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UACE UNEB SAMPLES

WITH GUIDES

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TIPS ON HOW TO PREPARE FOR UACE UNEB EXAMINATIONS

The new curriculum developed by NCDC is competency-based. Consequently, the UACE examination has shifted from traditional recall-based questions towards **scenario-based assessment** that measures understanding, application, analysis, evaluation, scientific reasoning and problem-solving. The official UNEB sample papers and scoring guides demonstrate this shift clearly.

1. Understand what UNEB is actually assessing

Under the new curriculum, every science question is designed to assess competencies rather than memorised notes. A candidate is expected to demonstrate the ability to:

- Interpret scientific information.
- Explain natural phenomena.
- Analyse data.
- Solve unfamiliar problems.
- Evaluate scientific evidence.
- Make justified conclusions.
- Communicate scientifically.

Instead of asking: "State Ohm's Law." UNEB is more likely to present a real-life electrical installation, provide measurements, and ask the learner to determine whether the installation is safe, calculate required quantities, justify recommendations and explain the science involved. The examination therefore measures whether the learner can think like a scientist.

2. Master the UNEB Constructs

Although terminology varies slightly among subjects, the assessments generally progress through increasing levels of thinking, moving from knowledge and understanding to application and higher-order reasoning.

For science students this means:

Level 1 – Knowledge and Understanding

Know

- Definitions
- Principles
- Formulae
- Laws
- Scientific facts
- Terminology

But remember:

Knowledge alone is no longer enough.

Level 2 – Application

You must apply knowledge to unfamiliar situations.

For example: Instead of “Calculate the resistance”

UNEB may ask; A farmer wants to install a solar irrigation system. Recommend suitable electrical components and justify your choices.

Now you must

- identify principles
- choose formulae
- perform calculations
- interpret results
- justify decisions

Level 3 – Analysis

Analyse

- graphs
- experimental data
- tables

- diagrams
- observations

Separate important information from irrelevant information.
Identify relationships.

Level 4 – Evaluation

Judge whether

- an experiment is reliable
- a conclusion is valid
- a method is appropriate
- evidence supports a claim

Always support judgments using scientific principles.

Level 5 – Creation and Problem Solving

This is the highest level. You may be required to

- design an investigation
- propose solutions
- improve procedures
- recommend technologies
- predict outcomes

3. Learn how UNEB develops scenario questions

Almost every scenario contains four parts.

Part A

A realistic situation. Examples include

- hospital
- factory
- laboratory
- agriculture
- mining
- telecommunications
- transport
- sports
- environment
- climate change
- energy production

The scenario is never included merely to make the question longer. Every sentence provides useful evidence. Read carefully.

Part B

Supporting information such as

- graphs
- diagrams
- photographs
- tables
- experimental observations
- newspaper extracts
- laboratory results

Study every detail.

Part C

Questions. These increase gradually from easier to more demanding. The first question may assess understanding. The last question usually requires evaluation or recommendation.

4. Learn how UNEB awards marks

The scoring guides show that examiners award marks for **specific evidence** rather than lengthy essays. For science subjects, marks are commonly awarded for:

- correct scientific principle
- correct explanation
- appropriate calculations
- correct units
- logical reasoning
- interpretation of results
- justified conclusions
- appropriate recommendations

Many students lose marks because they know the science but fail to explain their reasoning.

5. Answer every question scientifically

Whenever you answer, follow this sequence.

Step 1

Identify what exactly is being asked? Not what you expected. Not what appeared in previous examinations. Read carefully.

Step 2

Identify the scientific concept. Ask yourself, which topic explains this scenario?
Examples

- Genetics
- Electrostatics
- Organic chemistry
- Thermodynamics
- Ecology

Step 3

Extract evidence. Underline

- numerical values
- trends
- observations
- scientific clues

Step 4

Apply scientific principles. Connect theory to the scenario and never simply reproduce classroom notes.

Step 5

Explain. Always explain Why?, How?, What evidence supports your answer

Step 6

Conclude. If UNEB asks
Recommend...
Choose...
Suggest...
Evaluate...
Your final sentence should clearly answer that instruction.

6. Subject-specific guidance

Mathematics

Do not memorise procedures only. Learn

- modelling
- interpretation
- assumptions
- justification

Show working clearly.

Interpret numerical answers within the context of the scenario.

