

*EXAMINATIONS COUNCIL OF ESWATINI*

# **EGCSE**

**EXAMINATION REPORT**

**FOR**

**AGRICULTURE (6882)**

**YEAR**

**2022**

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## EGCSE AGRICULTURE

### Paper 6882/01

#### Multiple Choice and Simple Response Questions

The 2022 EGCSE (Eswatini General Certificate of Secondary Education) Agriculture examination has four components;

**Component 1:** Theory (multiple choice and simple response questions)

**Component 2:** Theory (structured and essay questions)

**Component 3:** Practical exercises

**Component 4:** Investigatory project

Candidates that had registered for the 2022 examination were 4960 in each component. This indicated an over 40% decrease from the previous year's (2021) where there were 8893 registered candidates.

#### **PAPER 1 THEORY** (Multiple Choice and Simple Response Questions)

The agriculture paper 1 comprised of **two** sections;

**Section A:** Multiple choice worth 20 marks.

**Section B:** Simple response questions worth 40 marks.

The overall total marks for this component was 60 marks.

#### **General comments:**

1. Assessment for the 2022 examination was based on the 2021-2023 Examination syllabus. The style and approach to marking had not been altered, it was the same as in previous examination years.
2. The lowest mark/score attained in the 2022 examination was 3 and the highest being 53 out of 60. The highest mark obtained in the 2022 examination is 3 points higher than in 2021 which was 50. The lowest mark for the 2021 examination year was 02 out of 60. This indicates a slight improvement in performance in the 2022 examination year compared to the previous year. However, it is also worth noting that the majority of candidates scored less than 30 out of 60 in the 2022 Paper 1 examination.
3. Section A (multiple choice), was relatively well answered. Most candidates scored at least 10 out of 20.
4. Lower marks were scored in Section B. This was an attribute to;
  - Failure to recall terminology in reference to described concepts.
  - Writing of incorrect spelling of appropriate terms thus altering meaning in context.
  - Some questions being left unanswered by the candidates.

5. Average performance ranged between 20 and 28 marks, leaving many candidates below the C grade level.

**Questions that were easily accessible to candidates:**

**Section A:** Question 1, 2, 4, 13, 17, 19 and 20.

**Section B:** Question 24, 25, 29, 39, 40, 44, 50, and 52.

**Questions that were averagely/fairly accessible to candidates:**

**Section A:** Question 7, 8 and 15.

**Section B:** Question 32, 33, 35, 36, 38 and 41.

**Questions that were not easily accessible to candidates:**

**Section A:** Questions 3, 5, 6, 10, 12 and 14.

**Section B:** Questions 23, 27, 28, 31, 42, 47, 49, 51 and 56.

**Comments on Specific Questions**

**Section A:**

**Question 1**

**What controls gaseous exchange in a plant leaf?**

**Expected response:** C (guard cells)

**Comments:** Well answered question.

**Question 2**

**What term describes the ability of the soil to provide enough nutrients for plant growth?**

**Expected response:** B (soil fertility)

**Comments:** Well answered question.

**Question 3**

**Which legislation ensures proper management of biodiversity in Eswatini?**

**Expected response:** B (environmental policy)

**Comments:** A challenging question where most candidates opted for C (forest policy) which was incorrect.

**Question 4**

**Which marketing function adds value to milk?**

**Expected response:** D (processing)

**Comments:** Average performance was noted in this question.

**Question 5**

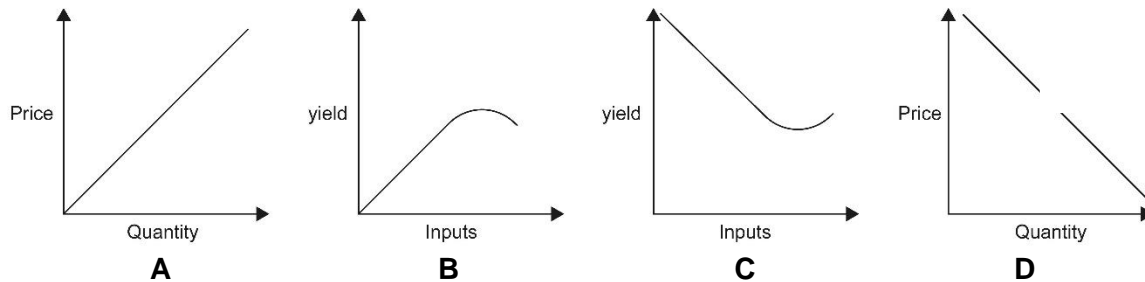
**What could be a direct economic effect of *Solanum mauritianum* (bugweed) to the government of Eswatini?**

**Expected response:** B (costly to control)

**Comments:** Not an easily accessible question as most candidates ignored the key word “economic” and opted for C (dries water resources) or D (reduces arable land) which were incorrect.

