PRINCIPAL EXAMINER'S REPORT

BOTSWANA
EXAMINATIONS
COUNCIL

BGCSE BIOLOGY

2024

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PAPER 1: MULTIPLE CHOICE

General Comments

The performance of the candidates was lower than that of the 2023 cohort in terms of the mean for the paper. There were twenty-five (25) items where at least 70% of the candidates got the item correct. There were nine (9) items where between 50% and 69% of the candidates got the item correct. There were six (6) items where less 50% of the candidates got the item correct.

Generally, Multiple-Choice items have a guessing factor that is considered to be the lowest proportion of being able to get the item correct without knowing the answer. For a Multiple-Choice item with four options, the guessing factor is 25% and any item which has the proportion of candidates who got it correct lower than the guessing factor is a cause for concern. Candidates should be encouraged to always read the question for understanding before they select an answer. Centres are encouraged to give candidates more opportunities for them to interact with application of the skills. The item reports are given as tables that include key information as indicated:

N	the number of candidates who selected each of the option
%	the percentage of candidates who selected the option
Key	the option that was taken as the answer

Comments on Individual Items

Item 1

Option	N	%	Key	Comment
A	191	0.10	C	The item was well done. Most of the candidates were able to identify the part where protein synthesis takes place in a plant cell.
B	14	0.01		
C	1656	0.87		
D	52	0.03		

Item 2

Option	N	%	Key	Comment
A	1471	0.77	A	The item was fairly done. Though most candidates were able to identify the structures that are arranged according to increasing size, 22% in the cohort went for option D.
B	13	0.01		
C	12	0.01		
D	417	0.22		

Item 3

Option	N	%	Key	Comment
A	1786	0.93	A	The item was well attempted. Majority in the cohort could choose a row in which a cell is matched with its adaptation.
B	15	0.01		
C	49	0.03		
D	63	0.03		

Item 4

Option	N	%	Key	Comment
A	942	0.49	B	The item was averagely done. Half of the candidates could not determine processes X and Y from the diagram or chart given as they went for option A showing a misconception or no clue on the terms miosis and mitosis. Centres are advised to dwell much on these two terms.
B	965	0.50		
C	3	0.00		
D	3	0.00		

Item 5

Option	N	%	Key	Comment
A	266	0.14	D	The item was averagely done as majority in the cohort showed knowledge on the role of bacteria I root nodules in nitrogen cycle.
B	351	0.18		
C	113	0.06		
D	1183	0.62		

Item 6

Option	N	%	Key	Comment
A	6	0.00	D	The item was well done as majority in the cohort showed understanding on products of photosynthesis and the vascular bundles they are transported.
B	1	0.00		
C	69	0.04		
D	1837	0.96		

Item 7

Option	N	%	Key	Comment
A	57	0.03	B	The item was poorly done as majority in the cohort could not define the term frequency.
B	768	0.40		
C	875	0.46		
D	213	0.11		

Item 8

Option	N	%	Key	Comment
A	5	0.00	C	The item was well attempted as most candidates showed knowledge on plant structures and the processes they perform.
B	25	0.01		
C	1772	0.93		
D	111	0.06		

Item 9

Option	N	%	Key	Comment
A	8	0.00	B	The item was well done as 98% of the candidates were able to deduce the reason why the mass of a potted plant changed after transpiration.
B	1846	0.96		
C	48	0.03		
D	11	0.01		

Item 10

Option	N	%	Key	Comment
A	1463	0.76	A	The item was fairly done. The candidates showed knowledge on the function of valves in the pulmonary artery.
B	126	0.07		
C	292	0.15		
D	32	0.02		

Item 11

Option	N	%	Key	Comment
A	1863	0.97	A	The item was well done as most candidates were able to identify the quality of blood (either oxygenated or deoxygenated) in the human circulatory system.
B	23	0.01		
C	10	0.01		
D	17	0.01		

Item 12

Option	N	%	Key	Comment
A	63	0.03	C	The item was poorly done. The question proved to be more demanding as the candidates could not recall the chemical formula that represent product of anaerobic respiration in muscles.
B	411	0.21		
C	750	0.39		
D	689	0.36		

Item 13

Option	N	%	Key	Comment
A	244	0.13	C	The item was fairly done. Most candidates could recall the set changes of the diaphragm and external intercostal muscle while breathing in.
B	129	0.07		
C	1260	0.66		
D	280	0.15		

