آغا خان یونیورسٹی ایگزامینیشن بورڈ

AGA KHAN UNIVERSITY EXAMINATION BOARD

Notes from E-Marking Centre on SSC-II Biology Annual Examinations 2024

Introduction

This document has been produced for the teachers and candidates of Secondary School Certificate (SSC) Part II Biology. It contains comments on candidates' responses to the 2024 SSC-II 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 that 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 SLOs 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

Most candidates demonstrated strong responses, particularly in their understanding of the endocrine function of the pancreas. They also excelled in explaining the process of vegetative propagation in onions and ginger. However, to ensure a more robust understanding, teachers should emphasise the following areas and provide candidates with additional practice:

- Differentiating cytokinesis in animal and plant cells.
- Interpreting diagrams or X-ray images to identify skeletal diseases.
- Understanding how genetic variations and hereditary traits drive evolution through natural selection.
- Relating ecological interactions to population growth in a given area.

Note: Candidates' responses shown in this report have not been corrected for grammar, spelling, format, or information.

DETAILED COMMENTS

Constructed Response Questions (CRQs)

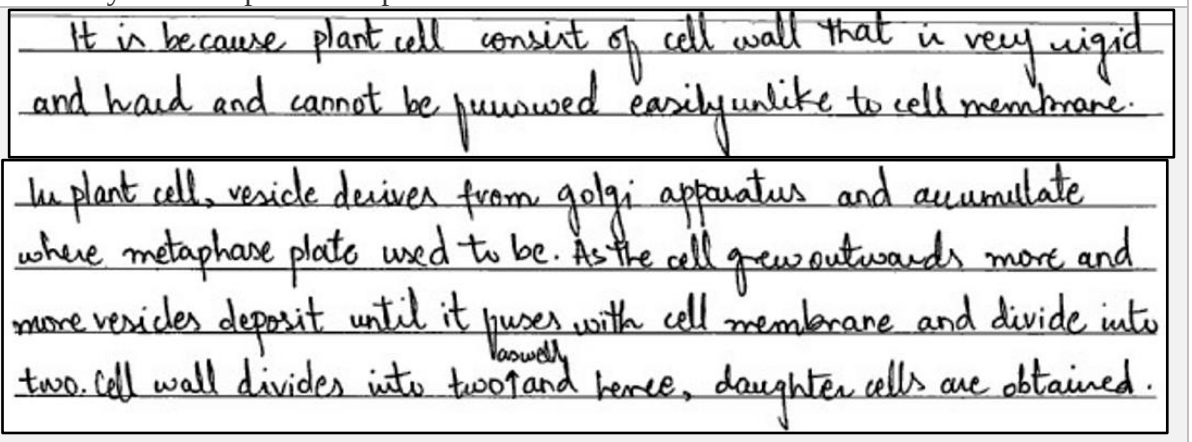
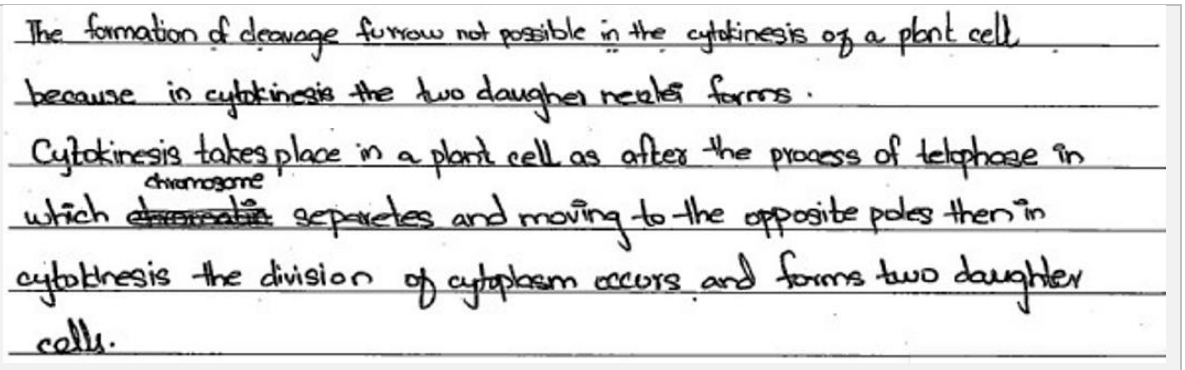
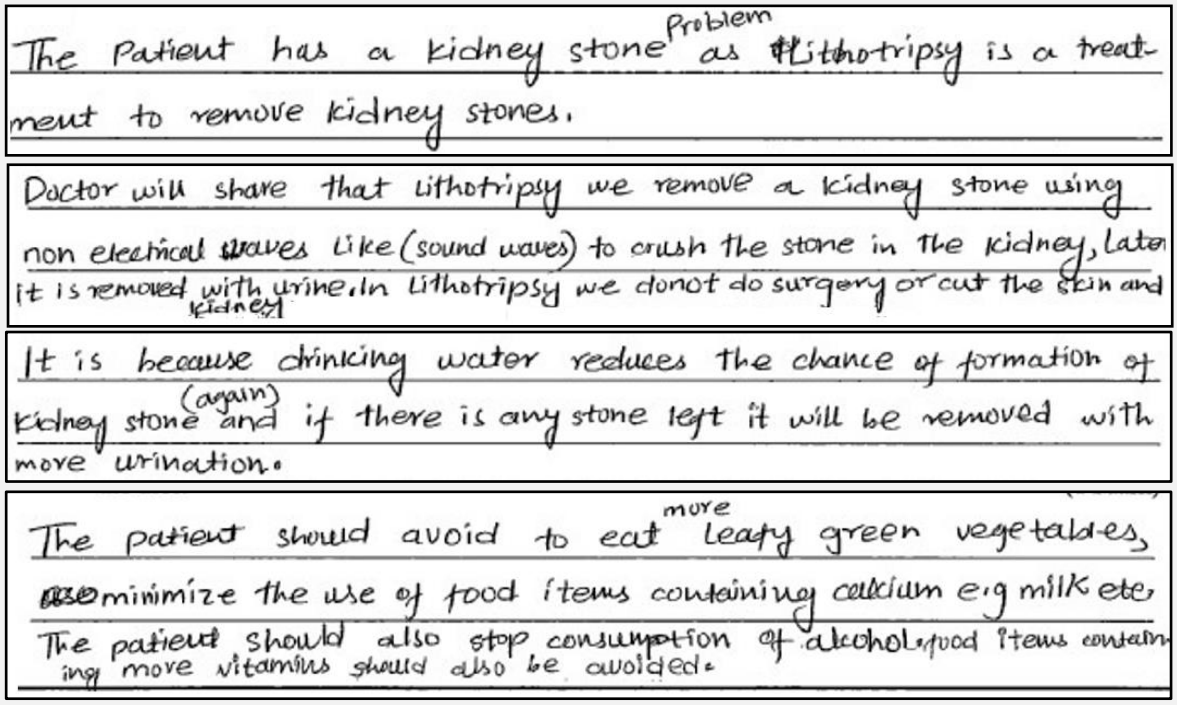
Question No. 1	
Question Text	a. Why is the formation of cleavage furrow not possible in the cytokinesis of a plant cell? b. Describe how cytokinesis takes place in a plant cell.
SLO No.	10.2.5
SLO Text	Describe physical division of cytoplasm during cytokinesis in animal and plant cells.
Max Marks	3
Cognitive Level	U*
Checking Hints	a. 1 mark for the reason b. 1 mark for describing about the cell plate/ phragmoplast 1 mark for describing about the fusion of cell plate with membrane/ formation of cell wall
Overall Performance	Overall, candidates' performance on this question was average. While the key concepts were addressed, the explanations lacked some clarity and detail, indicating a partial understanding of plant cell cytokinesis.
Description of Better Responses	*Better responses* clearly explained that a cleavage furrow cannot form in plant cell cytokinesis due to the rigid cell wall. They detailed the cell plate formation process, highlighting the Golgi apparatus's role in producing vesicles that transport cell wall materials to the cell plate's site. They described the vesicle fusion at the cell's centre, initiating the cell plate formation, and noted the involvement of the phragmoplast. Additionally, they explained how the cell plate matures and expands outward until it merges with the existing cell walls. These responses demonstrated a comprehensive understanding of the cytokinesis process in plant cells.
Image of Better Response	
Description of Weaker Responses	*Weaker responses* incorrectly mentioned the formation of a metaphase plate instead of a cell plate and confused this with cleavage furrow formation. They also included irrelevant stages of mitosis. These responses failed to distinguish between the structural mechanisms unique to plant and animal cell cytokinesis. There was a lack of clarity regarding the Golgi apparatus's role and the process of vesicle fusion. Additionally, the involvement of the phragmoplast and the maturation of the cell plate until it merges with existing cell walls were inadequately addressed. A stronger focus on these key concepts is necessary for a comprehensive understanding of plant cell cytokinesis.