**Question 6**

**Which graph illustrates the law of diminishing returns?**



**Expected response:** B

**Comments:** A challenging question, most candidates chose A or D representing supply and demand curves respectively.

**Question 7**

**How does an increase in rainfall over several years influence soil pH?**

**Expected response:** D (soil pH reduces)

**Comments:** Average performance was noted in this question. Emphasis should be made on pH scale (values and conditions).

**Question 8**

**What term describes an organism that depends on another for survival?**

**Expected response:** B (parasite)

**Comments:** a well answered question.

**Question 9**

**What prevents wave erosion on a dam?**

**Expected response:** D (rip rap)

**Comments:** a fairly answered question.

**Question 10**

**Which water source is the safest to drink?**

**Expected response:** A (borehole)

**Comments:** a challenging question. Candidates could not relate to the fact that the deeper the water source, the lower the chances of contamination through leaching.

**Question 11**

**Which is a sure way of preventing Newcastle disease in poultry?**

**Expected response:** D (vaccinate birds)

**Comments:** A well answered question.

**Question 12**

**Table 12.1 shows a farmer's financial statement.**

**Table 12.1**

<b>Income</b>	<b>Expenses</b>
7.5 tonnes of maize @ E1000.00 /ton	- Chemicals @ E2000.00
	- Permanent labour @ E1500.00
	- Seeds @ E1000.00

**What is the farmer's total variable costs?**

**Expected response:** B (E3000)

**Comments:** This was not an easily accessible question. Most candidates could not identify variable costs from the table.

**Question 13**

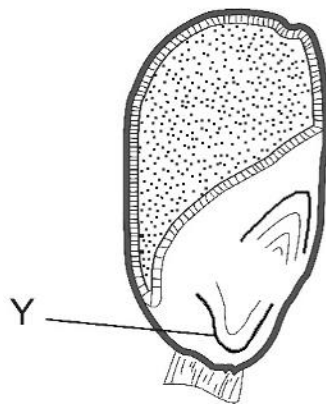
**Which record measures profitability of a livestock enterprise?**

**Expected response:** C (financial record)

**Comments:** A well answered question.

**Question 14**

**Fig. 14.1 shows a maize seed.**



**Fig. 14.1**

**What is the function of part Y?**

**Expected response:** D (to protect the radicle)

**Comments:** A challenging question. The misconception was radicle for part Y instead of coleorhiza.

**Question 15**

**What is the correct sequence for these environmental processes?**

**Expected response:** D (greenhouse effect, global warming, climate change)

**Comments:** Average performance was noted in this question.

**Question 16**

**Which equipment is used in the artificial pollination of plants?**

**Expected response:** D (soft brush)

**Comments:** A well answered question.

**Question 17**

**Which acid is produced during silage making?**

**Expected response:** C (lactic acid)

**Comments:** A well answered question.

**Question 18**

**What type of farming involves high use of inputs per unit area?**

**Expected response:** C (intensive farming)

**Comments:** A well answered question.

**Question 19**

**What term describes the proportion of sand, silt, and clay in soil?**

**Expected response:** D (texture)

**Comments:** A well answered question.

**Question 20**

**What process involves movement of mineral ions against their concentration gradient?**

**Expected response:** A (active transport)

**Comments:** An easily accessible question.

**SECTION B**

**Question 21**

**Which developmental stage of agriculture is characterised by leaving infertile land to cultivate a new area?**

**Expected response:** shifting cultivation.

**Comments:** Good performance was noted, common mistakes included nomadic herding and shift agriculture or farming.

**Question 22**

**What type of weathering is oxidation?**

**Expected response:** chemical weathering.



**Comments:** well answered question by most candidates. However, some candidates made reference to physical weathering which was incorrect.

### **Question 23**

**Give an example of a creeping cultivated pasture grass.**

**Expected response:** kikuyu; couch grass; buffalo grass

**Comments:** Wrong responses included reference to any pasture grass, otherwise performance was fairly good in this question.