Item 14

Option	N	%	Key	Comment
A	110	0.06	D	The item was fairly attempted. Most candidates were able to identify a condition caused by inhalation of carbon monoxide during pregnancy.
B	201	0.11		
C	97	0.05		
D	1505	0.79		

Item 15

Option	N	%	Key	Comment
A	85	0.04	B	The item was well attempted as most of the candidates could identify a graph that represent the oxygen concentration in the pond after large deposit of sewage in the pond.
B	1581	0.83		
C	34	0.02		
D	213	0.11		

Item 16

Option	N	%	Key	Comment
A	31	0.02	C	The item was well done as most of the candidates showed knowledge on the structure of a flower that produces haploid cells with half the number of chromosomes.
B	211	0.11		
C	1637	0.86		
D	34	0.02		

Item 17

Option	N	%	Key	Comment
A	154	0.08	D	The item was poorly done. Though the question is of lower cognitive demand, the cohort could not recall a feature of wind pollinated flowers.
B	456	0.24		
C	618	0.32		
D	685	0.36		

Item 18

Option	N	%	Key	Comment
A	114	0.06	D	The item was fairly done. Majority of the candidates were able to recall the name of the shared structure by fraternal twins.
B	313	0.16		
C	56	0.03		
D	1430	0.75		

Item 19

Option	N	%	Key	Comment
A	85	0.04	C	The item was fairly attempted. Majority in the cohort were able to determine the days in which conception is most likely to take place for a regular 28-days menstrual cycle.
B	135	0.07		
C	1369	0.72		
D	324	0.17		

Item 20

Option	N	%	Key	Comment
A	74	0.04	B	The item was well done. Majority in the cohort could determine a set of environmental conditions which will lead to increased transport of magnesium ions from roots to the leaves of a plant.
B	1655	0.87		
C	145	0.08		
D	39	0.02		

Item 21

Option	N	%	Key	Comment
A	40	0.02	D	The item was well attempted. Majority of the candidates could determine the substances that are likely to move in the directions shown by the two arrows in a nephron diagram.
B	270	0.14		
C	44	0.02		
D	1559	0.81		

Item 22

Option	N	%	Key	Comment
A	1831	0.96	A	The item was well done. Most of the candidates managed to recall the parts from the diagram which make up the central nervous system.
B	64	0.03		
C	7	0.00		
D	11	0.01		

Item 23

Option	N	%	Key	Comment
A	247	0.13	D	The item was fairly done. Most of the candidates managed to identify the part of the human eye that contains the sensory neurones.
B	1490	0.78		
C	15	0.01		
D	161	0.08		

Item 24

Option	N	%	Key	Comment
A	827	0.43	D	The item was poorly done. The candidates had no clue on the colour changes of the presence of amylase and lipase using the biuret solution as they went for option A as compared to the correct answer.
B	244	0.13		
C	180	0.09		
D	662	0.35		

Item 25

Option	N	%	Key	Comment
A	77	0.04	B	The item was fairly done as 75% of the candidates were able to deduce a gland that acts as both an endocrine and exocrine in the human body.
B	1444	0.75		
C	234	0.12		
D	158	0.08		

Item 26

Option	N	%	Key	Comment
A	8	0.00	C	The item was well attempted as almost all the candidates were able to put in order the events that occurs in the human body after consuming a carbohydrates rich meal.
B	9	0.00		
C	1875	0.98		
D	21	0.01		

Item 27

Option	N	%	Key	Comment
A	58	0.03	C	The item was averagely though many candidates could not identify the parts that respond to light in a seedling.
B	1033	0.54		
C	788	0.41		
D	34	0.02		

Item 28

Option	N	%	Key	Comment
A	41	0.02	D	The item was fairly done as majority of the candidates proved to have an understanding on the bones of a human forelimb as they were able to identify the ulna and radius.
B	659	0.34		
C	54	0.03		
D	1159	0.61		

Item 29

Option	N	%	Key	Comment
A	1784	0.93	A	The item was well done. Majority of the candidates could identify a row that describes the function of a structure found in an organism.
B	31	0.02		
C	65	0.03		
D	33	0.02		

Item 30

Option	N	%	Key	Comment
A	32	0.02	D	The item was well done as majority of the candidates could identify the arrow that represents photosynthesis in the carbon cycle diagram given.
B	6	0.00		
C	5	0.00		
D	1870	0.98		

