Aga Khan University Examination Board

Notes from E-Marking Centre on SSC-I Biology Examination May 2017

Introduction

This document has been produced for the teachers and candidates of Secondary School Certificate (SSC-I) Biology. It contains comments on candidates' responses to the 2017 SSC-I Examination indicating the quality of the responses and highlighting their relative strengths and weaknesses.

E-Marking Notes

This includes overall comments on candidates' performance on every question and some specific examples of candidates' responses which support the mentioned comments. Please note that the descriptive comments represent an overall perception of the better and weaker responses as gathered from the e-marking session. However, the candidates' responses shared in this document represent some specific example(s) of the mentioned comments.

Teachers and candidates should be aware that examiners may ask questions that address the Student Learning Outcomes (SLOs) in a manner that requires candidates to respond by integrating knowledge, understanding and application skills they have developed during the course of study. Candidates are advised to read and comprehend each question carefully before writing the response to fulfil the demand of the question.

Candidates need to be aware that the marks allocated to the questions are related to the answer space provided on the examination paper as a guide to the length of the required response. A longer response will not in itself lead to higher marks. Candidates need to be familiar with the command words in the Student Learning Outcomes which contain terms commonly used in examination questions. However, candidates should also be aware that not all questions will start with or contain one of the command words. Words such as 'how', 'why' or 'what' may also be used.

General Observations

Candidates who did not score well were mostly not able to understand the demand of the question, often misinterpreting the command word and the stimulus. Furthermore, understanding of use of scientific terminology and interpretation of unseen diagrams and graphs was also weak. Mentioned below are few concepts that teachers need to focus and give candidates more drill and practice to have a strong grip.

- Concept of meiosis
- Specified examples of properties of enzymes
- Fate of lactic acid in the body
- Importance of fertiliser and the environmental hazards related to chemical fertilisers' use

However, candidates outshined in some concepts such as variety of specialised structures and their function in cells of the leaf system and impact of human activities such as deforestation and over-hunting on biodiversity.

Constructed Response Questions (CRQs)

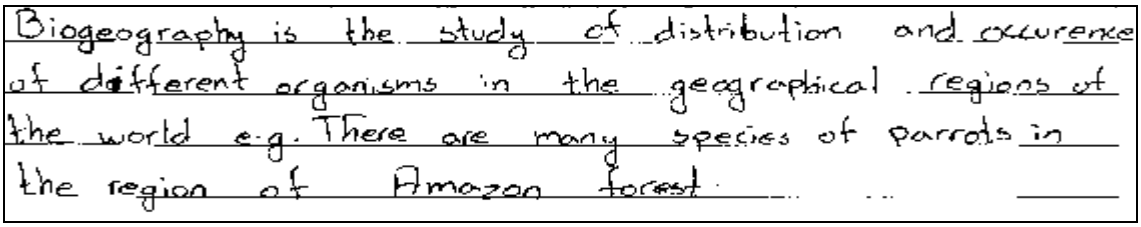
Detailed Comments:

Question 1a

Describe the relationship of biology with geography using an example.

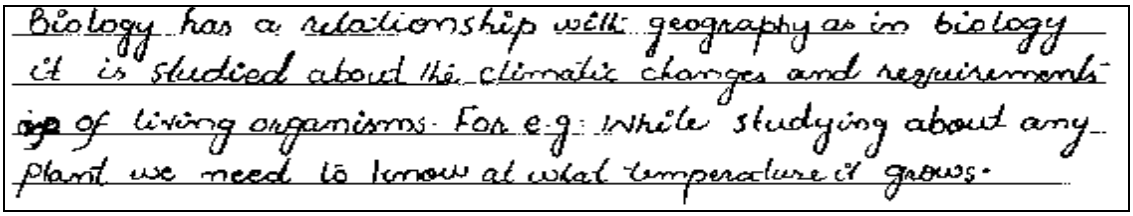
Better responses described the relationship of biology with geography using relevant examples. Such responses mentioned the distribution of polar bears and penguins in the Polar regions, the distribution of coniferous forests at high altitudes, the distribution of marsupials in Australia, the distribution of snow leopard and Markhor on the mountainous areas of Pakistan.

Example:


Biogeography is the study of distribution and occurence of different organisms in the geographical regions of the world e.g. There are many species of parrots in the region of Amazon forest.

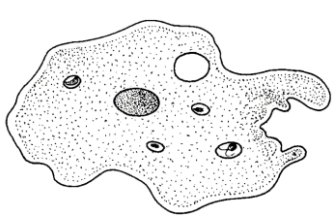
Weaker responses were unable to relate geography to biology. Most of the responses described the habitat of organisms in a generalised way quoting examples such as fish live in water/ mammals live on land. Some of the responses provided irrelevant descriptions, e.g. the number of species of plants and animals present in different geographical regions of the world; importance of animals and plants; described the impact of human activities on plants and animal life. A few responses revealed misunderstanding of candidates between distribution and characteristics of living organisms.

Example:

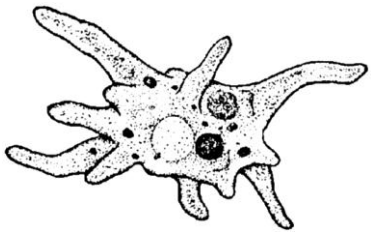

Biology has a relationship with geography as in biology it is studied about the climatic changes and requirements of living organisms. For e.g: While studying about any plant we need to know at what temperature it grows.

Question 1b:

The given diagrams show two amoebae of similar size.



I

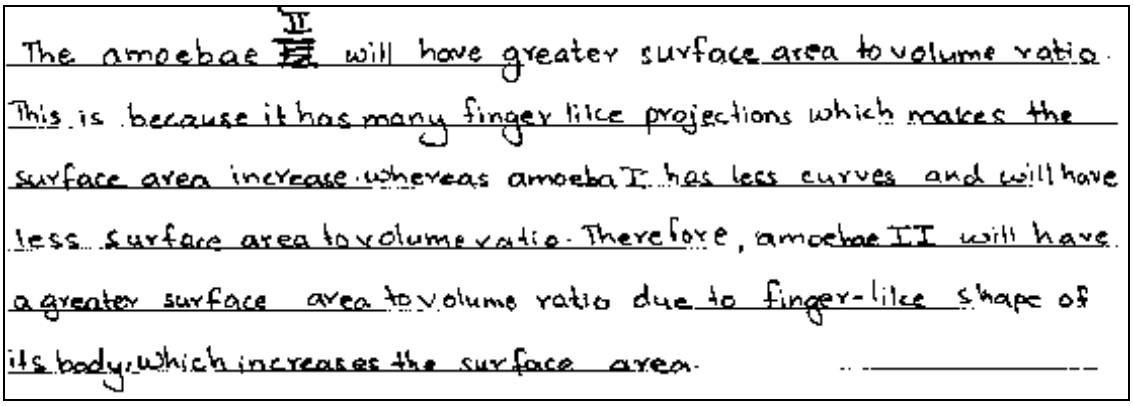


II

Which of the two amoebae will have greater surface area to volume ratio? Support your answer with suitable description.

Better responses correctly identified amoeba II as the amoeba with greater surface area to volume ratio. Such responses described the shape of amoeba II as irregular/ presence of more number of pseudopodia/ finger-like projections. Moreover, such responses linked the mentioned shape to more exposed surface or more exchange of material with the environment.

Example:


The amoebae II will have greater surface area to volume ratio. This is because it has many finger like projections which makes the surface area increase whereas amoeba I has less curves and will have less surface area to volume ratio. Therefore, amoebae II will have a greater surface area to volume ratio due to finger-like shape of its body which increases the surface area.

Weaker responses either failed to identify the amoeba with greater surface correctly or justify the correct identification. Some responses identified correctly but were unable to support with valid reasons. Other responses gave irrelevant reasons such as it has better conditions/ it is greater in size/ the size of both amoebae is same/ it has complex structure/ it is shrinking and organelles are close to each other/ it is wide.

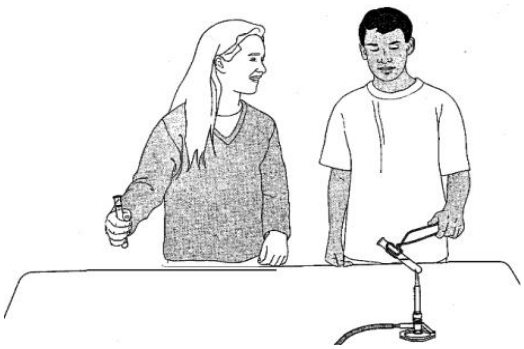
Candidates are advised to relate such topics of biology with mathematics for better understanding.

Example:

Amoebae 1 have a greater surface area, Because it more wide as compare to amoeba 2. amoeba 2 have an irregular shape that is why it have a smaller surface area as compared to amoeba 1.