### **Question 24**

**Which vascular tissue conducts water and mineral salts up the plant?**

**Expected response:** xylem vessels

**Comments:** Well answered question, however there were few cases where phloem vessels were mentioned.

### **Question 25**

**What term describes the fusion of male and female gametes?**

**Expected response:** fertilisation

**Comments:** A well answered question.

### **Question 26**

**What general term describes chemicals that are used to control weeds?**

**Expected response:** herbicides

**Comments:** Well answered question.

### **Question 27**

**What disease of tomato plants can be identified by cutting a length of stem and recording the release of a milky substance when it is placed in water?**

**Expected response:** bacterial wilt

**Comments:** A fairly answered question. The common wrong response was blight.

**Question 28**

**What name is given to a group of plants produced asexually?**

**Expected response:** clones

**Comments:** It was very rare to find this term, so this question was generally not easily accessible to candidates.

**Question 29**

**Name the first milk calves get from their mother after birth?**

**Expected response:** colostrum

**Comments:** A well answered question except for spelling mistakes in writing colostrum.

**Question 30**

**What term describes the removal of unproductive chickens from a flock?**

**Expected response:** culling.

**Comments:** A fairly answered question. Common mistakes included isolation or curling which has a different meaning.

**Question 31**

**Give two reasons for the inclusion of lucerne in a pasture.**

**Expected response:** fix nitrogen; protein source/highly nutritious/palatable

**Comments:** Unacceptable responses made reference to general points such as improve soil structure and prevent soil erosion. This was a challenging question to most candidates.

**Question 32**

**Which part of a knapsack sprayer controls release of the chemical?**

**Expected response:** shut-off/ trigger/ spray control

**Comments:** A well answered question. There were some cases where pump or nozzle were mentioned which were incorrect.

**Question 33**

**Name the posts that are placed at intervals between standard posts.**

**Expected response:** droppers

**Comments:** A fairly answered question. Unacceptable responses related to use of circular language such as drobhas.

**Question 34**

**Which soil type could be used to prevent seepage in an earth dam?**

**Expected response:** clay soil

**Comments:** Well answered question.

**Question 35**

**What term describes the debts of a farm business?**

**Expected response:** liabilities

**Comments:** Average performance was noted.

**Question 36**

**Name the equipment used for dehorning cattle.**

**Expected response:** disbudding iron; hacksaw

**Comments:** A fairly answered question. A common incorrect response was burdizzo.

**Question 37**

**Which group of pests are aphids classified under?**

**Expected response:** piercing and sucking

**Comments:** The common incorrect response was sucking and piercing. The pests feed by piercing the plant tissue first using the proboscis before sucking the sap.

**Question 38**

**What name describes the state of ownership of land?**

**Expected response:** land tenure

**Comments:** Fair performance on this question. However, some candidates made reference to the different types of land tenure such as leasehold or title deed.

**Question 39**

**What name is given to dried cut grass that is used for livestock feeding?**

**Expected response:** hay

**Comments:** A well answered question

**Question 40**

**Which term describes the growing of crops in a nutrient solution?**

**Expected response:** hydroponics

**Comments:** A well answered question.

**Question 41**

**Name the equipment used for tightening wire fences.**

**Expected response:** wire strainer

**Comments:** Fairly answered question.

**Question 42**

**Which 'Act' controls the importation of GMOs into Eswatini?**

**Expected response:** Biosafety Act

**Comments:** This was a challenging question to most candidates. The common incorrect response was crop and stock movement act.

**Question 43**

**What name is given to an area that collects rainwater into a reservoir?**

**Expected response:** catchment area

**Comments:** An easily accessible question. However, some candidates wrote dam which was incorrect.

**Question 44**

**Which process is responsible for the loss of water from land surfaces into the atmosphere?**

**Expected response:** evaporation

**Comments:** A well answered question, but some candidates gave transpiration which only relates to plants or gave general terms such as evapotranspiration.

**Question 45**

**Name the process given to sorting agricultural products to given standards prior to packing and sending to market?**

**Expected response:** grading

**Comments:** Average performance was noted.

**Question 46**

**What term describes mating unrelated animals of the same breed?**

**Expected response:** outbreeding/outcrossing

**Comments:** fair performance apart from some candidates who were giving any breeding system such as cross breeding or inbreeding.

**Question 47**

**What is the percentage of phosphorus in a 50 kg bag of 2:3:2 (35) fertiliser?**

**Expected response:** 15 percent

**Comments:** A challenging question to most candidates. Common errors include wrong calculation and/or wrong units.

**Question 48**

**Name a career opportunity in the field of plant protection.**

**Expected response:** crop protection officer; entomologist; pathologist; weed research officer; conservation officer.

**Comments:** Average performance was observed.

**Question 49**

**Which major plant nutrient is contained in dried blood?**

**Expected response:** nitrogen

**Comments:** Not an easily accessible question as learners were giving any plant nutrient.

**Question 50**

**What term describes the transfer of pollen grains from anther to stigma in the same plant?**

**Expected response:** Self pollination

**Comments:** Average performance was noted. Some candidates gave just pollination as a response which was unacceptable as the question is specific.

**Question 51**

**What pasture management practice involves sowing of seeds to improve a pasture?**

**Expected response:** veld reinforcement

**Comments:** This was a challenging question. Most candidates gave seed planting methods such as sodseeding or overseeding which were incorrect responses.