Item 31

Option	N	%	Key	Comment
A	568	0.30	B	The item was averagely attempted as half of the cohort managed to deduce the correct conversion of nitrous compounds in the nitrogen cycle.
B	966	0.50		
C	90	0.05		
D	289	0.15		

Item 32

Option	N	%	Key	Comment
A	1278	0.67	A	The item was fairly attempted as the majority of the candidates were able to determine the number of organisms that at tertiary consumers from the food web given.
B	73	0.04		
C	261	0.14		
D	301	0.16		

Item 33

Option	N	%	Key	Comment
A	151	0.08	C	The item was fairly attempted as most of the candidates managed to identify a stage of cell division that does cross over.
B	349	0.18		
C	1113	0.58		
D	300	0.16		

Item 34

Option	N	%	Key	Comment
A	19	0.01	D	The item was well attempted. Majority of the candidates were able to determine a blood group of the child (from blood group AB for both parents) that suggests that the partner may not be the biological father of the child.
B	32	0.02		
C	22	0.01		
D	1840	0.96		

Item 35

Option	N	%	Key	Comment
A	291	0.15	D	The item was fairly done as most candidates were able to match a single cell protein with the organism used in its production.
B	1154	0.60		
C	101	0.05		
D	367	0.19		

Item 36

Option	N	%	Key	Comment
A	1136	0.59	A	The item was fairly done. Though the question was a recall question, quite a number in the cohort could not recall what the back cross is used for.
B	532	0.28		
C	114	0.06		
D	131	0.07		

Item 37

Option	N	%	Key	Comment
A	39	0.02	B	The item was averagely answered. About half in the cohort could not identify a structure used to receive the human insulin gene during genetic engineering. Option D received more choices from the cohort among the distractors.
B	1012	0.53		
C	70	0.04		
D	791	0.41		

Item 38

Option	N	%	Key	Comment
A	203	0.11	C	The item was well attempted as majority of the candidates managed to identify the part in the male reproductive system that produces seminal fluid.
B	13	0.01		
C	1693	0.89		
D	2	0.00		

Item 39

Option	N	%	Key	Comment
A	176	0.09	D	The item was well done. Majority in the cohort were able to interpret the graph by identifying the process which is associated with the change in the human body temperature between period **V** and **W** on the graph.
B	1576	0.83		
C	91	0.05		
D	66	0.03		

Item 40

Option	N	%	Key	Comment
A	74	0.04	D	The item was well done. Most of the candidates were able to identify the part of the brain associated with the delay of ovulation.
B	114	0.06		
C	171	0.09		
D	1533	0.81		

PAPER 3: WRITTEN PAPER

General Comments

The overall performance of candidates in this examination revealed varying levels of understanding across different biological concepts and skills. The performance remained consistent with previous years. Several patterns emerged from the candidates' responses:

Conceptual Understanding: Candidates demonstrated good comprehension of basic biological structures and processes, particularly in areas such as pollination stages and blood grouping identification. However, significant gaps were evident in understanding more complex concepts such as protein function, energy flow in ecosystems, and chromosomal mutations.

Scientific Communication: Many candidates showed proficiency in describing straightforward biological processes and structures using appropriate biological terms. There was a notable weakness in providing detailed explanations and justifications for biological phenomena, particularly evident in questions requiring cause-and-effect relationships.

Practical and Technical Skills: Candidates displayed good technical abilities in constructing biological diagrams, as demonstrated by their drawing of pyramid of numbers representation. Observational skills were generally strong, as shown in structural comparison questions.

Application of Knowledge: While recall of basic facts was good, candidates often struggled to apply their knowledge to new contexts or scenarios. Questions requiring integration of multiple concepts (such as those involving protein digestion and hormone function) proved challenging for many candidates.

Key Areas for Improvement: A significant challenge identified was the precise use of biological terminology. For example, some candidates described respiration as "energy production" rather than the more accurate "energy release." Such imprecise use of terminology resulted in loss of marks and indicates a need for greater attention to scientific accuracy in responses.

Presentation Quality: In terms of presentation, candidates maintained a standard of neatness and organisation consistent with that observed in prior years. This aspect reflects positively on majority of the cohort for this year.

Comments on Individual Items

1 **(a)** Candidates successfully identified structures R and S, with many candidates correctly naming both structures. Common errors included confusing structure S with similar cellular components, which resulted in loss of marks.

(b) The relationship between structure T and energy release was well understood, with candidates typically scoring 2 out of 3 marks. To achieve full marks, responses needed to specifically link released energy to protein synthesis. A common oversight was failing to mention the role of ribosomes in this process.