Question 2a:

The given diagram shows two students working in the biology laboratory.



Identify any TWO safety measures that the students have NOT taken while working in the laboratory.

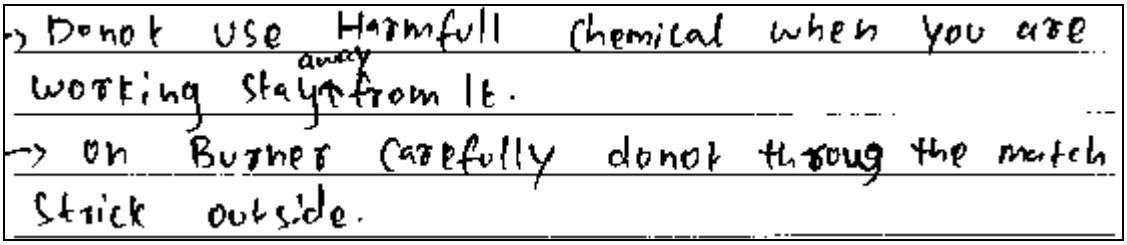
Better responses identified those potential hazards which are visible in the diagram such as the test tube is facing toward the students/ the student is holding a test tube in her hand instead of a holder/ they are not wearing lab coat or goggles or gloves or mask/ hair of the girl is not tied.

Example:

Two safety measures which the students have not taken are:-
1) The boy is pointing the test tube which he's heating, directly towards his face.
2) The children are not wearing lab coats & safety goggles.

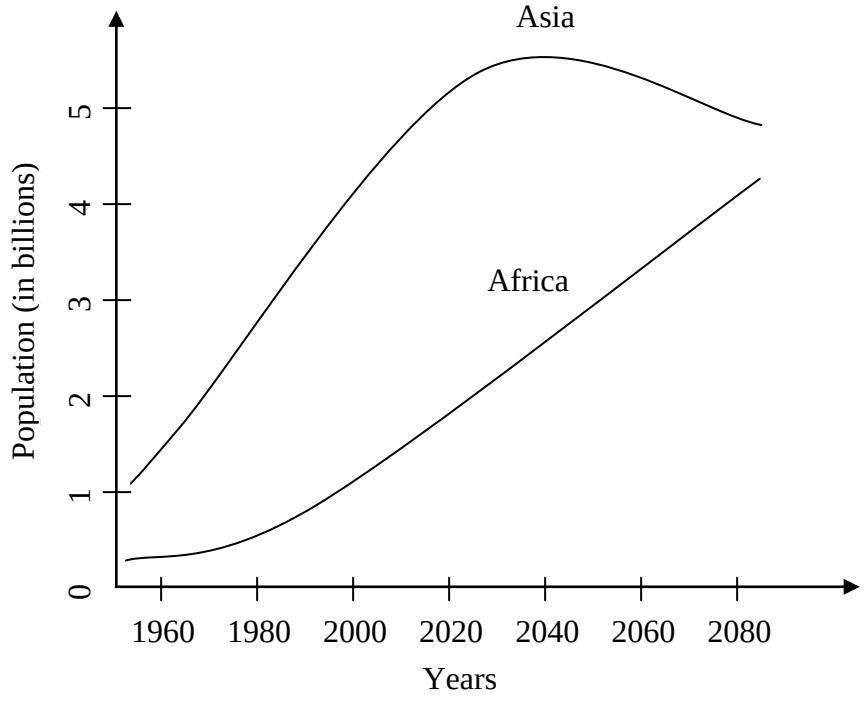
Weaker responses were unable to identify the potential hazards as revealed by the given diagram. Such responses ignored the given stimulus and mentioned the memorised safety measures which can be applicable to any situation in a laboratory, e.g. do not use harmful chemicals while working/ the students should have kept themselves away from chemicals/ students should not work with a high flame/ do not throw match stick/ discard chemicals after use/ care about beakers during experiments/ do not handle the apparatus carefully. Candidates are advised to focus on the given stimulus before drafting their responses.

Example:



Question 2b

The given graph shows the population growth of two different continents.

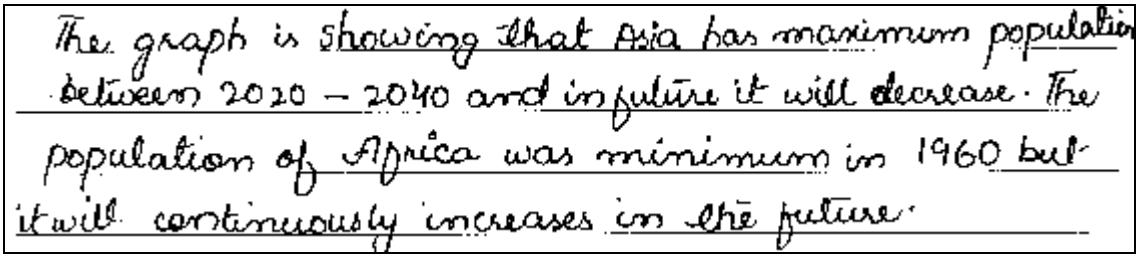


Source: United Nations

Interpret the graph referring to the population of Asia and Africa.

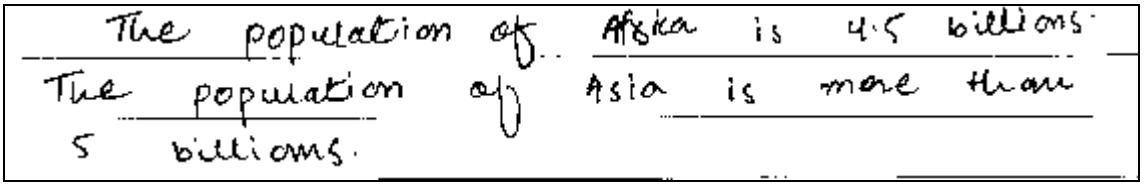
Better responses showed clear understanding of the graph. Such responses interpreted the graph and extracted that Asia will reach the maximum population in 2030/ 2040; after 2030/ 2040, the population of Asia will decrease; the population of Africa is increasing since 1990; the population of Asia is more as compared to Africa, no significant change in the population of Africa between 1960 and 1980.

Example:


The graph is showing that Asia has maximum population between 2020 – 2040 and in future it will decrease. The population of Africa was minimum in 1960 but it will continuously increases in the future.

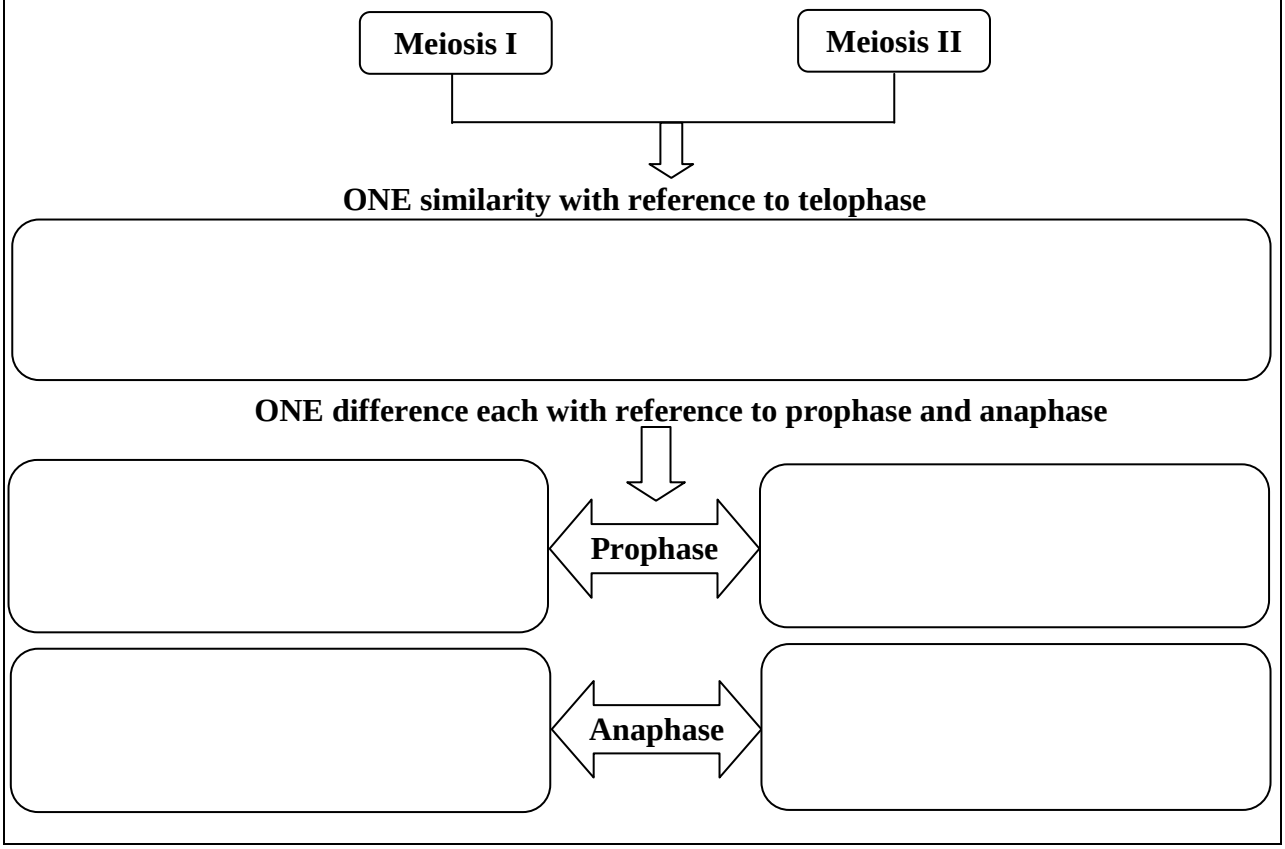
Weaker responses were unable to unpack the command word, i.e. interpretation and thus provided vague description of graph such as Africa has constant population during these years and Asia has variable population/ both countries have high population rate so food demands will be high/ Asia has a population of 4.2 billion and Africa has a population of 5.7 billion. Some of the responses gave irrelevant and incorrect descriptions, e.g. when the population is above the optimum, the kinetic energy increases and when the population is on average of optimum pH then the kinetic energy is on average. A few responses redrew the same graph in different forms. Candidates are instructed to emphasise on the command word given in the question.