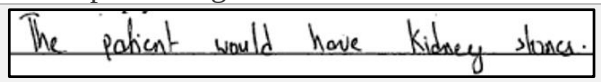
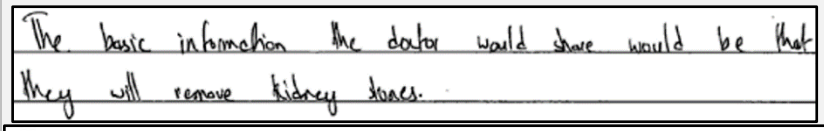
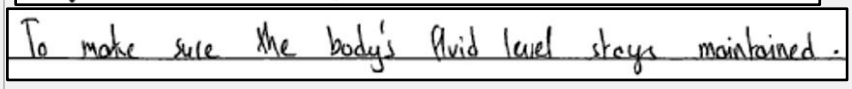
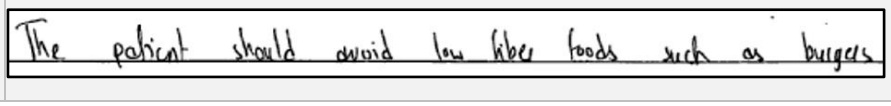
Image of Weaker Response	 The formation of cleavage furrow not possible in the cytokinesis of a plant cell because in cytokinesis the two daughter nuclei forms. Cytokinesis takes place in a plant cell as after the process of telophase in which ~~chromosome~~ chromosome separates and moving to the opposite poles then in cytokinesis the division of cytoplasm occurs and forms two daughter cells.

Suggestions for improvement (Highlight all that apply)

Maximising SLO Achievement	**Preferred Pedagogy** Used for this SLO**	**Assessment Strategies**
• Identify the expectation of command words (use Command Word Guide) • Ensure the content is taught at the relevant cognitive level • Identify necessary content required (skills + concepts) • Review past paper questions on the concept • Utilise the resource guide for additional materials	• Story Board • Cause and Effect • Fish and Bone • Concept Mapping • Audio Visual Resources • Think, Pair and Share • Knowledge Platform videos • Questioning Technique (Socratic approach) • Practical Demonstration ** For description of each Pedagogy, refer to Annexure A	• Past paper questions • Discussion on E-Marking Notes • AKU-EB Digital Learning Solution powered by Knowledge Platform https://akueb.knowledgeplatform.com/login
Any Additional Suggestion: Teachers should regularly assess candidates' understanding through quizzes and provide constructive feedback. Highlight areas of strength and provide solutions for areas needing improvement.		

*K = Knowledge U = Understanding A = Application and other higher-order cognitive skills

Question No. 2	
Question Text	A doctor recommends lithotripsy to a patient. Before the procedure, the doctor explains the essentials of treatment to the patient. a. Identify the patient's medical condition for which the doctor would have recommended lithotripsy. b. What basic information would doctor share with the patient regarding the procedure of lithotripsy? c. Why is the patient recommended to drink plenty of water after lithotripsy? d. To prevent the given condition in future, which food items the patient should avoid in the diet?
SLO No.	11.5.3
SLO Text	Differentiate between lithotripsy and surgery as the methods to remove kidney stones.
Max Marks	4
Cognitive Level	U
Checking Hints	a. 1 mark for the correct identification b. 1 mark for the correct recommendation c. 1 mark for the correct reason d. 1 mark for naming the correct food item
Overall Performance	Overall, the performance of candidates in this question was good. Many demonstrated a solid understanding of kidney stones and the lithotripsy procedure. However, there is room for improvement in ensuring all responses address the key points with clarity and accuracy.
Description of Better Responses	*Better responses* accurately identified the patient's medical condition as 'kidney stones.' They provided a precise description of the lithotripsy procedure, including the use of non-invasive shock waves to fragment the stones. Additionally, these responses correctly explained the importance of drinking ample water after lithotripsy to facilitate the removal of stone particles through urine. Furthermore, they demonstrated a clear understanding of dietary recommendations by specifying the food items such as spinach, tomatoes, and green leafy vegetables that should be avoided to prevent future stone formation.
Images of Better Responses	 The Patient has a kidney stone (Problem) as Lithotripsy is a treatment to remove kidney stones. Doctor will share that Lithotripsy we remove a kidney stone using non electrical waves like (sound waves) to crush the stone in the kidney, later it is removed with urine. (kidney) In Lithotripsy we donot do surgery or cut the skin and It is because drinking water reduces the chance of formation of kidney stone (again) and if there is any stone left it will be removed with more urination. The patient should avoid to eat (more) leafy green vegetables, minimize the use of food items containing calcium e.g milk etc. The patient should also stop consumption of alcohol. food items containing more vitamins should also be avoided.

Description of Weaker Responses	*Weaker responses* failed to correctly identify the patient's medical condition as 'kidney stones.' They provided vague descriptions of the lithotripsy procedure, often incorrectly mentioning the use of ultraviolet or X-rays to break the stones. Additionally, these responses incorrectly stated that drinking plenty of water after lithotripsy was merely to ensure hydration. Furthermore, for dietary recommendations, they inaccurately mentioned nutrients such as fiber, vitamin C and vitamin D, instead of specifying the food items to avoid preventing future stone formation.
Images of Weaker Responses	   

Suggestions for improvement (Highlight all that apply)

Maximising SLO Achievement	Preferred Pedagogy Used for this SLO	Assessment Strategies
• Identify the expectation of command words (use Command Word Guide) • Ensure the content is taught at the relevant cognitive level • Identify necessary content required (skills + concepts) • Review past paper questions on the concept • Utilise the resource guide for additional materials	• Story Board • Cause and Effect • Fish and Bone • Concept Mapping • Audio Visual Resources • Think, Pair and Share • Knowledge Platform videos • Questioning Technique (Socratic approach) • Practical Demonstration	• Past paper questions • Discussion on E-Marking Notes • AKU-EB Digital Learning Solution powered by Knowledge Platform https://akueb.knowledgeplatform.com/login

Any Additional Suggestion: Teachers may use real-life examples and case studies to illustrate how medical conditions are diagnosed and treated. This can make the learning experience more relatable and memorable for students.