Physics

Expect questions involving

- engineering
- medicine
- electricity
- transport
- communication
- renewable energy

Always explain the physics behind observations. Include correct units and state assumptions where necessary.

Chemistry

Expect scenarios involving

- industries
- food processing
- water treatment
- environmental pollution
- pharmaceuticals

Explain reactions using

- bonding
- energetics
- equilibrium
- kinetics
- structure

Interpret experimental observations scientifically.

Biology

Expect

- disease outbreaks
- ecology
- biotechnology
- genetics
- agriculture
- conservation
- public health

Support explanations using biological principles, Relate structure to function and Interpret experimental data accurately.

7. Practical papers

For practical science, learn to

- observe carefully
- record accurately
- calculate correctly
- plot graphs properly
- interpret results
- identify sources of error
- suggest improvements

Never fabricate observations. Use the observations you actually obtain.

8. Time management

During the examination, use the first 10 minutes to read everything carefully. Then attempt questions you understand well and in the final 20 minutes, check

- calculations

- units
- graph labels
- significant figures
- question numbering
- unanswered sections

9. Common mistakes to avoid

Many candidates still

- Memorise notes instead of understanding concepts.
- Ignore the scenario.
- Copy information directly from the passage without applying it.
- Fail to justify recommendations.
- Omit units.
- Skip reasoning.
- Write excessively long introductions.
- Misread command words such as *Explain*, *Analyse*, *Evaluate*, *Recommend*, or *Justify*.

10. The winning examination strategy

For every question, think like a scientist:

1. Read the scenario carefully.
2. Identify the scientific concepts involved.
3. Extract relevant evidence.
4. Apply the correct principles.
5. Perform accurate calculations where required.
6. Interpret your results in the context of the scenario.
7. Justify every conclusion or recommendation with scientific reasoning.
8. Present your work clearly, logically, and with correct scientific terminology.

This approach aligns with the competency-based philosophy of the NCDC Advanced Secondary Curriculum.

MATHEMATICS

ASSESSMENT OBJECTIVES

The End of Cycle Assessment for Principal mathematics will be guided by five assessment objectives focusing on the learner's ability to:

AO1: manipulate a wide range of algebraic expressions and equations, evaluate logical proofs and apply these skills to strategically solve real-world problems.

AO2: perform transformations, reason logically, visualize spatial relationships in solving geometrical related challenges in real world.

AO3: apply analytical and numerical skills in mathematical modelling to solve real life challenges involving rates of change, accumulation and optimization for decision making.

AO4: predict future trends by analysing and interpreting statistical data using principles of statistics and probability to make reasonable conclusions

AO5: apply principles of statics and dynamics to analyse and solve real world problems involving state of motion of bodies, and to predict their behaviors.

RELATIONSHIP BETWEEN ASSESSMENT OBJECTIVES, CONSTRUCTS AND SYLLABUS

Assessment Objective	Construct	Construct Description	Topics in the syllabus
AO1	Algebra	Applying algebraic principles to model and solve real-life problems and lead to informed decision making.	1. Numerical concepts 2. Equations and inequalities 3. Permutations and combinations 4. Series 5. Complex numbers
AO2	Geometry	Applying geometric concepts and spatial reasoning to interpret relationships in mathematical and real-life contexts for informed problem solving.	1. Coordinate geometry 1 2. Trigonometry 3. Vectors 4. Coordinate geometry 2
AO3	Calculus	Analysing and modelling of real-life situations involving rates of change, accumulation, and optimization of resources.	1. Partial fractions 2. Differentiation 1 3. Integration 1 4. Error analysis 5. Differentiation 2 6. Integration 2 7. Differential equations 8. Trapezium rule 9. Iterative methods 10. Flow charts
AO4	Data analysis and probability	Analysing data and applying probability models to make informed decisions and predictions in personal, academic, and societal contexts	1. Descriptive statistics 2. Correlation and scatter diagrams 3. Probability theory 4. Random variables 5. Probability distributions 6. Sampling distribution
AO5	Mechanics	Analysing the effect of forces on bodies in motion or at rest, interpreting motion patterns and predict object behavior and use it to solve real world kinematic problems.	1. Dynamics 1 2. Dynamics 2

CHEMISTRY SUBJECT GRADING

Chemistry learning outcomes and competencies have been amalgamated to form the three constructs aligned to Assessment Objectives:
AO1: (Atomic Structure, Bonding, Periodicity),
AO2: (Organic Chemistry),
AO3: (Physical and Chemical Principles).
The candidates' overall performance per construct will be identified and recognised using five letter grades from A to E in a descending order and are meant to differentiate achievement levels as follows;