Example:


The population of Afsica is 4.5 billions. The population of Asia is more than 5 billions.

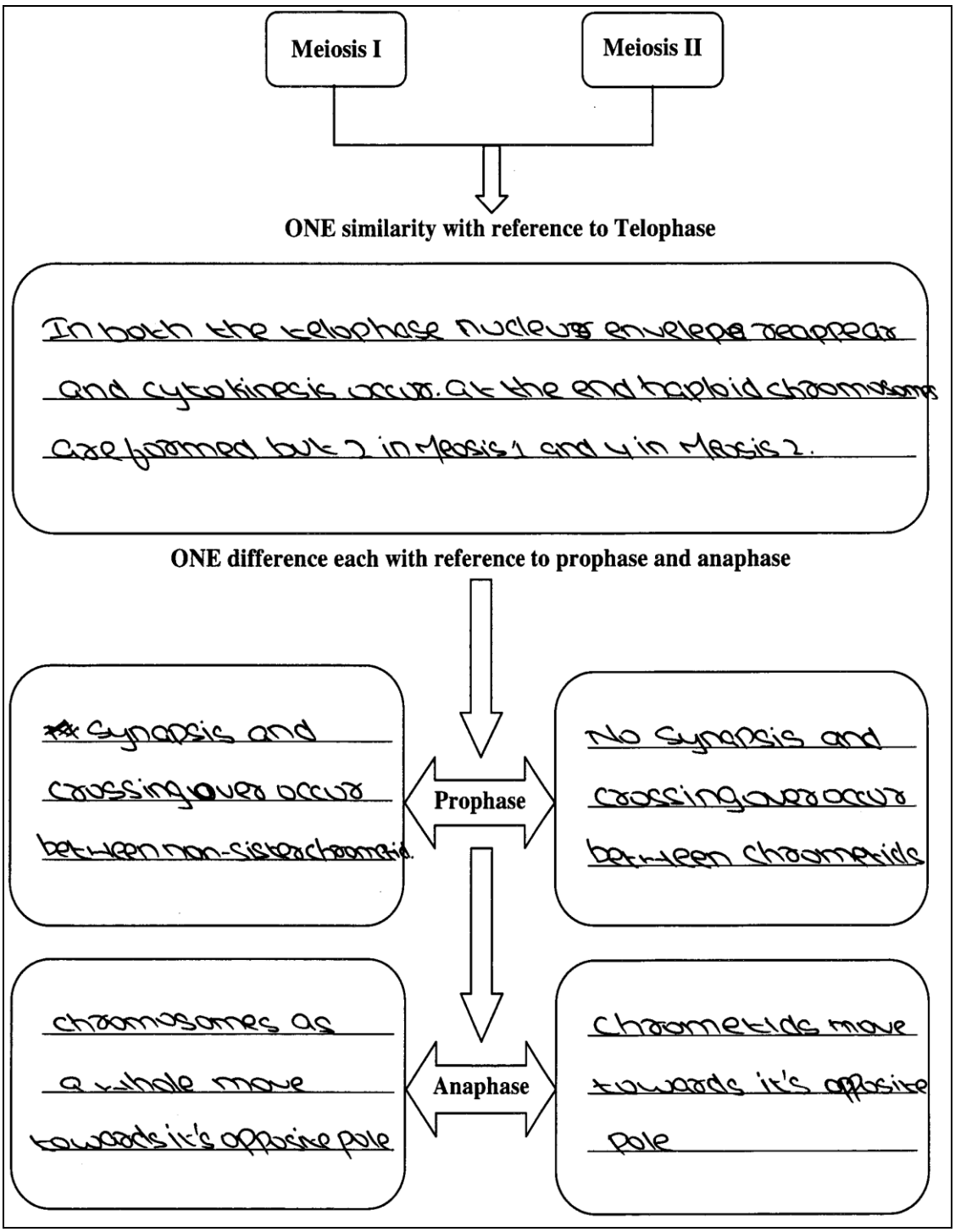
Question 3a:

Complete the given flow chart of meiosis.



Better responses demonstrated clear understanding of the concept of meiosis. Such responses filled the flowchart correctly by mentioning a relevant similarity between meiosis I and II. These responses differentiated between meiosis I and II with reference to prophase and anaphase based on a single concept.

Example:

