BIOLOGY REVISION AND EXAMINATION TIPS

Main reasons why Students Perform Poorly in the Biology Subject

- Confusion of biology concepts and terminologies.
- Inability to recall ideas about the subject content (subject matter). This could be attributed to lack of interest and concentration in class and poor study habits hence the meaning of the content is never grasped.
- Use of poor vocabulary-lack of good English command to express ideas e.g. the relaxation of erector pili muscles cause the hair to **fall down** instead of **lie flat** on the skin surface
- Assuming too much. This leads to giving sketchy, ambiguous, half answers or giving more information than asked which in most cases is irrelevant.
- Not following simple instructions and guidelines in answering questions (examination techniques) particularly graphical and structured questions. Students need to know that most structured questions require a deeper understanding of the concepts behind the question/experiment. Furthermore, most of the answers in the various subsections are **tied** i.e. the student has to get the first part of the question right first to guarantee him/her a correct response in the subsequent subsections of the question.

Possible Remedies

- During study sessions, ensure that you understand adequately the subject matter for every topic. This calls for a lot of reasoning, comparison, application, relation, evaluation, analysis and observation. These are core science-process skills that make science therefore Biology a unique discipline. Understanding can be enhanced through having interest in what you are reading (have a positive attitude towards the subject having understood its relevance in your future career as well as individual life and community development); planning and organizing yourself by knowing what to do, where, when and for how long (prepare a realistic study schedule/timetable and follow it); concentrate by being attentive and alert in class; be determined; never give up and have a dream or vision that will help you look into your future. Thorough revision or study ensures information is securely fixed in the long-term memory of the brain (principle of consolidation). The best method is ensuring you review notes right after class. Large chunks of information can be summarized through use of pseudo codes, mnemonics or use of concept maps (schematic mapping).
- Arrive in class and examination room in time. This will enable you gather all the verbal and written concepts taught and boost confidence and reduce pre-exam stress respectively. This can also be enhanced by conferring with other students to predict what might be in the test prior to the start of the examination.
- Read through each question at least three times before you decide to write down your answer. Use grammatical clues within a statement as hints for the correct answer. Underline the key words in the question to help you know exactly what is being asked. If you go blank on any of the questions, skip it and go to the next but remember to spare some time later to answer the skipped question (s).

- Believe in yourself. Do not try to be perfect; instead try to balance your work by giving the best. Never be in a hurry/panic. The time allocated for each paper has been pretested to be adequate for every student's level of achievement (intelligence) and it only requires proper planning and approach to fit within the allocated time and even have time to review your work. Budget your time according to what is required of you in each question. Answer questions in a strategic order starting with the easy ones to help you build confidence and familiarize yourself with the vocabulary and concepts that you will deal with, then answer the more difficult questions.
- Write your answers neatly, accurately and precisely. Start by writing the points you are sure of first. This is because in Biology, only the first required correct responses are awarded. Any extra point beyond the required is just acknowledged but not awarded even if it is also or is the only correct one yet the earlier stated ones are wrong or not all.
- Use proper English and avoid confusing concepts. English is the medium of instruction (l*ingua franca*) of the Biology subject matter and therefore a correct and clear command of the language is paramount to passing the subject.
- Remember to write exhaustive answers as half answers and 'hanging' statements are never awarded in any Biology examination e.g. for each structure or process, mention the function or reasons respectively depending on how the question is framed.
- Concentrate on the unique or distinguishing features or characteristics and avoid obvious things e.g. if asked for the adaptations of the gills in fish to gaseous exchange, don't expect to be awarded for mentioning that they are moist yet it is obvious that fish are aquatic animals found in water (moist) bodies.
- Strive to answer the questions as they are stated but not to memorize the content read e.g. you might be tempted to state all the adaptations of gaseous exchange structures you know including the structures having a **dense network of capillaries**…yet the question asked is specifically asking for the adaptations of **plant** structures. Therefore, get to understand the question asked first before attempting to answer.
- Avoid canceling your work by being sure before writing down. Canceling can also be a point of suspicion for cheating. Neatness of the answers also encourages the examiner and implies keenness, clarity and being sure, all being the expected attributes of a modern scientist.
- Write all scientific names and technical words/phrases according to the rules of the binomial nomenclature and correct spellings respectively. Avoid using abbreviations, short codes and symbols as most are not conventional (not universally used/accepted by the body of scientists) hence you risk being penalized for their use.
- Never add information in brackets if you are not sure e.g. red blood cells (leucocytes). This will not be awarded as it shows confusion of concepts which is penalized.
- All diagrams drawn should be clear, neat and proportional sketches (not artistic impressions) and must be true representations of the object/specimen. Follow the simple rules: Labeling lines should not cross each other; the labeling line should touch the structure in question but not hang; use lines not arrows to label, arrows only show direction; do not shade the drawings but use dots or crosses within the part if you want to show the difference; lines must be continuous and not broken; no two structures should have the same name; for cross-sections and plan diagrams, remember to use double outer lines (outline) and only show key/few features avoiding unnecessary details.