GRADE	(AO1: Atomic Structure, Bonding, Periodicity)	(AO2: Organic Chemistry)	(AO3: Physical & Chemical Principles)
A	Clearly explains atomic structure, bonding, and periodic trends, accurately predicts reactivity using strong reasoning, and confidently applies this knowledge to new and unfamiliar problems.	Accurately interprets organic structures, correctly predicts reactions and mechanisms, and independently applies organic chemistry to real-life situations.	Accurately solves complex calculations and equilibrium problems, confidently predicts system changes, and effectively interprets graphs, models, and data.
B	Gives clear explanations of bonding and periodic trends, predicts reactivity accurately in most cases, and applies knowledge effectively in familiar situations.	Understands most reactions and mechanisms, predicts outcomes with few errors, and applies these ideas to familiar real-world situations.	Handles most calculations correctly, predicts system behaviour accurately under standard conditions, and interprets data and models with some support.
C	Shows a good basic understanding of atomic structure and periodicity, correctly predicts simple trends, but needs support with unusual or complex patterns.	Understands basic organic structures and reactions, predicts simple outcomes fairly well, and can apply ideas to straightforward examples with guidance.	Solves routine calculations and predicts the behaviour of simple systems accurately, but still require guidance when working with graphs or multi-step problems.
D	Shows limited understanding of bonding and periodic trends, can recall facts but struggles to apply them, and often gives incomplete or incorrect predictions.	Recognizes basic organic reactions but struggle to explain them, often make unclear or incorrect predictions, and require support to apply their knowledge.	Solves only simple calculations but often with errors, struggles to predict how systems behave, and finds it difficult to interpret models or data.
E	Shows very little understanding of atomic structure or periodicity, frequently misinterprets trends and reactivity, and requires significant teacher support.	Struggles to understand organic structures and reactions, is unable to reliably predict outcomes, and requires step-by-step guidance.	Makes frequent errors in calculations and predictions, is unable to model or interpret chemical systems, and requires continuous support.

PHYSICS

ASSESSMENT OBJECTIVES

Teaching Physics at Advanced Level is aimed at achieving the overall objective of enabling the learner to apply the principles, laws and concepts in Physics to investigate, model and provide solutions to real-world problems by designing innovative and responsible technologies, and effectively communicating and collaborating using appropriate scientific methods and tools.
The end of Cycle assessment for Physics will be guided by four assessment objectives (AO) focusing on the learner's ability to:

AO1: Evaluate how forces affect static, moving bodies and their structures and use this knowledge to design safe, efficient, and practical solutions in everyday situations

AO2: Investigate how energy is transferred and transformed, design devices and systems used in daily life, industry, and technology that employ energy transformations.

AO3: Explore how electric and magnetic fields interact in systems and devices, and use this understanding to explain and model technologies for power transmission, energy storage, and electronic control in daily life and industry.

AO4: Investigate atomic, quantum, and nuclear phenomena, and use this understanding to explain how modern technologies work and to assess the benefits and risks of their applications.

ASSESSMENT OBJECTIVES, CONSTRUCTS AND THE TOPICS IN THE SYLLABUS

Assessment Objective	Construct	Construct Description	Topics in the syllabus
AO1	Force and Motion	Analysis of how force affects the state of bodies	1. Measurement and Dimensions of Physical Quantities 2. Statics 3. Linear Motion 4. Motion Under Gravity 5. Work, Energy and Power 6. Solid Friction 7. Fluid Mechanics 8. Mechanical Properties of Matter 9. Circular Motion 10. Gravitation
AO2	Energy	Exploration and application of energy forms and transformations.	1. Thermometry 2. Heat Quantities 3. Transfer of Heat 4. Behaviour of Gases 5. Thermodynamics 6. Reflection of Light 7. Refraction of Light 8. Optical Instruments 9. Simple Harmonic Motion 10. Progressive Waves 11. Stationary Waves 12. Sound Waves
AO3	Charges and Fields	Exploration of how electric and magnetic fields interact in systems and devices.	1. Electrostatics 2. Capacitors 3. Digital Electronics 4. Current Electricity

			5. Magnetism in Matter 6. Magnetic Effect of an electric Current 7. Electromagnetic Induction 8. A.C Circuits
AO4	Particles	Investigation of atomic, quantum, and nuclear phenomena and their applications	1. Atomic Particles 2. Quantum Theory 3. Nuclear Processes

OVERALL GRADE DESCRIPTORS

Construct 1: Forces and Motion

The learner investigates how forces affect motion and structures, and uses this knowledge to design safe, efficient, and practical solutions in everyday situations.