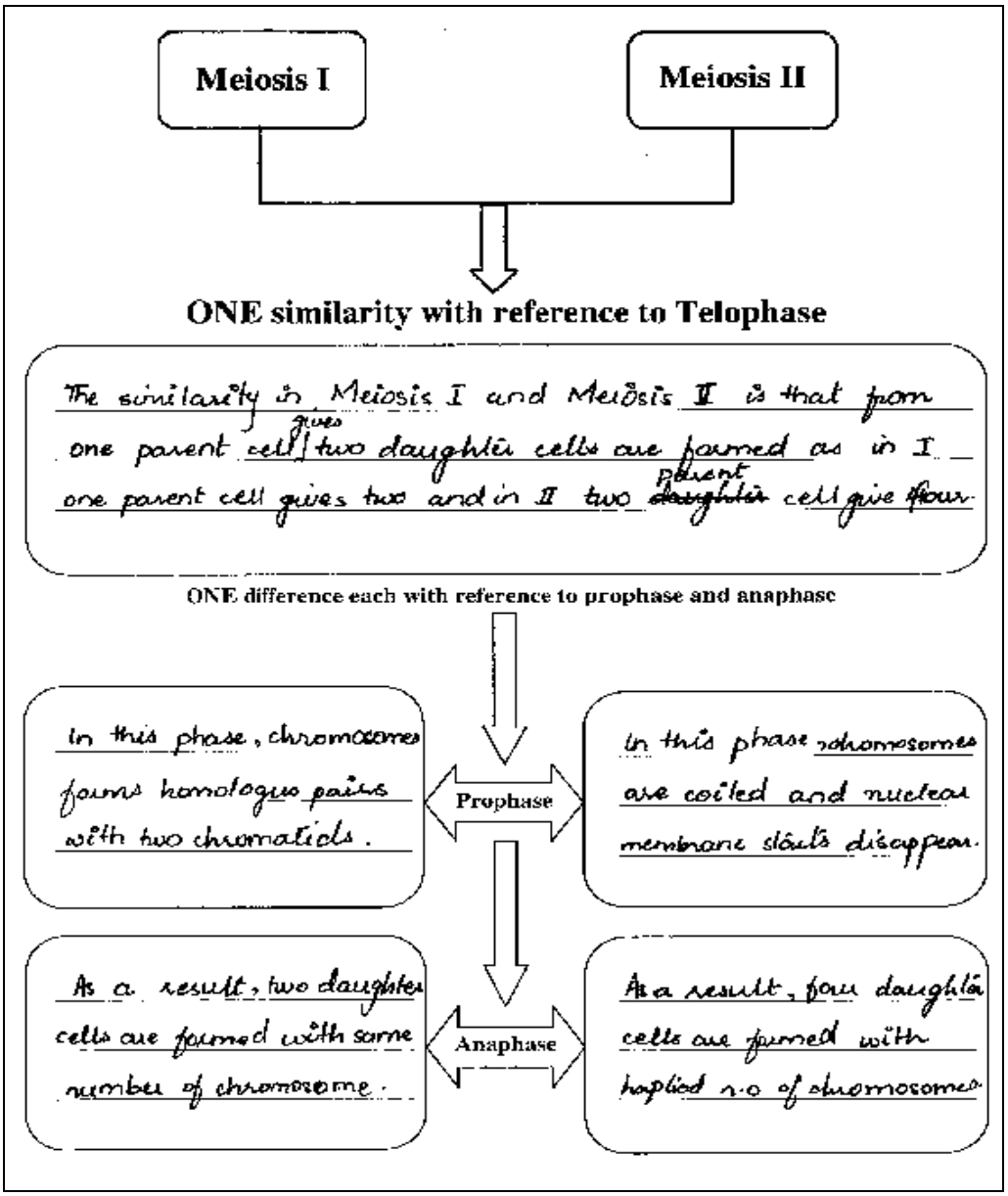

Meiosis I
Meiosis II
ONE similarity with reference to Telophase
In both the telophase nucleus envelope reappear and cytokinesis occur. At the end haploid chromosome are formed but 2 in Meosis 1 and 4 in Meosis 2.
ONE difference each with reference to prophase and anaphase
Synapsis and crossing over occur between non-sister chromatid.
Prophase
No synapsis and crossing over occur between chromatids
chromosomes as a whole move towards it's opposite pole
Anaphase
Chromatids move towards it's opposite pole

Weaker responses were unable to mention the similarity between meiosis I and meiosis II in Telophase. Instead, such responses mentioned the similarity between cytokinesis and karyokinesis.

In case of the difference between prophase I and II, most of the responses mentioned two different points rather than differentiating both the phases on a single point such as in prophase of meiosis I chromosomes form homologous pairs while in meiosis II chromosomes are coiled and nuclear membrane starts to disappear.

Other responses swapped the differences of prophase and anaphase and despite writing all the correct differences in the table, such responses failed to score any marks.

Example:


Meiosis I
Meiosis II
ONE similarity with reference to Telophase
The similarity in Meiosis I and Meiosis II is that from one parent cell gives two daughter cells are formed as in I one parent cell gives two and in II two parent cell give four
ONE difference each with reference to prophase and anaphase
In this phase, chromosomes forms homologue pairs with two chromatids.
Prophase
In this phase chromosomes are coiled and nuclear membrane starts disappear.
As a result, two daughter cells are formed with same number of chromosome.
Anaphase
As a result, four daughter cells are formed with haploid n.o of chromosomes

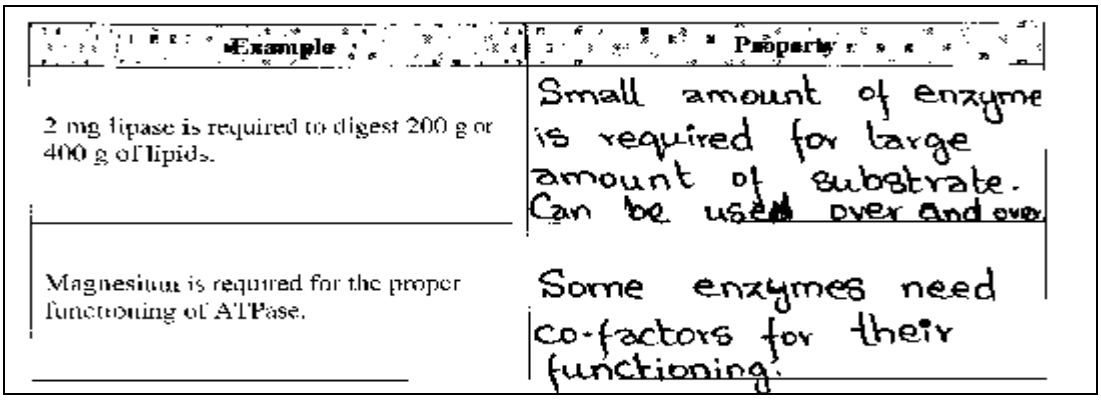
Question 4

Mention the general properties of enzymes for the given examples.

Example	Property
2mg lipase is required to digest 200g or 400g of lipids	
Magnesium is essential for the proper functioning of ATPase.	

Better responses successfully extracted the specific properties of enzymes from the given examples such as small amounts of enzymes are required to convert a substrate into product/ enzymes are specific in their action. Such responses mentioned that some enzymes need co factors for their proper functioning.

Example:



Example	Property
2 mg lipase is required to digest 200 g or 400 g of lipids.	Small amount of enzyme is required for large amount of substrate. Can be used over and over.
Magnesium is required for the proper functioning of ATPase.	Some enzymes need co-factors for their functioning.

Weaker responses mentioned the general properties of enzymes which were irrelevant to the given stimulus; therefore, they were unable to derive the specific properties of enzymes from the given examples. Such responses wrote that all enzymes work on specific substrate/ enzymes are biocatalysts that speed up the reaction/ lipase enzyme is used to breakdown lipids/ enzymes work at 37°C/ when temperature increases enzymes become denatured.

Magnesium is the major component of chloroplast/ magnesium will help to store energy so ATP will function properly.

Some other responses stated the occurrence of enzymes in human body such as lipase is present in the intestine/ stomach.

Magnesium is essential for the proper functioning of ATPase because it is used in the dark reaction in plants.

Example:

Example	Property
2 mg lipase is required to digest 200 g or 400 g of lipids.	Lipase enzyme will break down the lipids into fatty acid and glycerol.
Magnesium is required for the proper functioning of ATPase.	ATPase enzyme will break the magnesium. and stored it.

Question 5:

A student takes rest after a strenuous exercise. While resting, the lactic acid produced in the student's muscles during exercise is converted into glucose.

Outline the process of conversion of lactic acid into glucose.

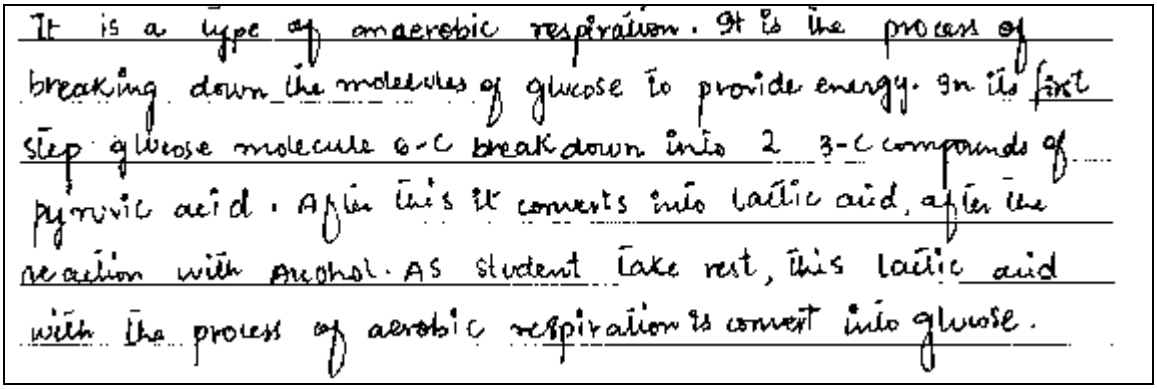
Better responses outlined the conversion of lactic acid into glucose in a correct sequence. Such responses wrote about the transportation of lactic acid to liver, oxidation of lactic acid to produce energy and the conversion of the remaining lactic acid to glucose.

Example:

Lactic acid formed in the skeletal muscles is toxic and can cause fatigue if not removed from the body. Lactic acid is sent to the liver where it is oxidised and its energy is lost. This energy is used to convert the remaining lactic acid into glucose by the expenditure of ATPs. The glucose is transported to the body if it is required otherwise it is stored in the form of glycologen.

Weaker responses displayed misunderstanding regarding the question. Such responses described anaerobic respiration in terms of the production of lactic acid. A few responses outlined the mechanism of cellular respiration highlighting the steps of glycolysis.

Example:


It is a type of anaerobic respiration. It is the process of breaking down the molecules of glucose to provide energy. In its first step glucose molecule 6-C breakdown into 2 3-C compounds of pyruvic acid. After this it converts into lactic acid, after the reaction with Alcohol. AS student take rest, this lactic acid with the process of aerobic respiration is convert into glucose.

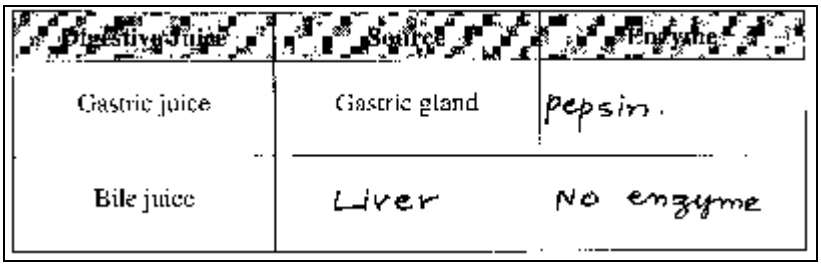
Question 6

State the source of the given digestive juice and name ONE enzyme present in each juice.

