; they are less active; they store wastes in dead tissues.**
4	Name two alkaloids produced by plants.	**For example: caffeine, nicotine, quinine, morphine.**

WATCH OUT FOR

Learners call oxygen from photosynthesis a waste only during the day. Explain that at night plants take it in for respiration.

ASSESSMENT RUBRIC - THE FOUR CBC LEVELS

Level	What the learner can do
Exceeds expectations (EE)	Can explain the meaning of excretion in plants confidently and accurately, explain the method used, and apply the idea to new or unfamiliar problems.
Meets expectations (ME)	Can explain the meaning of excretion in plants accurately in familiar situations; notices and corrects slips without help.
Approaches expectations (AE)	Can partly explain the meaning of excretion in plants, or does so with prompts from the teacher or a partner; makes some errors.
Below expectations (BE)	Cannot yet explain the meaning of excretion in plants without direct help; needs the idea taught again with concrete objects.

SUPPORT AND EXTENSION

Learners who need support	Give a word bank of waste products.
Learners ready for more	Why do plants rarely suffer from build-up of nitrogenous waste? (Answer: They synthesise proteins only as required and recycle nitrogen compounds)
Inclusion	Seat learners with low vision near the board and read aloud whatever you write; use large, clear, tactile materials; allow extra time; pair with a patient partner; use gestures or Kenyan Sign Language for the key words.

HOMEWORK AND FOLLOW-UP

Redo questions 3 and 4 neatly in the exercise book. Then tell someone at home what you learned about "meaning of excretion in plants and plant waste products" and bring one question of your own to ask next lesson.

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TEACHER SELF-CHECK

- Did every learner get a turn to handle materials or explain their thinking?
- Did most learners meet the outcome? Write down the names of those who did not.
- Was the pace right — did any step take too long or too short a time?
- Which competency and value did I see learners showing?
- What will I change the next time I teach this lesson?

REFLECTION ON THE LESSON / SELF-REMARKS

Write this after teaching - what worked, what to change, which learners need follow-up.

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