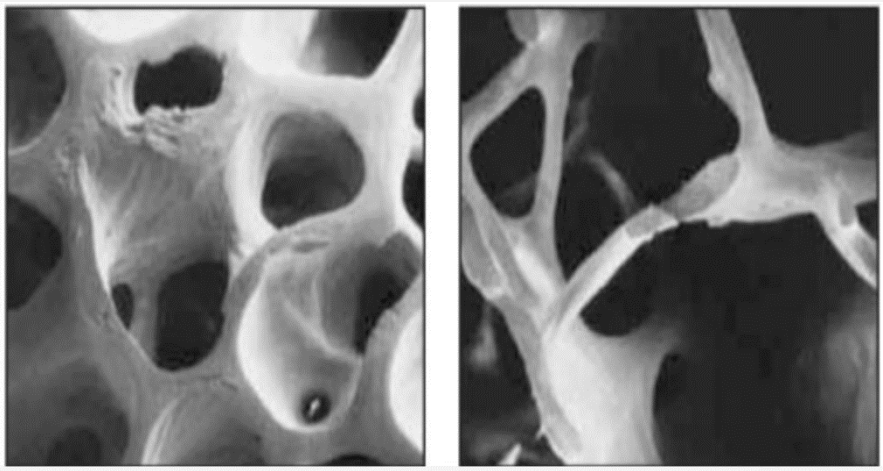
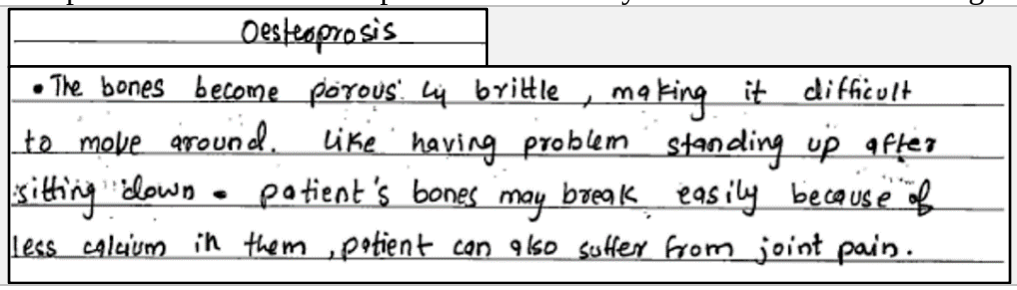
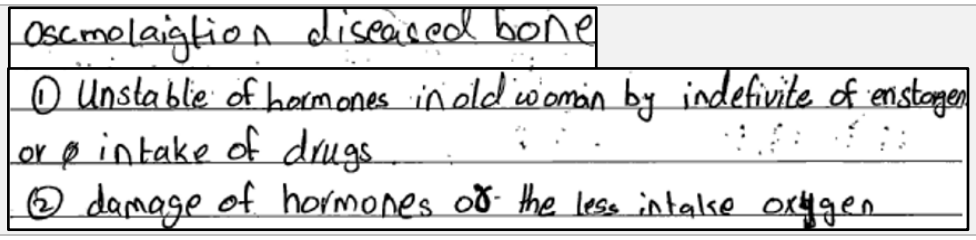
Question No. 3	
Question Text	Consider the given scanning electron micrographs of a bone tissue.  Normal Bone Diseased Bone a. Identify the condition of the diseased bone. b. Write any TWO symptoms in a patient suffering from the disease identified in part a.
SLO No.	13.4.1
SLO Text	Compare the causes and symptoms of osteoporosis and osteoarthritis.
Max Marks	3
Cognitive Level	U
Checking Hints	a. 1 mark for the correct identification b. 1 mark for writing each symptom (any 2 required)
Overall Performance	Overall, candidates' responses were average, with some correctly identifying the disease but providing inaccurate or incomplete symptoms. More detailed understanding and accuracy are needed for improvement.
Description of Better Responses	*Better responses* demonstrated a strong understanding of bone-related diseases. They correctly identified the condition as osteoporosis by observing the appearance of bone as less dense and more porous in the diagram, showcasing a good grasp of bone health issues. Additionally, they accurately listed two symptoms associated with osteoporosis, such as a humped back and severe pain, reflecting an understanding of the disease's impact on patients. The response effectively linked symptoms to the condition, showing a clear comprehension of how osteoporosis affects daily life and overall well-being.
Image of Better Response	 Oesteoprosis • The bones become porous & brittle, making it difficult to move around. like having problem standing up after sitting down • patient's bones may break easily because of less calcium in them, patient can also suffer from joint pain.
Description of Weaker Responses	*Weaker responses* showed some misunderstandings about bone-related diseases. They incorrectly identified the condition, potentially confusing osteoporosis with other bone diseases such as osteomalacia and arthritis. The listed symptoms were either vague or inaccurate; for instance, they mentioned symptoms not typically associated with osteoporosis or missed common ones like loss of height. The responses suggest a need for a clearer understanding of how to identify and describe bone-related conditions and their symptoms.

Image of Weaker Response	

Suggestions for improvement (Highlight all that apply)

Maximising SLO Achievement	**Preferred Pedagogy Used for this SLO**	**Assessment Strategies**
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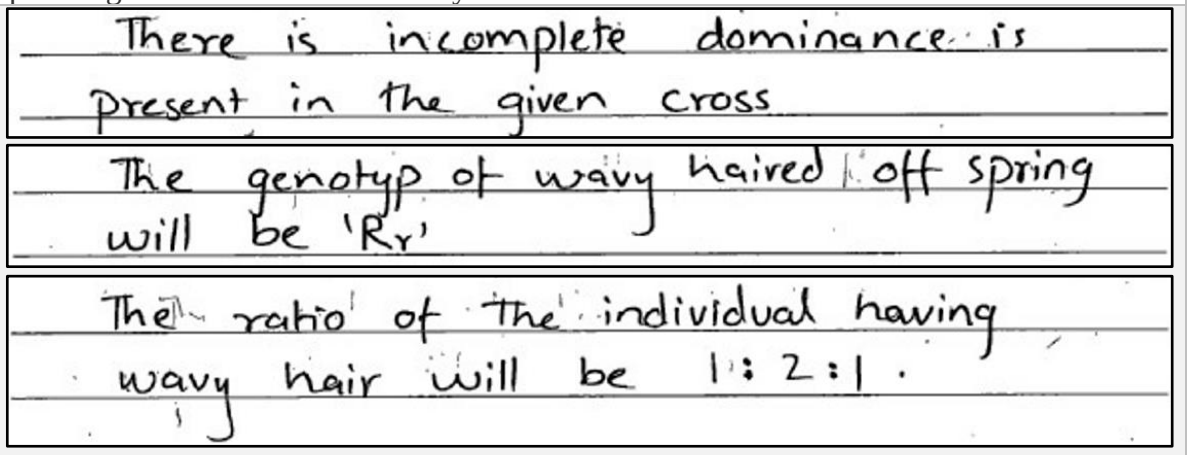
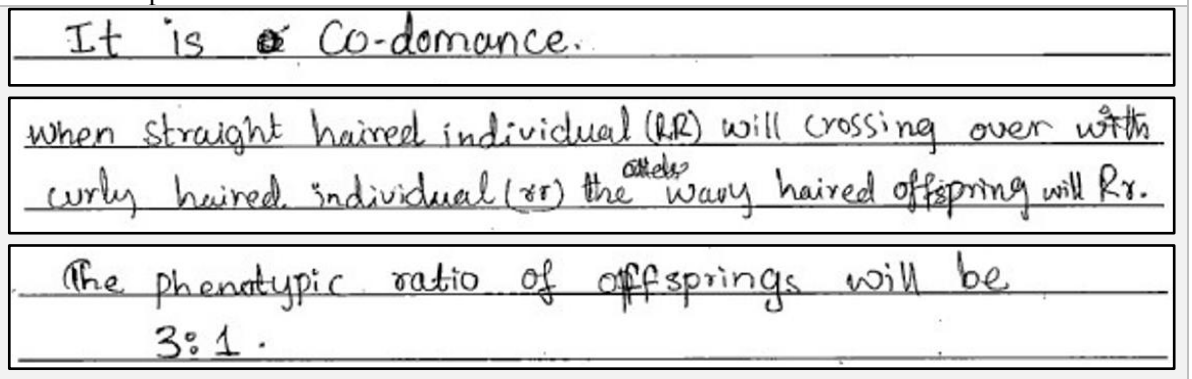
Any Additional Suggestion: Teachers should allow candidates to examine X-ray images and diagrams to practice identifying osteoporosis-related changes in bone structure.		