Digestive Juices	Source	Enzyme
Gastric juice	Gastric gland	
Bile juice		

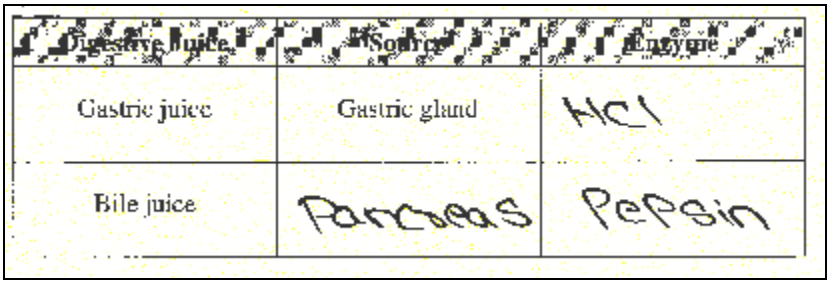
Better responses correctly stated the source of bile juice as liver, enzyme present in gastric juice as pepsin/ pepsinogen/ renin and absence of any enzyme in bile juice.

Example:


Digestive Juice	Source	Enzyme
Gastric juice	Gastric gland	pepsin.
Bile juice	Liver	No enzyme

Weaker responses wrongly stated the source and name of enzyme. The enzyme present in gastric juice was identified as lipase/ amylase/ trypsin/ trypsinogen/ HCl. The source of bile juice was stated as pancreas/ stomach/ intestine/ gall bladder. Most of the responses in this case were confused between the function of gall bladder and liver. While the enzyme present in bile juice was identified as trypsin/ pepsin/ pepsinogen/ HCl/ lipase/ amylase/ trypsin/ trypsinogen.

Example:



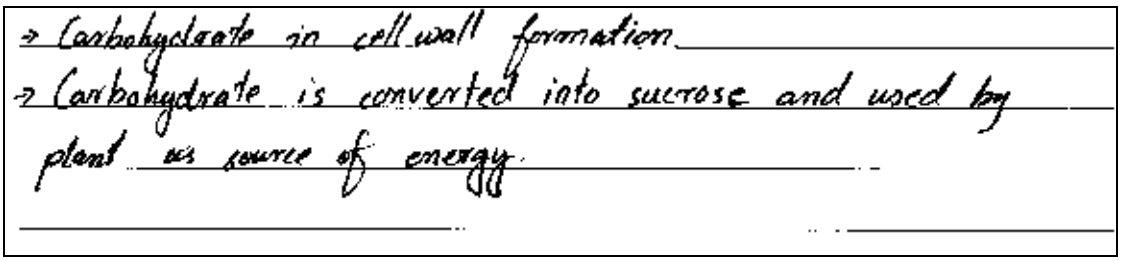
Digestive Juice	Source	Enzyme
Gastric juice	Gastric gland	HCl
Bile juice	Pancreas	Pepsin

Question 7a:

State any TWO functions of carbohydrates in plants.

Better responses stated the functions of carbohydrates in plants that it forms structures like cellulose in plants; produces nectar in some flowers which enables pollination in plants; acts as a source of energy; forms ATP or forms cell membrane.

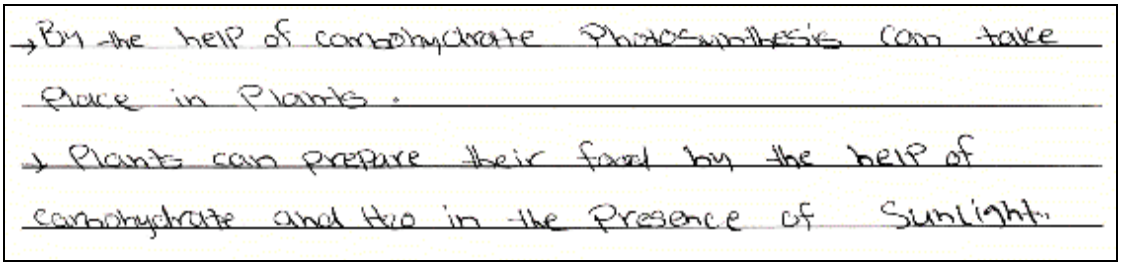
Example:



Weaker responses were unable to differentiate between the process of formation of carbohydrates and their functions. Some responses were irrelevant such as carbohydrates are used for growth/ for metabolic reactions used in dark reactions/ used to maintain water level in plant.

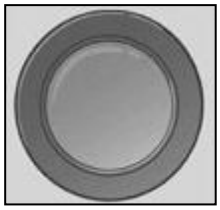
Some other responses gave vague answers, e.g. carbohydrates give water and carbon dioxide/ carbohydrates are converted into sucrose and go to sink for utilisation/ used in photosynthesis/ used for the distribution of food in plants/ they convert lipids into lipase. A few responses described the events of Calvin cycle. Functions of macromolecules should also be emphasised along with the micronutrients. It is evident from the weaker responses that candidates lack in understanding of functions of macromolecules in plants.

Example:



Question 7b:

The given diagrams show cross-sections of arteries.



I. Normal Artery

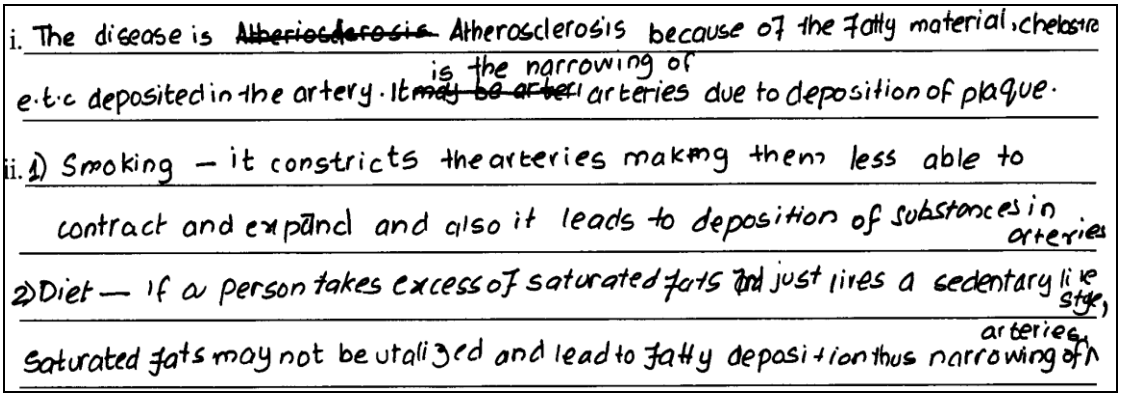
II. Diseased Artery

i. Identify the disease shown in diagram **II**.

ii. Mention any TWO factors that lead to the diseased condition of the artery as shown in diagram **II**.

Better responses identified the disease as atherosclerosis/ arteriosclerosis and mentioned the factors as unhealthy blood cholesterol levels/ high LDL cholesterol/ bad cholesterol/ smoking/ diabetes/ overweight or obesity/ lack of physical activity/ accumulation of calcium/ fibrin.

Example:

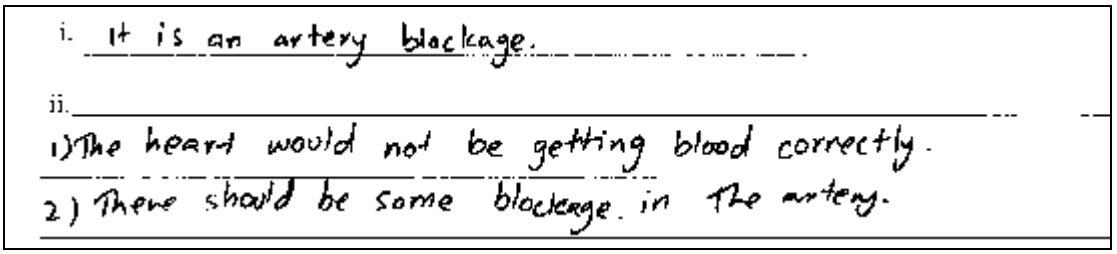


Weaker responses identified the disease as myocardial infarction/ heart attack/ leukemia/ anemia/ thalassemia. Other responses wrote causes or symptoms of the disease instead of the name of disease, such as fat deposition.

Such responses stated irrelevant factors, e.g. infected blood/ not getting blood properly/ injury/ less supply of blood/ cancer/ overeating/ mineral deficiency/ death of heart tissues. A few other responses drafted the treatment of the identified disease such as use of aspirin and bypass surgeries/ treatment is transfusion.