(c) In completing the comparison table, candidates demonstrated good observational skills. The most successful responses included specific structural differences such as the presence/absence of chloroplasts, presence/absence of finger-like projection and variations in the number of mitochondria. Weaker responses often omitted quantitative differences.

(d) This part question was poorly answered by many candidates who restricted themselves to explaining the effect of temperature instead of explaining the effect of light intensity. These candidates did not attain the full marks.

2 **(a)** Most of the candidates did well on this part question by correctly naming blood groups A and AB as incompatible blood groups that should be avoided. Common errors included either listing only one blood group or including blood group O incorrectly.

(b) This part of the question required candidates to articulate the reasons for avoiding certain blood groups during transfusions for recipients with blood group B. Unfortunately, many candidates demonstrated a lack of understanding in this area, often conflating the functions of antigens and antibodies. A common misconception was the assertion that agglutination results from a reaction between the donor's antibodies and the recipient's antigens. Additionally, several candidates inaccurately described blood agglutination as equivalent to blood clotting. Such misunderstandings, which highlight the necessity for a clearer comprehension of immunological principles related to blood transfusions, resulted in loss of marks. The marking scheme awarded: 1 mark for correctly identifying the presence of anti-A antibodies, 1 mark for explaining the interaction with A antigens and 1 mark for describing the agglutination process.

3 **(a)** A significant number of candidates struggled with this part of the question, which required a clear definition of Biotechnology as outlined in the syllabus. The primary issue noted was the failure to provide an accurate and comprehensive definition. This oversight resulted in a loss of 2 marks for most candidates. Only a few candidates managed to score 1 mark, indicating that while some attempted to address the question, their responses lacked clarity or completeness.

(b) **(i)** Most of the candidates answered this part of the question well, correctly naming the organism used in biotechnology for insulin production.

(ii) Most of the candidates performed well on this part of the question, correctly explaining that the organism releases energy from glucose through respiration, and that this energy is used to synthesise insulin.

(c) **(i)** Most of the candidates struggled with this part of the question. It revealed gaps in understanding protein digestion and insulin function. The marking scheme required: recognition that insulin is a protein and understanding protein digestion in the alimentary canal and the connection to blood glucose regulation. Common errors included: confusion between insulin production and action, incomplete explanation of the digestive process, failure to link to liver glycogen conversion.

(ii) This part of the question saw most of the candidates performing well, accurately identifying the best method for administering insulin.

4 **(a)** Most of the candidates did not answer this part of the question well. A complete response required: identification of the sun as the primary energy source, recognition that energy flow is unidirectional and explanation of energy loss to space/atmosphere.

(b) The construction of the pyramid of numbers showed good technical skill, with many of candidates achieving full marks. Successful responses included: proper labelling of trophic levels, correct orientation of the pyramid and accurate proportional representation of organisms.

(c) Most of the candidates struggled with this part of the question and were unable to explain why the highest concentration of the chemical was found in hornbill birds. Common errors included: confusion between bioaccumulation and biomagnification and lack of specific reference to the hornbill's position in the food chain. Full marks required: understanding of non-biodegradable nature of the chemical as well as explanation of bioaccumulation or concentration increase through food chain.

5 **(a)** This part question was well answered by most of the candidates; they were able to identify process X correctly as pollination.

(b) **(i)** This part of the question was poorly answered by most of the candidates, with very few achieving the mark. Common incorrect responses included: wind pollination, animal pollination (without specific reference to insects) and self-pollination.

(ii) Most of the candidates performed poorly on this part of the question as well, as they could not explain how the flower in Fig. 5.1 is adapted for pollination by insects. Instead of discussing the visible features of the flower that facilitate insect pollination, candidates referred to characteristics that were not depicted in the diagram.

(c) This part of the question was well answered by many candidates, who effectively described the events that occur after pollination leading to the formation of the zygote. The candidates performed particularly well achieving at least 3 out of 4 marks. This thorough understanding of the concepts by candidates is commendable. The marking scheme awarded marks for: pollen grain absorption of stigmatic fluid (1 mark), pollen tube formation and growth down style (1 mark), entry of pollen tube into ovule (1 mark), through micropyle (1 mark), and fusion of male and female gamete nuclei (1 mark).

6 **(a)** **(i)** This part of the question was well answered by most candidates, in particular, almost all candidates were able to correctly describe the harmful effects of deforestation shown in town P, with many achieving at least 4 out of 6 marks. Common errors included: listing effects without explanation and insufficient detail in cause-and-effect relationships.