Question No. 4	
Question Text	The given table demonstrates a genetic cross. **Parents Phenotype and Genotype**: Straight haired individual RR × Curly haired individual rr **F1 Generation**: Wavy Hair a. Identify the type of dominance in the given cross. b. What would be the genotype of wavy-haired offspring? c. If two wavy-haired individuals are crossed, then what would be the phenotypic ratio of offspring?
SLO No.	15.3.8
SLO Text	Determine incomplete dominance with examples (such as in Japanese 4 O' clock plant.
Max Marks	3
Cognitive Level	A
Checking Hints	a. 1 mark for the correct identification b. 1 mark for the correct genotype c. 1 mark for the correct phenotype
Overall Performance	Overall, the candidates' performances on this question reflect a moderate grasp of genetic concepts, with room for improvement in key areas such as determining the genotype and phenotype ratios in different scenarios.
Description of Better Responses	In *better responses*, candidates accurately identified that crossing straight-haired (RR) and curly-haired (rr) individuals results in wavy-haired (Rr) offspring, demonstrating an understanding of incomplete dominance. They correctly determined the heterozygous genotype (Rr) of the offspring and accurately calculated the F2 generation's phenotypic ratio as 1:2:1. This means 25% straight-haired (RR), 50% wavy-haired (Rr), and 25% curly-haired (rr). The candidate's precise determination of these ratios into percentages showcases a strong grasp of Mendelian genetics and inheritance patterns, highlighting their ability to predict genetic outcomes accurately.
Image of Better Response	
Description of Weaker Responses	In *weaker responses*, candidates demonstrated misconceptions in their understanding of hair texture inheritance. They incorrectly identified the cross between straight-haired (RR) and curly-haired (rr) individuals as resulting in offspring with straight or curly hair, confusing incomplete dominance with codominance. The correct outcome is wavy-haired offspring (Rr). Additionally, the candidates

	wrongly determined the F2 generation phenotype ratio as 3:1 instead of the correct 1:2:1 ratio for incomplete dominance, where 25% are straight-haired (RR), 50% wavy-haired (Rr), and 25% curly-haired (rr). These errors highlight a need for a better understanding of Mendelian genetics and inheritance patterns.
Image of Weaker Response	

Suggestions for improvement (Highlight all that apply)

Maximising SLO Achievement	Pedagogy Used for that SLO	Assessment Strategies
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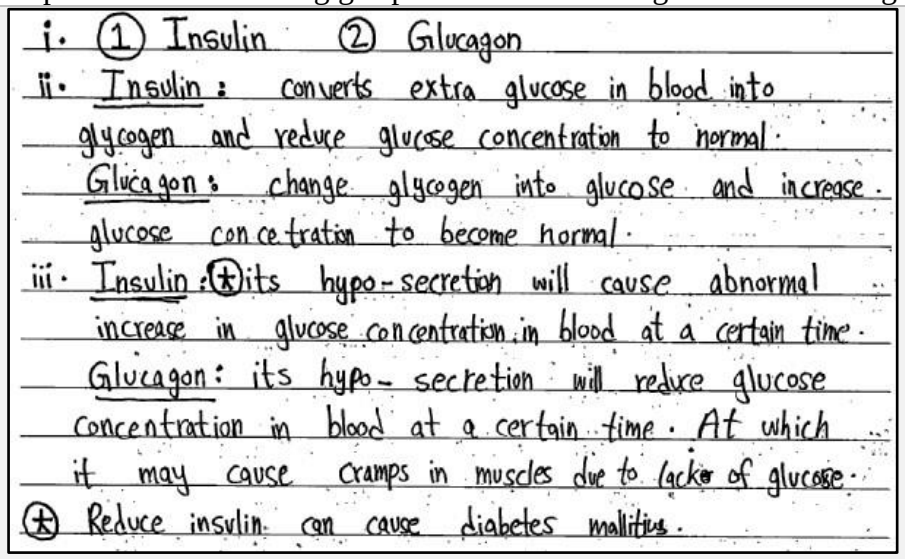
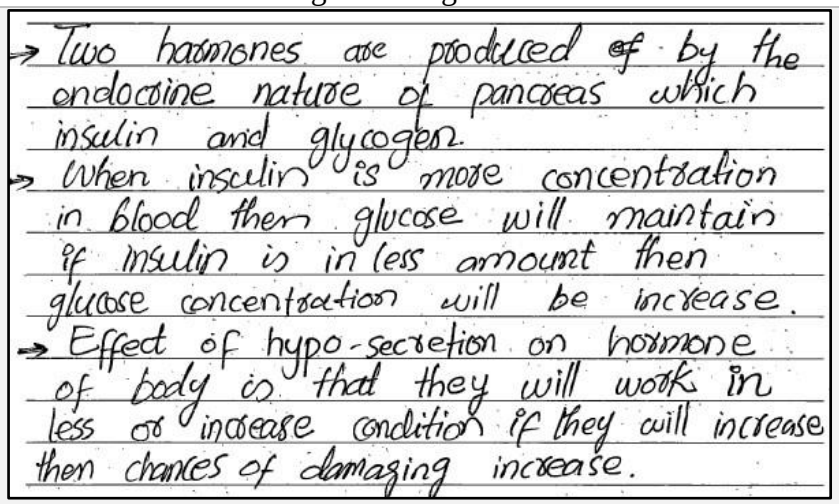
Any Additional Suggestion: Teachers should integrate Punnett squares and other genetic tools into classroom activities to help students practice predicting genotype and phenotype ratios. Additionally, they should use a range of inheritance patterns to strengthen students' understanding.