- For essay questions, choose the option you are sure of and comfortable with in terms of raising the maximum points possible. Write down key words as they are fresh in your mind; use the first paragraph as an overview of your essay; when time is up for one question or part of the question, stop writing, leave some space and begin the next question or part of the question. The incomplete answers can be completed later during review. However, remember six incomplete answers will receive more credit (marks) than thee complete ones, so don't waste time. Compactness, completeness (exhaustiveness) and clarity of a well-organized answer is what is important in essay questions. This can be achieved by ensuring that every sentence earns you at least 2 marks hence a 1-1½ page-length (A-4 paper/foolscap) essay is more appealing than 3 pages of verbal irrelevancies. Remember also that to know a little and present it well is superior to knowing much and presenting it poorly.
- Allow yourself time to review your work. Review allows you to ensure that you have answered all the required questions, not skipped any relevant question, not made some simple mistakes and also gives you time to complete any uncompleted questions as well as correcting the wrongly answered ones.
- Rules for graphical questions may vary from time to time (year to year) but currently the following apply: Use a thin (well-sharpened) pencil to draw thin clear curves for accuracy; all graphs should be curves drawn using continuous lines regardless of the number; the graph should occupy at least ¾ of the grid/graph paper provided, achieved through appropriate scales; state the title and scale at the top of the graph clearly and avoid using abbreviations (remember to include the given units); ensure the Cartesian plane (X and Y axes) has arrows at the ends to show continuity; use dots/small crosses for plotting; do not extrapolate the curve unless asked for a point beyond the plotted ones; label the axes and curves; be neat; if the range of the data is so wide, break the affected axis/axes but don't force the curve to begin from the 0 point.

Commonly Used First Statements in Biology Questions and their Meanings

- **State/What** -This requires the student to present the said concept in a brief and clear form. If it is an adaptation, then it must be given fully i.e. structure, modification and function.
- **Explain**- Give reasons why something/anything happened or will happen.
- **Describe**-Give a detailed or graphic account of the issue or phenomenon showing all features and characteristics e.g. if it is a structure and function question (adaptation), you are expected to correctly name the structure or feature, explain how it is modified and give the function (s) of the structure. Sketchy explanations are penalized or earn least marks. So give as many detailed points as possible.
- **Define**-Give a precise meaning of a word/phrase normally in one sentence.
- **Illustrate**-Use a figure, diagram or any non-text form as an example to explain or make something.
- **Name/Give**/**Mention**-Give points only, no explanations ✓ **Why**-Give clear reasons supported by an argument.
- **Outline**-Give the main features in a sequential manner.
- **Distinguish between**-Define the terms to clearly bring out the differences in their meanings. You only earn a full point (s) or mark (s) when both definitions are correctly given.

- **Account for**-Such questions need a two-prong approach: The first part is to give the trend/situation as it is e.g. the volume increases (d) rapidly/gradually with increase in temperature. The second portion of the answer involves giving the explanation/reasons for the situation/trend e.g. because the molecules/particles gain kinetic energy, moving/vibrating more rapidly hence occupying more space (hence raising the volume). These questions are common in the Paper 2; Section A structured questions and the compulsory question in Section B of the same paper. The questions assume prior knowledge in either one or a number of the Biology topics.
- **Differentiate/Give the differences**-Use either a table for the differences or use connectors such as the word 'while'. Make sure the responses rhyme to earn a mark e.g. an artery has a narrow lumen while the capillary has a wide lumen not an artery has a narrow lumen while a capillary's wall is thin.
- **Compare** (**and Contrast**)-Outline both the similarities and differences between the given terms/processes.