Candidates are advised to read the question carefully and understand the demand of the question before drafting their answer.

Example:



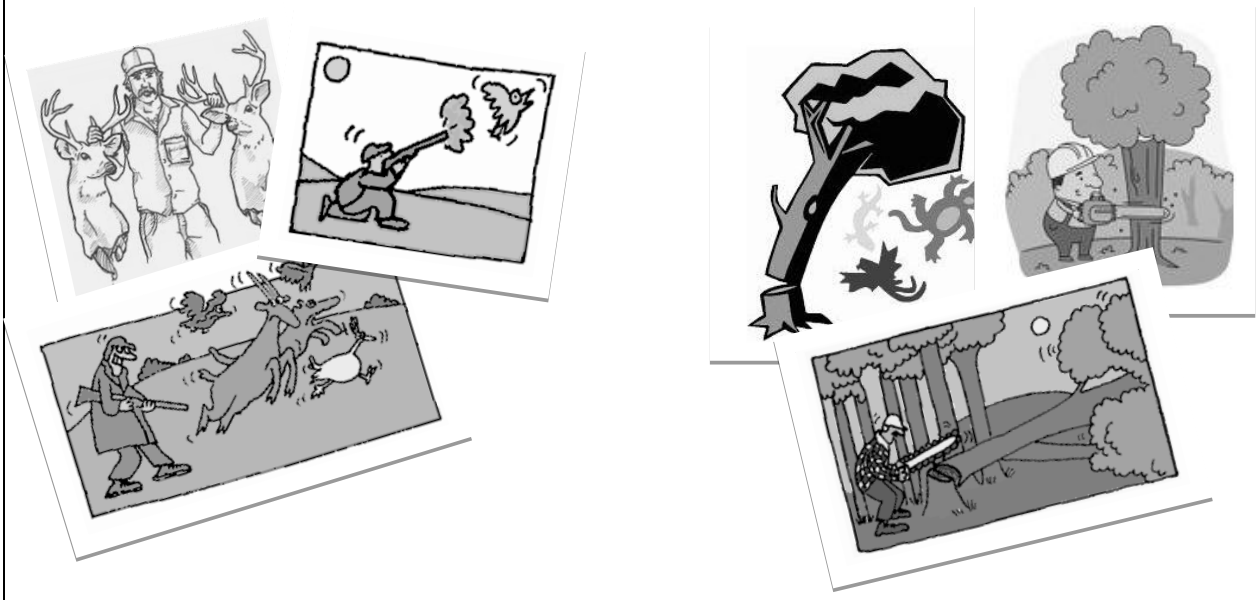
Extended Response Questions (ERQs)

The following questions (8 and 9) offered a choice between part **a** and **b**.

Approximately, larger number of candidates attempted part 'a' of question 8 as compared to part 'b'. This shows their interest and strong understanding of 'biodiversity'. Similarly, in question 9, more preference of candidates was observed in part 'b' than part 'a'. This indicates that candidates are more confident in plant physiology.

Question 8a:

The given diagrams represent two human activities which cause imbalance in nature.



Describe the given human activities and their impact in bringing imbalance in nature with reference to biodiversity.

Better responses described overhunting and deforestation in terms of the excessive killing of animals and cutting down of trees respectively. Such responses mentioned the correct causes and impacts of over-hunting and deforestation. Some responses described the impacts by taking into account specific examples of whales/ Ibex/ Markhor/ Urial.

Example:

OPtion (A)

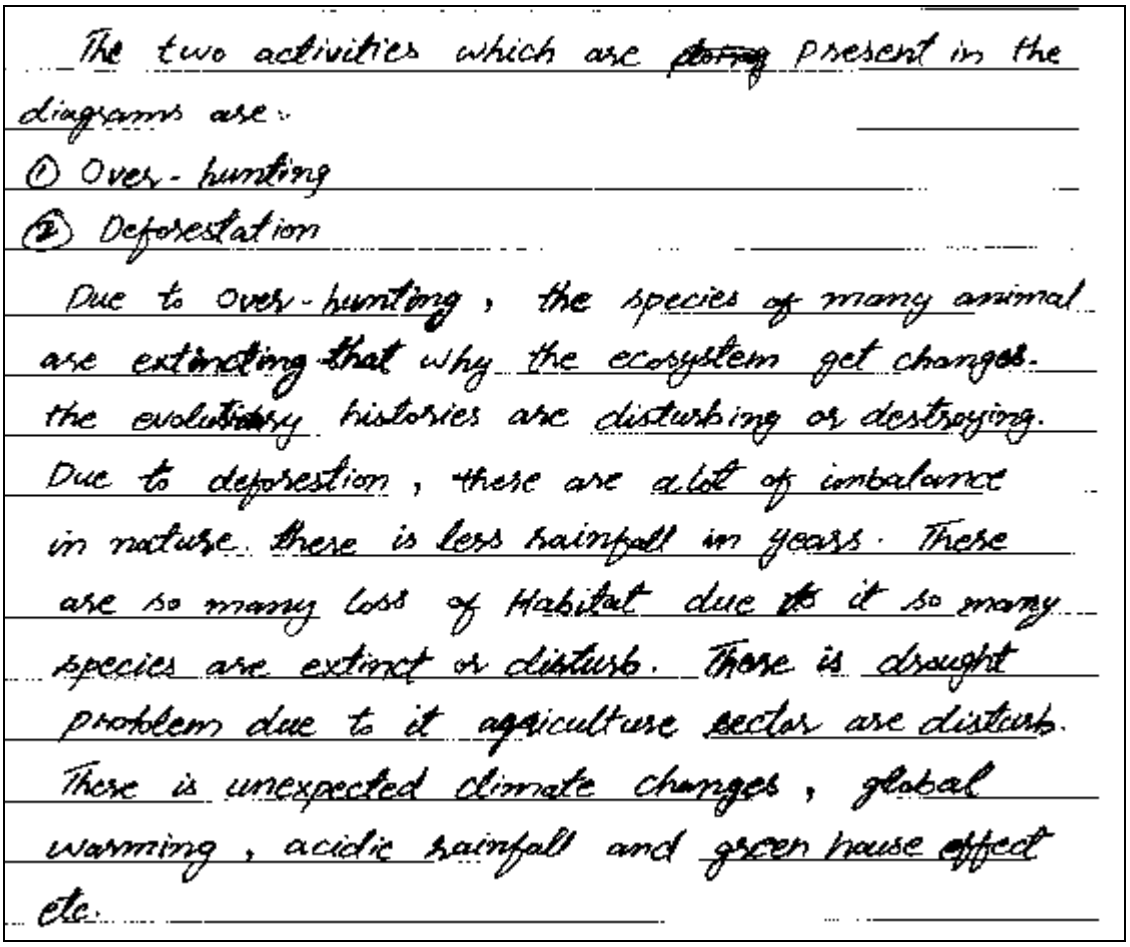
Today biodiversity is in strange danger due to many human activities. like shown in picture above that man's killing animals like deers which would be killed for his skin and for many other purposes for earning money, this is a cause of habitat destruction and dangerous for enviornment of ecosystem. By killing the animals can also make them endangered species in that region and it could be extinct And second picture is showing that people cutting the trees for there wood e.t.c to sell them and can earn money this is also a cause of habitat destruction if trees are cut down which are home for many organisms like some birds insect e.t.c and the rate of carbon dioxide will also be increase in enviornment because trees absorb CO_2 and rate of rainfall also decreases due to cutting of trees and soil arosion can start due to which flood take mud with them and river banks will be full of mud, so these activities imbalance the enviornment of nature.

Weaker responses failed to identify the activities as depicted in the given stimulus; therefore, such responses either described biodiversity or its importance, e.g. biodiversity provide medicine, furniture/ we would not fulfill our requirements without trees/ we would not get things which are essential for us/ by over fishing we can be the biggest reason for starving in further years.

Some other responses described only one part of the stimulus (overhunting or deforestation). A few responses either focused on causes or impacts. Other responses were vague, such as, overhunting causes air pollution/ gases released from weapons are harmful.

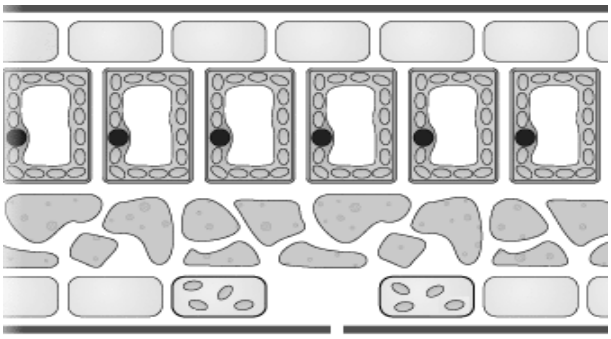
Most of the weaker responses mentioned the generalised role of biodiversity. Some other weaker responses wrote the contribution of animals and plants in ecosystem without referring to the stimulus. Candidates are advised to read the text and observe the diagrams carefully in the stimulus in order to meet the demand of the question.