Extended Response Questions (ERQs)

Extended response questions offered a choice between parts 'a' and 'b'

Question No. 5(a)	
Question Text	Pancreas acts both as endocrine and exocrine gland. With reference to the endocrine nature of pancreas, mention i. the names of hormones it produces, ii. any ONE way in which each of these hormones maintain the blood glucose concentration and iii. any ONE effect of hypo-secretion of each hormone on the body.
SLO No.	12.5.3
SLO Text	Differentiate among the problems associated with the hyper or hypo secretion of somatotrophin, thyroid-stimulating hormone, vasopressin, thyroxin, calcitonin, adrenaline, insulin, glucagon, testosterone, estrogen and progesterone.
Max Marks	6
Cognitive Level	U
Checking Hints	i. 1 mark for mentioning insulin 1 mark for mentioning glucagon ii. 1 mark for mentioning ONE function of insulin 1 mark for mentioning ONE function of glucagon iii. 1 mark for mentioning ONE effect of hypo-secretion of insulin 1 mark for mentioning ONE effect of hypo-secretion of glucagon
Overall Performance	Most candidates attempted this part of the question. Candidates displayed a good understanding of the endocrine function of the pancreas. While there were minor inaccuracies, the response overall demonstrates a solid grasp of the hormonal regulation of blood glucose concentration, reflecting good performance.
Description of Better Responses	*Better responses* demonstrated a comprehensive understanding of the endocrine function of the pancreas. The candidates correctly named the hormones insulin and glucagon. They accurately described how insulin lowers blood glucose by facilitating cellular glucose uptake and how glucagon raises blood glucose by stimulating glycogen breakdown in the liver. Additionally, the candidates accurately identified that hypo-secretion of insulin leads to diabetes mellitus, characterised by high blood sugar levels, while hypo-secretion of glucagon can result in hypoglycaemia, characterised by low blood sugar levels. Overall, the response reflects a strong grasp of the hormonal regulation of blood glucose concentration.
Image of Better Response	 i. (1) Insulin (2) Glucagon ii. Insulin: converts extra glucose in blood into glycogen and reduce glucose concentration to normal. Glucagon: change glycogen into glucose and increase glucose concetration to become normal. iii. Insulin: (+) its hypo-secretion will cause abnormal increase in glucose concentration in blood at a certain time. Glucagon: its hypo-secretion will reduce glucose concentration in blood at a certain time. At which it may cause cramps in muscles due to lacks of glucose. (+) Reduce insulin can cause diabetes mallitius.

Description of Weaker Responses	In *weaker responses*, candidates demonstrated some misconceptions about the endocrine function of the pancreas. They erroneously named glycogen instead of glucagon as one of the hormones produced. Additionally, they confused the functions of insulin and glucagon, stating that insulin raises blood glucose and glucagon lowers it, which is incorrect. Insulin lowers blood glucose by facilitating cellular uptake, while glucagon raises it by stimulating glycogen breakdown. The candidates also misunderstood the effects of hyposecretion, wrongly identifying hyposecretion of insulin as causing hypoglycaemia instead of diabetes mellitus. These errors highlight the need for a clearer understanding of pancreatic hormones and their roles in blood glucose regulation.
Image of Weaker Response	

Suggestions for improvement (Highlight all that apply)

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Any Additional Suggestion: Teachers should emphasise common errors, such as confusing glycogen with glucagon and reversing the functions of insulin and glucagon, to correct misconceptions. Using analogies and examples will help reinforce the correct information.

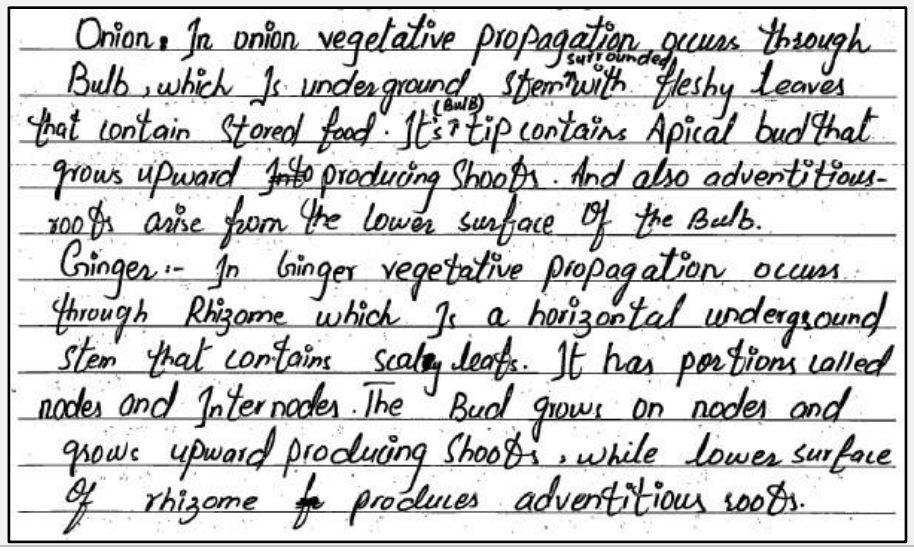
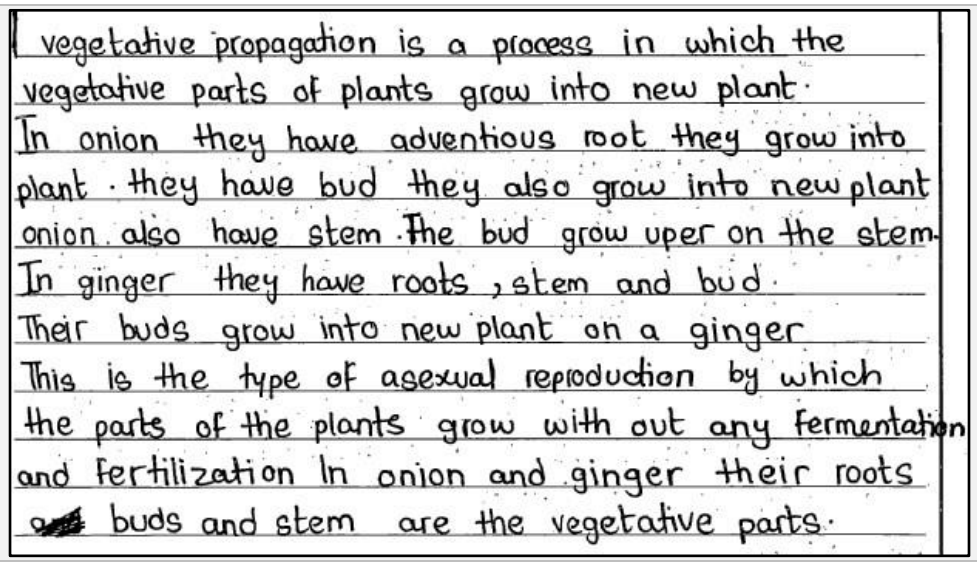
Question No. 5(b)	
Question Text	Explain the process of vegetative propagation in onion and ginger.
SLO No.	14.2.3
SLO Text	Explain natural vegetative propagation in plants (through stem, suckers and leaves).
Max Marks	6
Cognitive Level	U
Checking Hints	1 mark for each point related to onion (any 3 required) 1 mark for each point related to ginger (any 3 required)
Overall Performance	This part was attempted less frequently than part 'a'. Nevertheless, the explanations provided by the candidates were clear and well-organised, demonstrating a solid understanding of the vegetative propagation processes in these plants.
Description of Better Responses	*Better responses* provided a detailed and accurate explanation of vegetative propagation in onion and ginger. For onions, they correctly identified that propagation occurs through bulbs, which are underground stems. They described how bulbs contain stored food and are surrounded by thick fleshy leaves. The candidates accurately noted that adventitious roots emerge from the base of the bulb and shoots develop from the top. For ginger, the candidates correctly identified rhizomes as the part involved in propagation. They described rhizomes as underground stems containing buds at nodes. The response accurately covered how buds on the upper surface develop into shoots and buds on the lower surface form roots.
Image of Better Response	 Onion: In onion vegetative propagation occurs through Bulb, which is underground stem surrounded with fleshy leaves that contain stored food. It's (Bulb) tip contains Apical bud that grows upward producing shoots. And also adventitious roots arise from the lower surface of the Bulb. Ginger:- In ginger vegetative propagation occurs through Rhizome which is a horizontal underground stem that contains scaly leafs. It has portions called nodes and Internodes. The Bud grows on nodes and grows upward producing shoots, while lower surface of rhizome produces adventitious roots.
Description of Weaker Responses	*Weaker responses* showed some understanding of vegetative propagation but contained several misconceptions. They erroneously described the part involved in onion propagation as 'roots' instead of bulbs and misidentified rhizomes in ginger as 'leaves' rather than underground stems. The description of the bulb's characteristics was unclear and candidates confused the roles of shoots and roots, incorrectly stating that shoots emerge from the base and roots from the top. For ginger, they mistakenly suggested that shoots come from the lower surface of rhizomes. These errors indicate a need for a clearer understanding of the specific parts and their roles in vegetative reproduction.