(ii) This part of the question was well answered by many candidates, who successfully described the harmful effects of river water pollution in town Q. Those who scored high marks referenced several important consequences of water pollution caused by waste-water, including the increased risk of waterborne diseases, health issues resulting from chemical exposure, and the death of plants due to chemical toxicity. They also discussed eutrophication, algal bloom, the decomposition of organic matter, higher biochemical oxygen demand (BOD), oxygen

depletion, the death of aquatic animals, loss of biodiversity and ecological imbalance. Credit was awarded to candidates for these detailed responses which reflect a strong understanding of the harmful impacts of water pollution.

(b) This part of the question was well answered by many candidates who achieved full marks by demonstrating understanding of mitigation strategies for deforestation. Common oversights included: vague suggestions without specific implementation details and focus on single-approach solutions.

7 **(a)** **(i)** This part of the question was well answered by many candidates, who correctly identified the sex of the individual in Fig. 7.1.

(ii) In contrast to their response to (a)(i) many candidates struggled with this part of the question, as they did not adequately justify their answer for question 7 (a)(i), which was required. This revealed significant gaps in understanding with only a few candidates achieving full marks. To answer (i) and (ii) the marking scheme required: identification of (X and) Y chromosome (pair) and correct linking of chromosome combination to sex.

(b) This part of the question was also poorly done by most of the candidates, who could not describe the type of mutation shown in Fig. 7.1. However, a few candidates earned some marks by accurately describing the condition as Down Syndrome, referring to it as trisomy 21 and noting the presence of an extra chromosome in pair number 21 and that it is caused by nondisjunction / chromosome mutation. Notable weaknesses included: confusion between different types of mutations and inability to interpret karyotype information.

(c) This part of the question was well answered by many candidates, who adequately distinguished between continuous variation and discontinuous variation. Understanding of variation types showed good comprehension, with most of the candidates achieving at least 3 out of 4 marks. Successful responses included: three correct differences between continuous and discontinuous variation drawn from their definitions and one example of each.

(d) This part of the question was poorly answered, revealing significant conceptual gaps, with only a few candidates achieving full marks. Most of them did not effectively apply their understanding of natural selection in their responses. The marking scheme required: reference to genetic variation or new traits, arising from mutation/reproduction, reference to environmental pressure/competition, differential survival/reproductive success, inheritance of beneficial traits, long-term population changes. Common misconceptions included: confusion between natural selection and artificial selection and failure to link variation to survival advantage.

PAPER 4: PRACTICAL TEST

General Comments

Generally, candidates performed fairly well on the paper. There was a noticeable improvement on the presentation of biological drawings. Also, a noticeable improvement on calculation as well as correct expression of magnification was noted across all Centres. There was a significant improvement on drawing of bar chart by most candidates with correct labelling of axis. Most candidates have shown an improvement on following instructions and conducting experiments. However, some candidates had challenges with producing a correct and consistent scale for the graphs especially the scale for the pH variable. In addition, lack of neatness of drawings is still a concern that was picked across all Centres.

Comments on Individual Items

1 (a) (i) This part question was well-done. Most of the candidates were able to record their observations correctly.

(ii) This question was poorly answered by most of the candidates they failed to explain that the lowest purple pigment was because of less kinetic energy of the coloured pigments and that beetroot membranes were less permeable

(iii) This part question was fairly done by most of the candidates; they were able to state conditions such as number of beetroots and same size of beetroot cylinders. However, some candidates were not expressing “pH” using the correct notation. Centres are advised to emphasise on correct expression of “pH”.

(iv) This part question was well done by most candidates by suggesting that repeating the investigation and drawing averages can help improve the reliability of the results.

(b) This part question was fairly done by most of the candidates. Majority of candidates were able to make reference to concentration gradient and also stated that movement of the water molecules would be through “osmosis”. However, candidates lost marks by stating that the beetroot becomes turgid instead of referring to the cells inside the beetroot as expected.

This part question was also poorly done. Most of the candidates were not able to explain why the length of the potato cylinders remained constant between 15 and 25 minutes. The expected response was that “the potato cells were fully turgid, hence no net movement of water molecules”

(c) (i) This question was well done. Most candidates “labelled the axis correctly, provided a consistent scale and draw bars to required heights and spacing.