Example:


The two activities which are ~~doing~~ present in the diagrams are:-
① Over-hunting
② Deforestation
Due to over-hunting, the species of many animal are extinding that why the ecosystem get changes. the evolutionary histories are disturbing or destroying. Due to deforestion, there are a lot of imbalance in nature. there is less rainfall in years. There are so many loss of Habitat due to it so many species are extinct or disturb. There is draught problem due to it agriculture sector are disturb. There is unexpected climate changes, global warming, acidic rainfall and green house effect etc.

Question 8b:

The given diagram shows the cross section of a leaf.



i. What is the function of network of veins in the leaf?

ii. Describe the structural adaptation and advantages of any THRRE features present in the cross-section of the leaf shown in the given diagram.

Better responses mentioned the function of veins as they support the leaf and transport water and carbohydrates.

Such responses highlighted those features of the leaf which are apparent in the cross sectional view of the leaf in the diagram along with their advantages.

Example:

Part b:i) Function of network of veins in the leaf is to Transport water and to translocate food - These veins are actually vascular tissue called xylem and phloem -

ii) Structural Adaptations of leaf:

Leaves are most important part of plants - These are broader which provides large surface area for the absorption of light ~~and g~~ - These (Leaf) are thin which helps in the gaseous exchange of leaf - At the top of the leaf there is a single celled layer called epidermis - This epidermis is transparent so it can absorb or capture all the light falls on it without any reflection - ~~After~~ On the epidermis ~~there are photosynthetic~~ a layer of cuticle is present which is made up of a waxy substance called cutin which prevents water loss - After epidermis, there is a layer of photosynthetic cuboidal cells called palisade mesophyll cells - These palisade cells have special organells called chloroplast which helps in the photosynthesis - These ~~After this layer~~ cells are tightly packed so can capture all the light falls on it - After this there is another layer of ~~cells~~ mesophyll cells called spongy mesophyll cells - These cells have intracellular spaces which helps for the gaseous exchange and transpiration - At the very end of leaf, another layer of epidermal cells is present which have specialized cells called guard cells which are bean shaped cells - These cells make a opening called stoma which is adapted for transpiration and gaseous exchange -

* Advantages of features present in the leaf:

i- Leaf has photosynthetic cells called mesophyll cells which helps in the formation of food by using light energy in leaf.

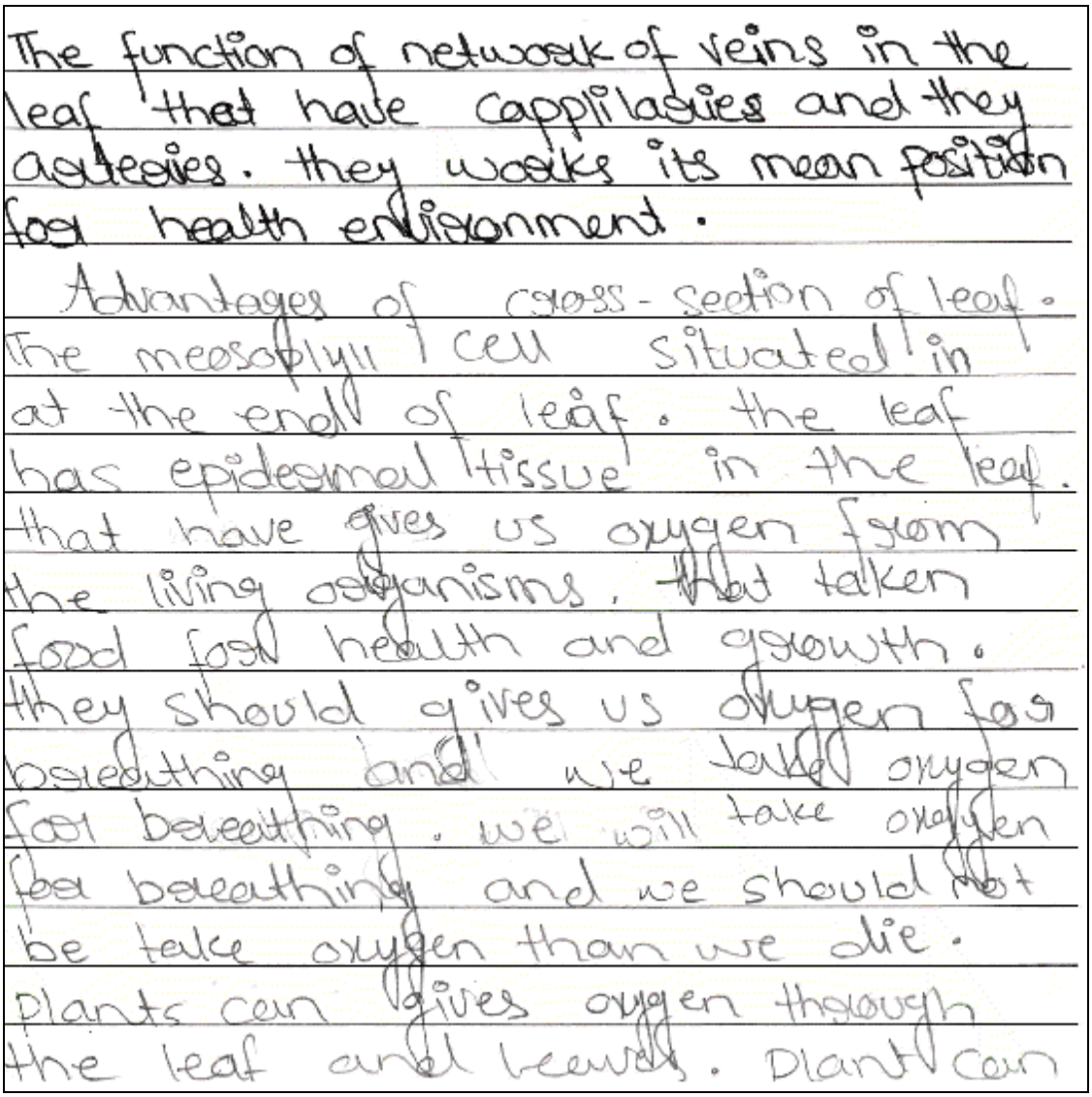
ii- In leaf there are veins called vascular tissues which helps in the tranport of water and translocation of food - iii) Leaf has specialized structures called stomata which helps in gaseous exchange and can create transpirational pull -

Weaker responses failed to extract the structural adaptations from the given diagram of the cross-section of the leaf. Such responses described the general structural features of a leaf. Moreover, these responses highlighted those features which are not visible in the stimulus such as presence of xylem and phloem for transport. This reveals the rote memorisation of candidates, hence, were not awarded marks.

Some of the responses correctly described the structural adaptations while skipped the advantages of these adaptations which again failed to fulfill the demand of the question.

A few responses gave irrelevant details on the structure, types and function of vascular bundles/ exchange of gases; therefore, they were not credited marks.

Example:


The function of network of veins in the leaf that have cappilaries and they arteries. they works its mean position for health environment.

Advantages of cross-section of leaf.
The meesophyll cell situated in at the endl of leaf. the leaf has epidermal tissue in the leaf. that have gives us oxygen from the living organisms. that taken food for health and growth. they should gives us oxygen for breathing and we take oxygen for breathing. we will take oxygen for breathing and we should not be take oxygen than we die.
Plants can gives oxygen through the leaf and leaves. Plant can

Question 9a:

i. Mention any ONE advantage and ONE disadvantage of using organic fertilisers.

ii. Explain the effects of excessive usage of inorganic fertilisers on the following:

   I. Global climate

   II. Aquatic life

Better responses mentioned the correct advantage and disadvantage of using organic fertilisers.

They explained the effects of excessive usage of inorganic fertilisers on global climate and aquatic life relating their impact to the composition of fertilisers.

Example:

Ans 9ai).

(i) Organic Fertilisers are made from natural manure. It is for the good nourishment and growth for the plants. One of its advantage is that it is natual so does not cause soil pollution or Lyeeching. But it has one disadvantage that it takes time to show effect inorganic consume less time to show effect.