Image of Weaker Response	

Suggestions for improvement (Highlight all that apply)

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Any Additional Suggestion: Teachers incorporate practical activities where candidates can observe or grow onions and ginger from bulbs and rhizomes. This hands-on experience will help reinforce their theoretical knowledge.		

Question No. 6(a)	
Question Text	Describe how the following factors facilitate the process of evolution via natural selection. i. Genetic variation ii. Hereditary traits
SLO No.	15.4.4 and 15.4.5
SLO Text	Explain how variation can lead to organic evolution. Describe how variation leads to competition in a population and differential survival by best fitting the environment.
Max Marks	6
Cognitive Level	U
Checking Hints	1 mark for describing genetic variation (any 4 points required) 1 mark for describing hereditary traits (2 points required)

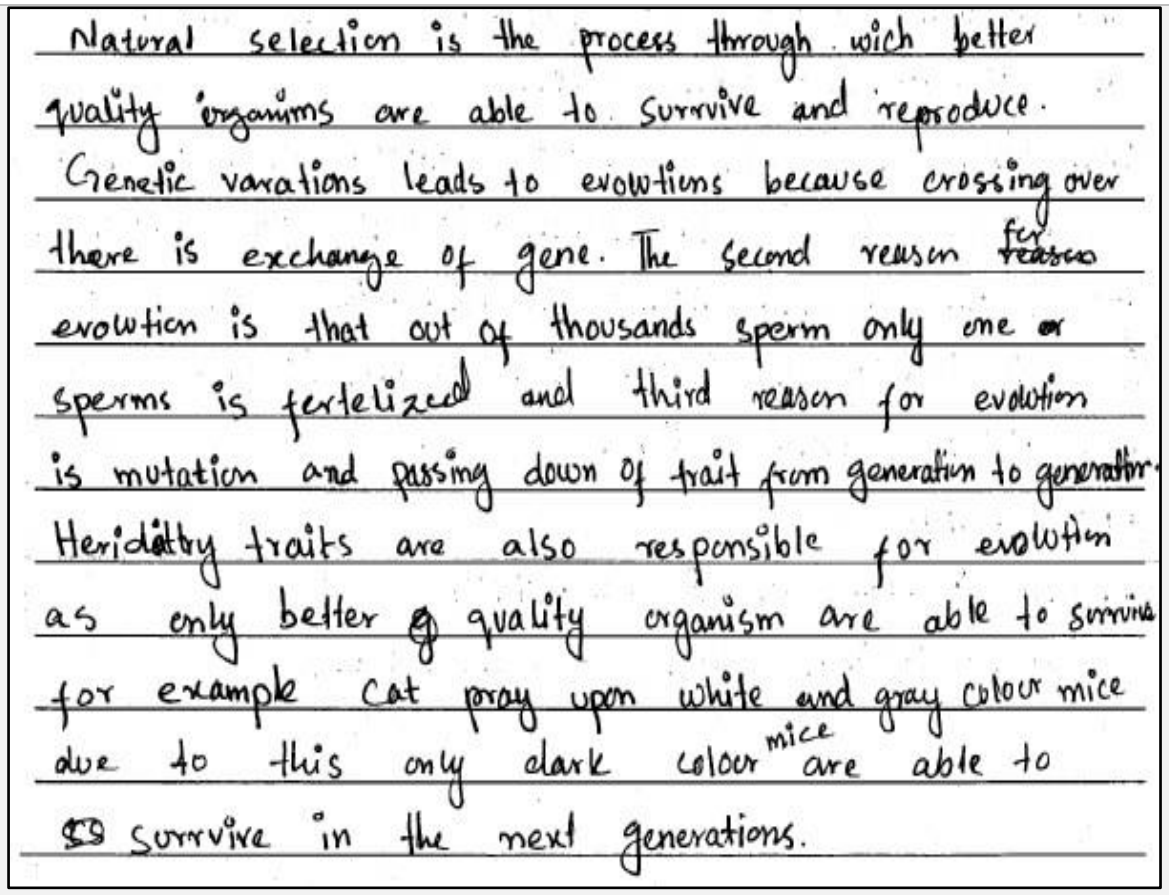
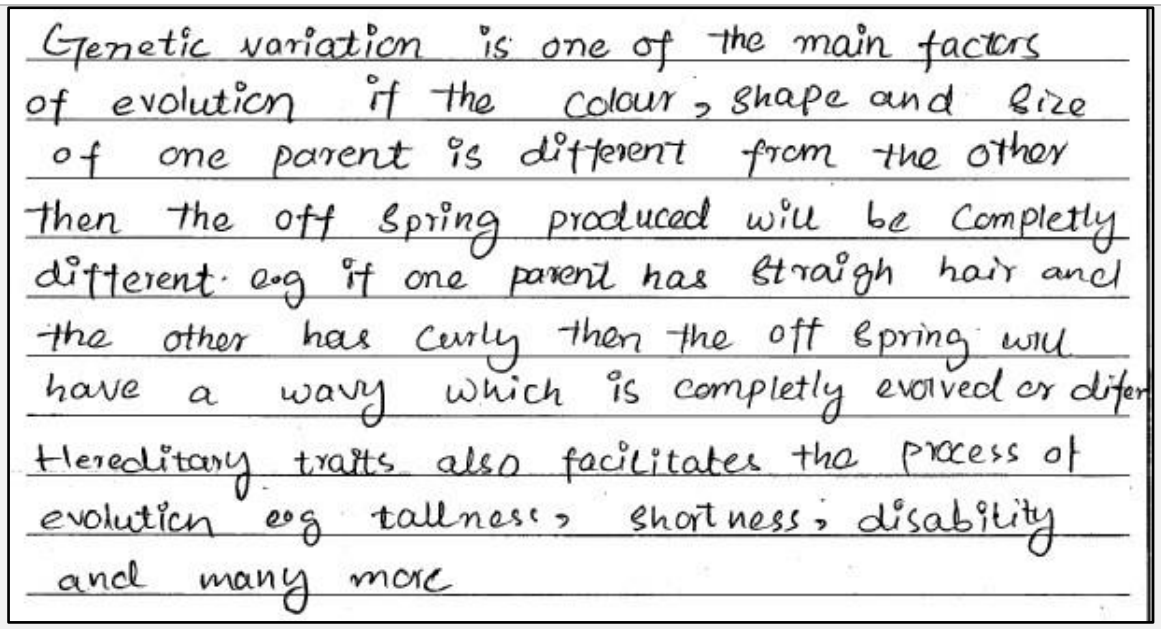
Overall Performance	This part of the question was attempted by fewer candidates and appeared challenging for them. The overall performance revealed a limited understanding of how genetic variation and hereditary traits contribute to evolution through natural selection. The responses suggest a need for a more thorough review of natural selection principles and evolutionary biology to address these fundamental knowledge gaps.
Description of Better Responses	*Better responses* provided a thorough and accurate explanation of how genetic variation and hereditary traits facilitate evolution through natural selection. They correctly identified that genetic variation is essential for natural selection, detailing how variations in genotypes lead to phenotypic differences, which are generated through mutations, random mating and chromosome alignment during meiosis. Additionally, the candidates accurately described hereditary traits as those consistently passed from parent to offspring, with advantageous traits being preserved and non-adaptive traits being discarded. Overall, these responses demonstrate a strong understanding of the mechanisms driving evolution through natural selection.
Image of Better Response	 Natural selection is the process through wich better quality organims are able to survive and reproduce. Genetic varations leads to evowtions because crossing over there is exchange of gene. The second reason for ~~reason~~ evowtion is that out of thousands sperm only one or sperms is fertelized and third reason for evolution is mutation and passing down of trait from generation to generation. Heridittry traits are also responsible for evolution as only better quality organism are able to survive for example cat pray upon white and gray colour mice due to this only clark colour mice are able to survive in the next generations.
Description of Weaker Responses	*Weaker responses* revealed several misconceptions about how genetic variation and hereditary traits facilitate evolution through natural selection. They struggled to clearly explain how genetic variation contributes to natural selection, often providing unclear or incomplete details about mutations and their role in introducing new traits. The explanation of hereditary traits was also vague, lacking clarity on how traits are passed on and how they interact with environmental pressures. The responses indicate a need for a more precise understanding of these fundamental concepts and their roles in the process of evolution through natural selection.