(ii) This question was poorly. The most common responses were: **“**pH7 and pH9”. This may signify that candidates were not able to realise that at higher pH the membranes would be damaged leading to greater % absorbance of pigments. The item required candidates to identify the suitable pH for the beetroot membranes and explain their choices.

2 (a) Generally most of the candidates did well on presenting a large drawing of the expected specimen to the required size. Also, it was observed that most of the candidates were able to label their drawings as required by the question. However, cleanliness of drawings and labelling of drawings

still remains a concern which should be addressed by all Centres. Some candidates lost marks due to presenting unlabelled work though this part question clearly demanded so.

(b) **(i)** This question was done well by most candidates. Only a few candidates were unable to show where measurement was taken, and this attracted a penalty for failure to follow instructions. Centres are advised to emphasise on training candidates to measure the dimension required by the question and also indicate where the measurement was obtained. In addition, candidates require more training on expressing the numerical values to the correct units.

(ii) Calculation of magnification was done satisfactorily. Most of the candidates expressed Magnification was expressed to **one** (1) decimal place by most candidates as expected.

(c) Most of the candidates did well on this question as they were able to come up with observable similarities and differences between specimens **Q** and **R.**

(d) **(i)** Most of the candidates performed satisfactorily in this question. This part question required candidates to record observations and conclusions to a starch test conducted on specimen P.

(ii) This part question was fairly done by most of the candidates. Only a few candidates failed to state that “starch was not digested”. Candidates who stated that “enzymes were denatured due to high temperature” used missed the mark. It was expected that candidates state that the “temperature was higher than optimum”.

PAPER 5: ALTERNATIVE TO PRACTICAL TEST

General Comments

Generally, candidates did not perform satisfactory on this component. For instance, although the general presentation of the biological drawings has improved, candidates still had challenges of drawing clean diagrams. In addition, most of the candidates did not attempt question 3 and this led to loss of marks.

Comments on Individual Items

1 (a) (i) This question was poorly answered by most of the candidates; they failed to explain that the lowest purple pigment was because of less kinetic energy of the coloured pigments and that beetroot membranes were less permeable.

(ii) This part question was fairly done by most of the candidates; they were able to state conditions such as number of beetroots and same size of beetroot cylinders. However, some candidates by not expressing “pH” using the correct notation. Centres are advised to emphasise on correct expression of “pH”.

(iii) This part question was well done by most of the candidates, by suggesting that **repeating the investigation** and **calculating averages** can help improve the reliability of the results.

(b) This part question was fairly done by most candidates. A majority of the candidates were able to make reference to concentration gradient and also stated that movement of the water molecules would be through “osmosis”. However, candidates lost marks by stating that the beetroot becomes turgid instead of referring to the cells inside the beetroot as expected.

(c) This question was well done. Most of the candidates “labelled the axis correctly, provided a consistent scale and draw bars to required heights and spacing.

2 (a) This part question was generally well done by most of the candidates, that is, candidates were able to make a large drawing with the necessary details. However, most of the candidates were not able to present **clean** and **labelled** drawings.

(b) (i) Most of the candidates showed correct skills on measuring and recording the measurements as expected. There were some minor errors encountered on this part question, such as failure to indicate where the measurement was taken and failure to express the numerical values to the correct unit of measurement.

(ii) An improvement on calculation and expression of magnification was observed on this part question. Centres are advised to emphasise on correct expression of magnification where a value expressed to a maximum of **one** decimal place should be preceded by “X” a multiplication sign.

(c) Most of the candidates did well on this part question as they were able to come up with observable similarities and differences between Fig. 2.1(a) and Fig. 2.1(b). Also, there was a noticeable improvement on writing responses on designated spaces.

(d) **(i)** Most of the candidates performed satisfactorily on this question. This part question required candidates to record their observations and conclusions on Table 2.1 which had some other portions already filled.

(ii) This part question was fairly done by most of the candidates. Only a few candidates failed to state that “starch was not digested”. Candidates who stated that “enzymes were denatured due to high temperature” used were penalised. It was expected that candidates state that the “temperature was higher than optimum”.

3 The part question was not performed satisfactorily by a majority of candidates. Most candidates could not provide a workable set up for the investigation; some did not state the control set up and how the treatment was varied on the experimental set up. Also, most candidates did not state the variables or conditions which needed to be kept constant, e.g. same type / variety / number of seedlings used. Most candidates lost marks because they were unable to show how the unidirectional light would be provided. Most candidates were also unable to suggest expected results on the experiments described.