Grade A (Exceptional)	Investigates and analyses complex force–motion interactions; accurately interprets data to make logical inferences and designs innovative, efficient, and safe mechanical or structural solutions for real-life problems.
Grade B (Outstanding)	Effectively investigates how forces affect motion and structures; applies correct concepts to develop appropriate innovations, efficient solutions with minimal errors.
Grade C (Satisfactory)	Investigates straightforward interactions of forces and motion; applies known methods to suggest workable solutions with some innovations.
Grade D (Basic)	Identifies simple force-motion situations with limited interpretation; shows partial understanding and limited ability to relate knowledge to practical or experimental examples.
Grade E (Elementary)	Shows limited identification or application of force and motion interaction in real life problems.

Construct 2: Energy Transfer and Transformation

The learner investigates how energy is transferred and transformed through heat, light, sound, and waves, and applies this understanding to design, use, and explain devices and systems in daily life, industry, and technology.

Grade A (Exceptional)	Analyses energy data in a variety of situations to make informed decisions and innovates or models complex systems of energy transfer with precision; explains, evaluates, and optimizes technological devices for efficiency.
Grade B (Outstanding)	Investigates and explains multiple forms of energy transformations; applies principles effectively to innovatively design or improve devices with sound reasoning.
Grade C (Satisfactory)	Demonstrates understanding of common energy conversions; correctly designs with minimal errors, describes or operates simple devices.

Grade D (Basic)	Recognises simple forms of energy transfer; states incomplete or partly correct innovative designs and explanations of simple device operation.
Grade E (Elementary)	Shows minimal awareness of energy concepts; unable to design, describe or demonstrate energy transfer in simple devices.

Construct 3: Electricity and Magnetism

The learner explores how electric and magnetic fields interact in systems and devices, and uses this understanding to explain and model technologies for power transmission, energy storage, and electronic control in daily life and industry.

Grade A (Exceptional)	Demonstrates comprehensive understanding of electric and magnetic field interactions; innovatively models, analyses, and predicts behaviour of complex systems and technologies.
Grade B (Outstanding)	Accurately applies principles of electricity and magnetism to explain and innovatively model common devices (motors, transformers, generators) with minimal errors.
Grade C (Satisfactory)	Understands core concepts of electricity and magnetism; can innovatively design, describe and test basic electrical or magnetic systems.
Grade D (Basic)	Shows partial understanding of electricity and magnetism principles; struggles to connect theory to practical devices or applications.
Grade E (Elementary)	Has very little understanding of electricity or magnetism principles or their interactions; cannot describe or design basic electrical or magnetic systems.

Construct 4: Atomic, Quantum, and Nuclear Phenomena

The learner investigates atomic, quantum, and nuclear phenomena, and uses this understanding to explain how modern technologies work and to assess the benefits and risks of their applications.

Grade A (Exceptional)	Integrates advanced understanding of atomic, quantum, and nuclear physics to explain and critically evaluate modern technologies and their social or environmental impacts.
Grade B (Outstanding)	Accurately explains and applies key principles of atomic and nuclear physics to interpret technological applications, showing analytical insight.
Grade C (Satisfactory)	Describes essential atomic and nuclear concepts and relates them to simple real-world technologies (e.g., X-rays, radioactivity) with minimal errors.
Grade D (Basic)	Recognises a few atomic and nuclear principles and gives incomplete or inaccurate explanations of phenomena or applications.
Grade E (Elementary)	Shows limited understanding of atomic and nuclear concepts; partially relates them to modern technology applications.

BIOLOGY

ASSESSMENT OBJECTIVES

The end of Cycle assessment for Biology will be guided by four assessment objectives focusing on the learner's ability to:

AO1: Evaluate the significance of the interactions that sustain life and energy production by analysing the structure of cells and tissues, the roles of biomolecules (water, lipids, proteins, and nucleic acids), and the processes of ATP production, cell division, and protein synthesis, in order to apply these biological principles to challenges in genetic technologies and health improvement.