Image of Weaker Response	 Genetic variation is one of the main factors of evolution if the colour, shape and size of one parent is different from the other then the off spring produced will be completly different. eg if one parent has straigh hair and the other has curly then the off spring will have a wavy which is completly evolved or differ Hereditary traits also facilitates the process of evolution eg tallness, shortness, disability and many more

Suggestions for improvement (Highlight all that apply)

Maximising SLO Achievement	Pedagogy Used for that SLO	Assessment Strategies
• Identify the expectation of command words (use Command Word Guide) • Ensure the content is taught at the relevant cognitive level • Identify necessary content required (skills + concepts) • Review past paper questions on the concept • Utilise the resource guide for additional materials	• Story Board • Cause and Effect • Fish and Bone • Concept Mapping • Audio Visual Resources • Think, Pair and Share • Knowledge Platform videos • Questioning Technique (Socratic approach) • Practical Demonstration	• Past paper questions • Discussion on E-Marking Notes • AKU-EB Digital Learning Solution powered by Knowledge Platform https://akueb.knowledgeplatform.com/login
Any Additional Suggestion: Teachers should provide real-world examples of natural selection and genetic variation, such as antibiotic resistance in bacteria or evolutionary adaptations in animals, to make the concepts more relatable.		

Question No. 6(b)	
Question Text	Describe how the following factors limit the population growth of an area. i. Competition ii. Predation iii. Parasitism
SLO No.	16.4.2
SLO Text	Relate competition, predation and parasitism with population growth.
Max Marks	6
Cognitive Level	U

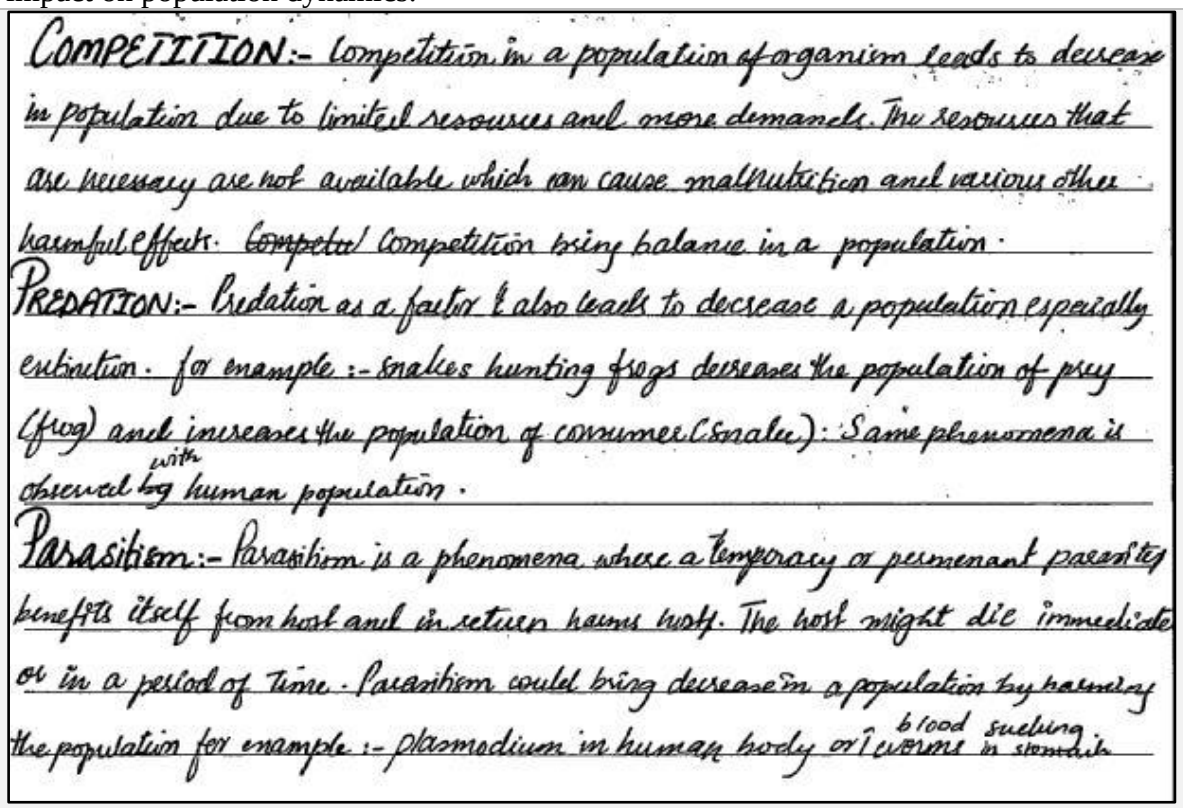
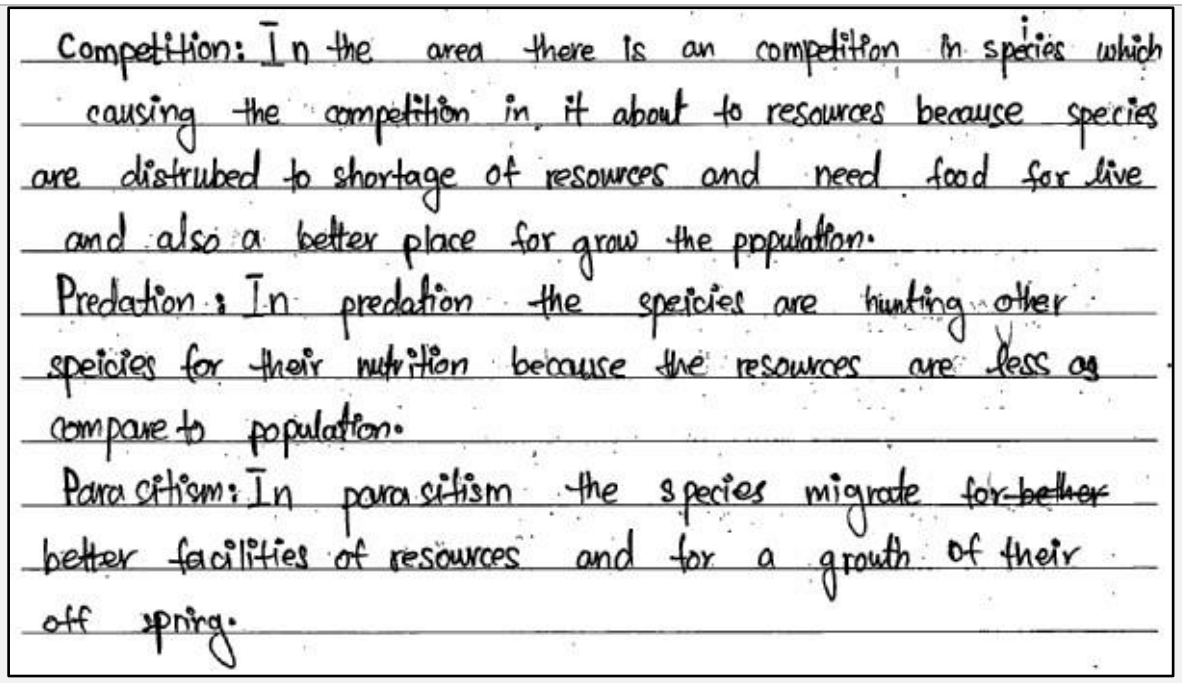
Checking Hints	1 mark for describing competition (any 2 points required) 1 mark for describing predation (any 2 points required) 1 mark for describing parasitism (any 2 points required)
Overall Performance	Most candidates attempted this part of the question, showing a basic understanding of ecological processes and their impact on population dynamics. Although the responses were generally accurate, they lacked depth and organisation.
Description of Better Responses	*Better responses* provided a thorough explanation of how competition, predation, and parasitism limit population growth. The candidates effectively described competition as a negative interaction for weaker competitors, leading to a reduction in population size. The explanation of predation was clear, emphasising how it decreases prey numbers and affects both individual and community fitness. The candidates also accurately described parasitism, highlighting how parasites reduce host fitness and can cause disease. Importantly, the responses included relevant examples for each interaction, enriching the explanations. Overall, the candidates demonstrated a strong grasp of ecological interactions and their impact on population dynamics.
Images of Better Responses	
Description of Weaker Responses	*Weaker responses* demonstrated some understanding but contained significant gaps. Their descriptions of competition were vague and lacked detail on how it specifically affects population growth. The explanation of predation was incomplete, missing how it impacts both individual prey fitness and overall prey population numbers. The discussion on parasitism was also unclear, with insufficient information on how parasites reduce host fitness and the different types of parasites. Additionally, these responses lacked relevant examples to illustrate each interaction effectively.

