

ORDINARY LEVEL BIOLOGY EXAMINATIONS

A. ABILITIES AND SKILLS TESTED IN EXAMINATIONS

- All examination syllabuses list the abilities to be tested by the examination. These skills and abilities are related in a broad way to the individual's 'biological intelligence'.
- Examiners aim to test all of these skills and abilities in their examination papers. The skills and abilities are hierarchical, which means the question which tests skills at level five will also test skills at all lower levels.
- For **theory papers** these may be summarized as follows:
 1. **Recall of knowledge** of learned facts, terms and principles (specifics and processes).
 2. **Comprehension** of learned facts, terms and principles presented in a variety of ways, e.g. verbal, diagrammatic, graphical and tabular, and the translation and interpretation of this information.
 3. **Application of the data** described in 2 above to new situations.
 4. **Synthesis and analysis of data** in terms of the construction of hypotheses and the design of experiments.
 5. **Evaluation of biological information** so as to display mastery of data at all levels as presented above.
- In practical examinations the skills and abilities tested may be summarized as the ability to:
 1. To follow carefully a sequence of instructions within a set time allowance.
 2. To use familiar and unfamiliar techniques in practical. To record their observations and make deductions from them.
 3. To observe and recognize features of familiar and unfamiliar biological specimens, record observations and make deductions about functions of whole specimens or their parts.
 4. To make clear line drawings of the specimens provided, indicate magnification and to label familiar structures.
 5. To interpret unfamiliar data and draw conclusion from their interpretations.
 6. To employ manual skills in assembling apparatus, in using chemical reagents and in using instruments such as mounting needles, scalpels/razor blades, forceps and scissors.
 7. To observe reactions, read simple measuring instruments and perform simple calculations.

B. CHALLENGES IN THEORY EXAMINATION OF BIOLOGY

1. Most students fail to answer multiple choice (objective) questions accurately due to guessing.
2. Some students use abbreviations/short hand and others have Poor handwriting.
3. Some students fail to give differences/contrasts.
4. Some students fail to describe the graph; biological processes; and experiments
5. Most of students fail to explain the graphs, biological situations/events.
6. Most students fail to carry out the genetical crosses; fail to construct food chain and webs.
7. Some students fail to represent data on graphs correctly.
8. Most students fail to give the correct appropriate graphical scale

9. Some students misinterpret of questions, probably due to lack of practice in answering questions and or limited vocabulary or due to insufficient or lack of practical skills.
10. Most of the students have low biological content either due to poor revision culture of the subject, low preparation/ lack of preparation, or Low syllabus coverage.

C. CHALLENGES IN PRACTICAL EXAMINATIONS OF BIOLOGY

- 1 Lack of observational skills or incorrect observations.
- 2 Students give correct observations but wrong deductions.
- 3 Most students fail to construct dichotomous keys correctly.
- 4 Students fail to classify of specimens (organisms) correctly.
- 5 Students tend to give wrong spellings of technical words e.g. proboscis spelt as proboscis; and insecta as insector.
- 6 Poor recording of results.
- 7 Poor drawings.
- 8 Use of wrong words and their explanation e.g. attack instead of attach; lives instead of leaves; etc.
- 9 Lack of knowledge of subject content.

D. SOLUTIONS TO THE CHALLENGES IN BIOLOGY EXAMINATIONS

- 1 Students must make practice on answering multiple choice (objective) questions.
- 2 Students must be encouraged to write properly in exams and must avoid shorthand or abbreviations.
- 3 Students must be exposed and trained on how to describe graphs, processes and experiments from different topics in the subject.
- 4 Students must be exposed and trained on how to explain the graphs, biological situations/events/processes from different topics in the subject.
- 5 Students must do practice on crosses of genetics and construction of food chain and web.
- 6 Students must do more practice on how to represent data on graphs correctly especially on the areas of the title, scale, labelling axes, and plotting.
- 7 Begin by answering all compulsory Questions; unless you feel that you are unable to tackle this question well. Work the easiest problems first;
- 8 Read through the question carefully and, if a choice is given, decide which one you are going to answer – choose a question which you have enough biological content.
- 9 Think before you write. Think of key words and make a rough outline of the points you will talk about in your essay.
- 10 Diagrams should be large, clearly drawn in pencil and labeled fully, either in pencil or ink.
- 11 Written in good English, and facts should be relevant to the question and presented in logical order. Do not write down all you know about that topic.
- 12 Teachers must incorporate practical activities in the theory lessons in order to
 - Stimulate their love towards the subject

- Widen their biological reasoning so as to be able to describe and explain the any biological situation.
- Ease the grasping of the biological concepts

13 Answering Practical examination take note of the following:

- ✓ Follow all instructions carefully and when asked to record your observation, include all details, e.g. Size, shape, colour, smell etc.
- ✓ Drawing should be accurate representation of the specimens.
- ✓ Conclusion should be made on the basis of your observations and practical and theoretical knowledge acquired during the course.

E. TERMS USED IN BIOLOGY EXAMINATIONS

Below is a list of terms that are used in examination questions. It is important that you familiarize yourself with these terms and what is expected in your answers when such terms are encountered.

1. Analyse:	Interpret data to reach conclusions.
2. Annotate:	Add brief notes to a diagram, drawing or graph.
3. Apply:	Use an idea, equation, principle, theory or law in a new situation.
4. Calculate.	Find an answer using mathematical methods. Show all the stages/working unless instructed not to.
5. Compare.	State the similarities and differences between the two or more topics given in the questions.
6. Construct:	Represent or develop information in a graphical form (include a legend or key).
7. Contrast:	Show differences. Set in opposition.
8. Deduce:	Reach a conclusion from the information given.
9. Define:	Give the precise meaning of a word or phrase as concisely as possible.
10. Design:	Produce a plan, model or simulation
11. Describe:	State in words (using diagrams when appropriate) the main points the topics you are asked to describe.
12. Determine:	Find the only possible answer.
13. Discuss:	Give a critical account of all the points involved in the topic being written about and their relative importance. Present them in an orderly way in your answer.
14. Distinguish	Give the differences between two or more different items or concepts.
15. Draw:	Represent by means of pencil lines. Add labels unless told not to do so. Diagrams may form the basis of a question or be used to illustrate a point in another type of question. Diagrams represent a simplified or idealized representation while drawings are usually made directly from the object and occur in practical examinations.
16. Estimate:	Find an approximate value for an unknown quantity, based on the information provided and prior scientific knowledge.

17. Evaluate:	Assess the consequences and limitations.
18. Explain:	State all the details which affect the subject and enable it to be clearly understood.
19. Identify:	Find an answer from a number of possibilities.
20. Illustrate:	Give concrete examples. Explain clearly by using comparisons or examples.
21. List:	Write down the facts as briefly as possible each fact should be numbered.
22. Name:	Write down the names of structures, process or organisms required by question.
23. Predict	Give an expected result.
24. Solve	Obtain an answer using algebraic and/or other numerical methods (show working unless instructed otherwise).
25. State:	Give a brief account or summary. Include essential information only. Give a brief overview, mention main facts/factors.
26. Outline:	Give a specific name, value, or other answer. No supporting argument or calculation is necessary.
27. Suggest:	State your answer on the basis of theoretical knowledge. Propose a hypothesis or other possible explanation