AO2: Evaluate plant structure and physiology by analysing structural adaptations and photosynthetic pathways in C_3 and C_4, environmental influences on photosynthesis, plant adaptations (to water availability), growth, photoperiodism, and the hormonal control of growth, to promote sustainable agricultural practices that improve crop yield and food security.

AO3: Evaluate the structure and physiology of animal sensory organs and systems (circulatory, nervous, immune, and homeostatic) by analysing blood circulation, gas transport, immunity (vaccination and allergies), neural transmission, sensory perception, homeostatic control, and the role of adaptive behaviours in survival, to make informed health decisions and promote animal welfare

AO4: Evaluate the principles of genetics, evolutionary mechanisms, and ecological interactions by analysing Mendelian and non-Mendelian genetics, species evolution, speciation, resistance, extinction, population dynamics, ecosystem balance, and carbon emissions, to create sustainable strategies for managing invasive species, enhancing food security, and mitigating climate change.

Table showing the relationship between assessment objectives, constructs, and the topics in the syllabus

Assessment Objective	Construct	Construct Description	Topics in the syllabus
AO1 Evaluate the significance of the interactions that sustain life and energy production by analysing the structure of cells, tissues and levels of organisation, the roles of biomolecules (water, lipids, proteins, and nucleic acids), and the processes of ATP production, cell division, and protein synthesis, in order to apply these biological principles to challenges in genetic technologies and health improvement.	Cellular Organisation, Respiration, and Molecular Analysis	Investigating the structure of cells, tissues and levels of organisation, the roles of biomolecules (water, lipids, proteins, and nucleic acids), and processes of ATP production, cell division, protein synthesis, and genetic manipulation, by analysing how they interact to sustain life, then ethically apply biological principles in genetic technologies and health improvement	1. Cell Biology 4. Respiration 7. Inheritance and Evolution
AO2 Evaluate plant structure and physiology by analysing structural adaptations and photosynthetic pathways in C_3 and C_4, environmental influences on	Plant physiology and adaptation	Evaluating plant structure and physiology by analysing structural adaptations and photosynthetic pathway differences in C_3 and C_4, plant	2. Nutrition in plants 6. Co-ordination 8. Growth in Plants and Development in Insects

photosynthesis, plant adaptations (to water availability), growth, photoperiodism, and the hormonal control of growth, to promote sustainable agricultural practices that improve crop yield and food security.		adaptations (to water availability), environmental influence on photosynthesis, growth, photoperiodism, and the hormonal control of growth, to promote sustainable agricultural practices that improve crop yield and food security.	
AO3 Evaluate the structure and physiology of animal sensory organs and systems (circulatory, nervous, immune, and homeostatic) by analysing blood circulation, gas transport, immunity (vaccination and allergies), neural transmission, sensory perception, homeostatic control, and the role of adaptive behaviours in survival, to make informed health decisions and promote animal welfare	Analysis of animal systems and behaviours in adapting to environmental changes for health, survival, and welfare	Evaluating the structure and physiology of animal sensory organs and systems (circulatory, nervous, immune, and homeostatic) by analysing blood circulation, gas transport, immunity (vaccination and allergies), neural transmission, sensory perception, homeostatic control, and how adaptive behaviours support survival to make informed health decisions and promote animal welfare	3. Transport in Humans 5. Homeostasis 6. Co-ordination
AO4 Evaluate the principles of genetics, evolutionary mechanisms, and ecological interactions by analysing Mendelian and non-Mendelian genetics, species evolution, speciation, resistance, extinction, population dynamics, ecosystem balance, and carbon emissions, to create sustainable strategies for managing invasive species, enhancing food security, and mitigating climate change.	Genetic, evolutionary, and ecological dynamics	Evaluating inheritance patterns, evolutionary mechanisms, and ecological interactions by analysing Mendelian and non-Mendelian genetics, species evolution, speciation, resistance, extinction, population dynamics, ecosystem balance, and carbon emissions, to inform sustainable strategies for managing invasive species, promoting food security, and mitigating climate change.	7. Inheritance and Evolution 8. Growth in Plants and Development in Insects 9. Ecology

BASIS OF ASSESSMENT

The table below shows the basis assessment of each construct for paper 1.