Image of Weaker Response	 Competition: In the area there is an competition in species which causing the competition in it about to resources because species are distrubed to shortage of resources and need food for live and also a better place for grow the population. Predation: In predation the speicies are hunting other speicies for their nutrition because the resources are less as compare to population. Parasitism: In parasitism the species migrate for better better facilities of resources and for a grouth of their off spring.

Suggestions for improvement (Highlight all that apply)

Maximising SLO Achievement	Preferred Pedagogy Used for this SLO	Assessment Strategies
• Identify the expectation of command words (use Command Word Guide) • Ensure the content is taught at the relevant cognitive level • Identify necessary content required (skills + concepts) • Review past paper questions on the concept • Utilise the resource guide for additional materials	• Story Board • Cause and Effect • Fish and Bone • Concept Mapping • Audio Visual Resources • Think, Pair and Share • Knowledge Platform videos • Questioning Technique (Socratic approach) • Practical Demonstration	• Past paper questions • Discussion on E-Marking Notes • AKU-EB Digital Learning Solution powered by Knowledge Platform https://akueb.knowledgeplatform.com/login
Any Additional Suggestion: Teachers should incorporate diverse real-world examples for each interaction to help candidates relate concepts to practical situations.		

Annexure A: Pedagogies Used for Teaching the SLOs

Pedagogy: Storyboard
Description: A visual pedagogy that uses a series of illustrated panels to present a narrative, encouraging creativity and critical thinking. It helps learners organise ideas, sequence events, and comprehend complex concepts through storytelling.
Example: In a Literature class, students are tasked with creating storyboards to visually retell a novel. They draw key scenes, write captions, and present their stories to the class, enhancing their reading comprehension and fostering their imagination.

Pedagogy: Cause and Effect
Description: This pedagogy explores the relationships between actions and consequences. By analysing cause-and-effect relationships, learners develop a deeper understanding of how events are interconnected and how one action can lead to various outcomes.
Example: In a History class, students study the causes and effects of the Industrial Revolution. They research and discuss how technological advancements in manufacturing led to significant societal changes, such as urbanisation and labour reform movements.

Pedagogy: Fish and Bone
Description: A method that breaks down complex topics into main ideas (the fish) and supporting details (the bones). This visual approach enhances comprehension by highlighting essential concepts and their relevant explanations.
Example: During a Biology class on human anatomy, the teacher uses the fish and bone technique to teach about the human skeletal system. Teacher presents the main components of the human skeleton (fish) and elaborates on each bone's structure and function (bones).

Pedagogy: Concept Mapping
Description: An effective way to visually represent relationships between ideas. Learners create diagrams connecting key concepts, aiding in understanding the overall structure of a subject and fostering retention.
Example: In a Psychology assignment, students use concept mapping to explore the various theories of personality. They interlink different theories, such as Freud's psychoanalysis, Jung's analytical psychology, and Bandura's social-cognitive theory, to see how they relate to each other.

Pedagogy: Audio Visual Resources
Description: Incorporating multimedia elements like videos, images, and audio into lessons. This approach caters to different learning styles, making educational content more engaging and memorable.
Example: In a General Science class, the teacher uses a documentary-style video to teach about the solar system. The video includes stunning visual animations of the planets, interviews with astronomers, and background music, enhancing students' interest and understanding of space.

Pedagogy: Think, Pair, and Share
Description: A collaborative learning technique where students ponder a question or problem individually, then discuss their thoughts in pairs or small groups before sharing with the entire class. It fosters active participation, communication skills, and diverse perspectives.
Example: In a Literature in English class, the teacher poses a thought-provoking question about a novel's moral dilemma. Students first reflect individually, then pair up to exchange their opinions, and finally participate in a lively class discussion to explore different viewpoints.

Pedagogy: Questioning Technique (Socratic Approach)

Description: Based on Socratic dialogue, this method stimulates critical thinking by posing thought-provoking questions. It encourages learners to explore ideas, justify their reasoning, and discover knowledge through a process of inquiry.
Example: In an Ethics class, the instructor uses the Socratic approach to lead a discussion on the meaning of justice. By asking a series of probing questions, the students engage in a deeper exploration of ethical principles and societal values.

Pedagogy: Practical Demonstration
Description: A hands-on approach where learners observe real-life applications of theories or skills. Practical demonstrations enhance comprehension, skill acquisition, and problem-solving abilities by bridging theoretical concepts with real-world scenarios.
Example: In a Food and Nutrition class, the instructor demonstrates the proper technique for filleting a fish. Students observe and then practice the skill themselves, learning the practical application of knife skills and culinary precision.

(**Note:** The examples provided in this annexure serve as illustrations of various pedagogies. It is important to understand that these pedagogies are versatile and can be applied across subjects in numerous ways. Feel free to adapt and explore these techniques creatively to enhance learning outcomes in your specific context.)

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