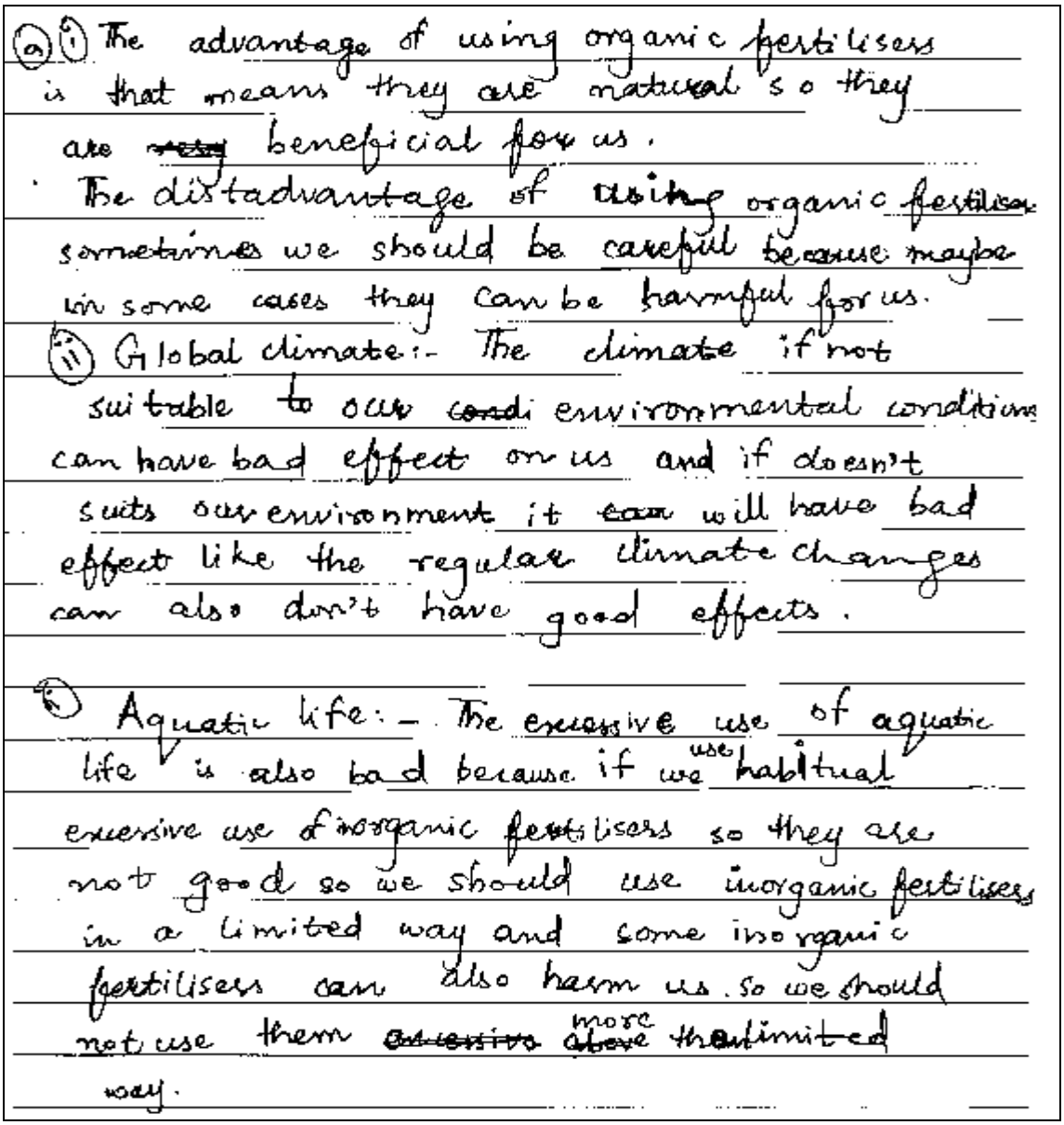
(ii) I Inorganic fertilisers are made from elements and compounds. Excessive usage of it has much effect on the Global climate. Fertilisers containing oxides of nitrogen are harmful because They rise up in the air causing ozone depletion (damage to ozone layer). They also are the cause of acid rain because they stay up in the enviro -ment and pollutes it. Excessive usage can leech the soil causing eutrophication (increase in soil nutrient holding capacity, which can damage the soil badly and the soil will not be able to grow any crop.

II It has great effect upon the aquatic life. When excessive fertilisers are used this causes fertilisers to deposit upon the soil. Heavy rainfall dissolves those fertilisers in rain water and they are carried into rivers and sea. This water contains many haimful acids, chemicals and element which are very haimful to the aquatic life. As a result loss of aquatic life occurs and many fishes die because these chemicals lower the oxygen level below in the water and kill away the plants beneath which causes imbalance in nature. Also this water is consumed by animals causes diseases in them and they eventually die. This causes aquatic life to deplet.

Weaker responses described the general properties of fertiliser such as fertilisers increase the growth of plants/ crops become good and safe to worms/ more leaves, fruits and vegetables are grown. Disadvantages were written as soil erosion occurs/ results in stunt growth of plants/ yellow colour of plants. Effect of fertilisers on global climate was also incorrect, e.g. fertilisers reduce the concentration of carbon dioxide in atmosphere/ prevent ozone layer depletion.

Weaker responses were unable to relate the effect of excessive use of fertilisers with aquatic life, hence, gave vague or incomplete description such as fertlisers are not good for aquatic life/ fertilisers used in crops are washed away due to rainfall/ plants get shortage of food.

Example:


(a) (i) The advantage of using organic fertilisers is that means they are natural so they are ~~very~~ beneficial for us.
The distadvantage of using organic fertilisers sometimes we should be careful because maybe in some cases they can be harmful for us.
(ii) Global climate:- The climate if not suitable to our ~~condi~~ environmental conditions can have bad effect on us and if doesn't suits our environment it ~~can~~ will have bad effect like the regular climate changes can also don't have good effects.

(b) Aquatic life:- The excessive use of aquatic life is also bad because if we use habitual excersive use of inorganic fertilisers so they are not good so we should use inorganic fertilisers in a limited way and some inorganic fertilisers can also harm us. So we should not use them ~~excersive~~ more than limited above way.

Question 9b:

i. Mention any TWO structural adaptations of phloem tissue for translocation.

ii. Describe the translocation of food in phloem referring to the Pressure Flow Mechanism.

Better responses clearly mentioned the structural adaptations of phloem tissue for translocation. Furthermore, some other credit worthy responses described the structural features of phloem tissue which contribute a specific function for translocation, e.g. both companion cells and sieve tube elements have plasmodesmata to allow sucrose to pass between the cells/ companion cells have lots of mitochondria for active pumping of hydrogen ions across its membrane.

In the second part, better responses accurately described each step of translocation of food with reference to Pressure Flow Mechanism.

Example:

i) phloem tissues are compound tissues found in plant. They are responsible for conduction of food and dissolved organic material from leaves to the other parts of plant body.

a) Phloem tissues are made up of sieve tube cells. These cells are elongated and have pores in their end walls from where the cytoplasm of the other cells are join and in this way they make long tubes for conduction of food and dissolved organic matter.

b) They are also composed of companion cells which have ~~thin~~ dense cytoplasm and ~~dense~~ large nucleus. Their function is that they make proteins for sieve tube cells. They lack end walls

In pressure flow Mechanism food is transported to the parts of plant from sources to sinks. Sources are the exporting and storage organs. while sink are those organs where food is stored and ~~their metabolism~~ their metabolic activities are very high. According to pressure flow Mechanism the food and organic material (sucrose) move to the sieve tubes cells through facilated diffusion or active transport from the source. As there is more solute concentration in sieve tube cells so water enters in these tubes through osmosis and the pressure at source increases. Due to the increase in pressure water and food molecules move towards sink. The food is unloaded in sink through active transport or diffusion and water leaves from sieve tubes cells. Due to exit of water there is a decreace in prescure and mass flow from the high prescure at ~~sink to~~ source to now lower pressure in sink. In this way dissolved organic material and food is transported to the parts of plant body.

Weaker responses failed to meet the demand of the question because such responses stated the structural features of phloem without relating with translocation. Some other responses stated the function of phloem/ the process of transpiration/ the process of respiration/ cohesion tension theory and the process of photosynthesis. Some other vague responses included; sink acts like a freezer for storage of food/ phloem is provided with water from xylem to lubricate food/ phloem tissue is also called pressure flow mechanism because it provides pressure to plants in upward and downward directions.

Example:

B(i)

Two Structural Adaptions Of Phloem Tissue:-

① Phloem tissue have sieves tube which is like filter paper that clean the material & minerals

② They are enlongated in size & flexible that is why they transport minerals in plant.

B(ii)

① Translocation of food in Phloem Refferring to Pressure Flow Mechanism:-

Mineral nutrients and water is transpoate to ~~all the part~~ the plant through xylem after it is absorb by root hair by soil. when nutrients are absorb then they transfer to leaf where food is produce when food is produce then it transported to all part of the plant by phloem.

② Pressure Flow Machnisms:-

pressure flow Machnisms is basically the process of transport of food by source into sink. sources are those things which are donar that they transport minerals to sink. Sinks are those which are acceptor. That they accept the nutrients form source. Source transport those minerals and nutrien which are the need of sink. This is the translocation of food in phloem refferring to:-

"Pressure Flow Mechanism"