CONSTRUCT	BASIS OF ASSESSMENT	5	4	3
		Exceptional	Outstanding	Satisfactory
Cellular Organisation, Respiration, and Molecular Analysis	Analyses the structures and functions of cells/tissues/ organelles/levels of organisation/ properties of biomolecules.	Analyses structures and functions of cells, tissues, organelles, levels of organisation, and properties of biomolecules with precise scientific detail, integrating all relevant levels into a coherent explanation; demonstrates clear relationships between structure and function.	Explains structures and functions of cells, tissues, organelles, levels of organisation, and properties of biomolecules with accurate detail, integrating some levels and showing partial relationships between structure and function..	Describes structures and functions of cells, tissues, organelles, levels of organisation, and properties of biomolecules accurately but separately, with no integration of levels or minimal linkage between structure and function.
	Evaluates the processes in a cell that sustain life: protein synthesis, glycolysis, the Krebs cycle, ETS, fermentation, DNA replication, meiosis, mitosis, and mutation.	Evaluates all major processes, clearly explaining how they are coordinated to sustain life and the effects of disruptions on cellular and organismal function.	Explains all major processes and clearly describes how they are coordinated to sustain life, but does not address the effects of disruptions.	Describes the processes with basic accuracy but does not show how they are coordinated to sustain life or the effects of disruptions.
	Applies concepts of cellular structures, cellular organisations, and processes	Applies the concepts to diagnose, explain, and design effective, evidence-	Applies the concepts to diagnose, explain, and design effective, evidence-based	Applies the concepts to diagnose, explain, and design effective, but non-evidence-based and non-ethical strategies for preventing, treating, or improving health problems.

	to improve health.	based, and ethical strategies for preventing, treating, or improving health problems.	but non-ethical strategies for preventing, treating, or improving health problems.	
Plant physiology and adaptation	Analyses plant structural features, photosynthetic Pathways, and Water Adaptations	Analyses plant structural features, C_3 and C_4 photosynthetic pathways, and water-related adaptations for survival, showing clear interconnectedness between all three aspects.	Describes plant structural features, C_3 and C_4 photosynthetic pathways, and water-related adaptations accurately but without linking them together.	Identifies plant structural features, stages of photosynthetic pathways, and water-related adaptations with some accuracy but little detail.
	Evaluates Physiological Processes & Environmental Influences, showing how these processes interact.	Evaluates hormonal regulation, photoperiodism, and environmental factors affecting plant photosynthesis and growth, clearly showing how these processes interact to influence outcomes.	Analyses the role of hormones, photoperiodism, and environmental factors in plant growth/photosynthesis, with minimal linkage among some of the processes.	Describes the role of hormones, photoperiodism, and environmental factors in plant growth/photosynthesis without demonstrating interaction.
	Applies effective and ethical agricultural strategies to enhance productivity and promote sustainable Agriculture.	Applies knowledge of plant structural features, photosynthetic pathways, water adaptations, physiological processes, and environmental influences to	Applies knowledge of plant structural features, photosynthetic pathways, water adaptations, physiological processes, and environmental influences to	Applies knowledge of plant structural features, photosynthetic pathways, water adaptations, physiological processes, and environmental influences to propose ineffective and non-ethical agricultural strategies.

		propose effective and ethical agricultural strategies that enhance productivity and promote sustainability.	propose effective but non-ethical agricultural strategies that enhance productivity and promote sustainability.	
Analyses animal systems and behaviours in adapting to environmental changes for health, survival, and welfare.	Analyse how structures and physiological processes respond to changes in the environment (Circulation, body defence, gas transport, neural transmission, homeostatic control)	Analyses systems accurately, showing integration of structures and processes to sustain life, and justifies the effects of disruptions to these structures and processes.	Analyses systems and shows integration of structures and processes to sustain life, but does not show the effects of disruptions.	Describes systems with basic accuracy but does not show how they are coordinated to sustain life or the effects of disruptions.
	Evaluates Sensory & Behavioural Responses (Sensory perception, behaviours, acclimatisation, animal welfare)	Evaluates causes, mechanisms, and effects of sensory and behavioural responses, accurately linking them to adaptations for survival and animal welfare, with correct, detailed explanations.	Analyses causes, mechanisms, and effects of sensory and behavioural responses, accurately linking them to survival and animal welfare, but with no correct explanation.	Describes causes, mechanisms, and effects of sensory and behavioural responses with no linkage to adaptations for survival or animal welfare.
	Applies concepts of physiological systems, sensory, and animal responses to real-life Health &	Applies concepts to explain and propose effective, evidence-based, and ethical strategies to address health	Applies concepts to explain and propose effective but non-ethical strategies to address health and	Applies concepts to explain and propose ineffective and non-ethical strategies to address health and performance issues.

	Performance Issues. (Local anaesthetics, effects of alcohol, physical activity, ice-cold first aid, sports doping, poisons)	and performance issues.	performance issues.	
Genetic, evolutionary, and ecological dynamics	Analyses genetic/ evolutionary and ecological mechanisms/ processes (Mendelian and non-Mendelian, speciation, succession)	Analyses Mendelian/non-Mendelian inheritance, speciation, succession, and energy flow, accurately making clear connections between stages/processes and their biological effects.	Analyses Mendelian/non-Mendelian inheritance, speciation, succession, and energy flow, accurately making clear connections between stages/processes, but without giving biological effects.	Explains Mendelian/non-Mendelian inheritance, speciation, succession, and energy flow accurately without showing connections between stages/processes and biological effects.
	Evaluates the significance, impact/role/causes of genetic, evolutionary, and ecological dynamics	Evaluates the significance, causes, roles, and impacts with relevant examples and clear justification of conclusions.	Analyses the causes, roles, and impacts with relevant examples but no justification of conclusions.	Explains the significance, causes, roles, or impacts with no examples and no justification of conclusions.
	Applies principles of inheritance, evolutionary change, ecosystem dynamics, and ecological change to address challenges in genetics, sustainability,	Applies the principles accurately to explain and propose effective, ethical, and evidence-based solutions to address challenges in genetics, sustainability,	Applies the principles accurately to explain and propose effective, evidence-based but non-ethical solutions to address challenges in genetics, sustainability,	Applies the principles to explain and propose effective, non-ethical and non-evidence-based solutions to address challenges in genetics, sustainability, and climate change.

	and climate change.	and climate change.	and climate change	

Table showing bases of assessment of each item of paper 2

ITEM	BASIS OF ASSESSMENT	5	4	3
		Exceptional	Outstanding	Satisfactory
1	Planning	Accurately states and clearly explains all four key attributes of planning: aim, hypothesis, variables, and materials, showing how they interrelate.	States and explains any three attributes of planning.	States and explains any two attributes of planning.
	Risks and Mitigation	Identifies all possible risks, explains their impacts, and proposes comprehensive, effective mitigation strategies.	Identifies key risks and suggests mitigation strategies, but explanations of potential impacts are limited OR vice versa.	Identifies some risks, but explanations of impacts are unclear and mitigations are vague/ineffective.
	Procedure	Designs a clear, step-by-step procedure that is accurate, coherent, and replicable. Uses all materials correctly and controls variables effectively.	Designs a coherent and mostly correct procedure, using most materials appropriately, but variable control is incomplete.	Designs a basic procedure with some flaws; uses only some materials correctly and shows weak control of variables.
	Data presentation	Presents data accurately, completely, and clearly using the most appropriate format. All labels, headings, and units are correct.	Presents data with minor errors; generally organized but some labels or units are missing/inconsistent.	Presents incomplete data with noticeable errors; several labels/units are incorrect or missing.
	Analysis and recommendations.	Accurately analyses data, identifies clear patterns, draws	Analyses data to identify patterns and	Analyses data to identify patterns and conclusions but

		valid conclusions, and provides well-justified, evidence-based recommendations.	meaningful conclusions with accurate explanations, but recommendations are absent or weak.	without clear explanations or recommendations.
2	Collection of data and evaluation of the suitability of structures to function in/ environment.	Accurately collects both qualitative and quantitative data, identifies and describes structures precisely, compares features effectively, critically analyses their functional and ecological suitability, and predicts how modifications could affect survival or function under different conditions.	Accurately collects qualitative and quantitative data, identifies and describes structures, compares features correctly, and explains suitability using clear evidence from structural and environmental interactions.	Collects data with some errors or omissions, identifies and describes structures with minor inaccuracies, comparisons are incomplete, and explanations of suitability are partially correct or lack depth.
	Drawing	Produces an accurate, well-labelled drawing with a clear, comprehensive title, precise outlines, correct magnification, neat organization, and all relevant histological features included.	Produces a largely accurate and labelled drawing with most attributes (title, outlines, magnification, neatness, features) correctly represented.	Produces a drawing with some accuracy and labelling, but several attributes (title, outlines, magnification, features, or neatness) are missing or incorrect.