**Question 52**

**What name is given to the process of giving birth in cows?**

**Expected response:** calving/ parturition

**Comments:** A well answered question.

**Question 53**

**Name an accessory gland that produces seminal fluid.**

**Expected response:** prostate gland; Cowper's gland (bulbourethral); seminal vesicle

**Comments:** Fairly done question. Misconceptions related to testicles or pituitary gland.

**Question 54**

**What body chemical substances fight off infection in livestock?**

**Expected response:** antibodies

**Comments:** Average performance was noted. Incorrect responses included antibiotics or red blood cells

**Question 55**

**Give two common chicken vices.**

**Expected response:** cannibalism; egg pecking

**Comments:** A fairly performed question. However, in some instances responses related to any poultry disease or writing packing instead of pecking which has a different meaning.

**Question 56**

**What type of record lists all physical and monetary assets in the farm?**

**Expected response:** inventory

**Comments:** This was a challenging question as many responses related to financial records which was incorrect.

**Question 57**

**What economic term describes the loss of potential gain when one particular alternative is chosen over the others?**

**Expected response:** opportunity cost

**Comments:** A fairly answered question with some cases where loss, risk and uncertainty were given, but they were all incorrect responses.

### Question 58

**Give one example of a root tuber.**

**Expected response:** sweet potato.

**Comments:** Averagely performed question. Incorrect responses included potato, carrot, beetroot and onion.

### Comments on overall performance:

1. Time allocated for the paper was adequate.
2. Assessment of the paper was evenly spread throughout the syllabus sections.
3. Candidates were **not** able to adhere to instructions related to the paper for example:
  - Writing using pencil in both Sections A and B,
  - Circling of correct letter in Section A instead of writing the letter in the given box,
  - Exam scripts with candidates' name written but no candidates number and center number.
4. There were also cases of overwriting on letters in the multiple-choice section, making it difficult to read the letter.
5. Some questions were left unanswered by candidates.

### Advice to Agriculture Teachers

Contribution and immersive commitment of the teacher is commendable. They are still kindly requested to continue motivating, empowering candidates with the knowledge and skill required of this practical science-oriented subject. In preparation for examination and attainment of much higher scores candidates should:

1. Refer to the syllabus as much as possible in preparation for the examination.
2. Adhere to the use of glossary terms used in the assessment of the subject.
3. Read and understand the question clearly before attempting to answer it.

### Teachers are still encouraged to;

1. Unpack the syllabus assessment as much as possible.
2. Evenly spread their scheme of work within the 5 terms in preparation for the examination and consider weightings of the various papers.
3. Encourage candidates to page through the question paper to the last page, this will help avoid leaving some questions unanswered.
4. Encourage candidates to gain more agricultural knowledge through participation in community activities; media, field days and agricultural shows.



**EGCSE AGRICULTURE****Paper 6882/02****Theory**

EGCSE Agriculture Paper 2 consists of two (2) sections, **SECTION A:** - Structured Questions and **SECTION B:** - Essay questions. This paper contributes 40% of the overall mark.

**General Comments on Paper 2**

The 2022 cohort performed relatively similar to the 2021 cohort. Most candidates in 2022 Agriculture paper 2 examination scored in the range of 15 – 30 marks out of 80. The lowest score was 02/80 and the highest was 54/80. On the overall, the paper proved to be challenging to most of the candidates. There were 4964 candidates who sat for the 2022 EGCSE Agriculture examination compared to the about 8890 candidates for 2021.

The paper was appropriate and relevant to the grade level of the candidates. It also covered all sections of the syllabus from general agriculture to agricultural economics.

In 2022, inappropriate definitions of scientific terms using improper technical words was noted as a key setback for candidates. There was a continued failure to describe processes or practical procedures in chronological order, resulting in loss of marks for disorderly mentioned points.

**Parts of the syllabus that seemed to be challenging to candidates:**

**Question 1 (c), (e) – hardening-off in transplanting, and protective spraying;**

**Question 2 (b), (c) – irrigation and minimum tillage;**

**Question 3 (a), (c) – genetics' terms, AI on cows;**

**Question 4 (c) (i) – stocking rates calculations;**

**Question 5 (b), (c), (d) – selective breeding, rations and weaning;**

**Question 6 (c) – soil quality and germination;**

**Question 7 (a), (c) – sexual reproduction, benefits of grass in crop rotations;**

**Question 8 (a), (b) – wooden posts treatments and fencing;**

**Question 9 (a), (b) – farm budget and environmental risks.**

**(NB: The comments on specific questions are found in full from section B of the report)**

**Section A**

Answer **all** questions in this section **(60 Marks)**

**Question 1**

(a) **Describe the characteristics of a soil suitable for a garden site.**

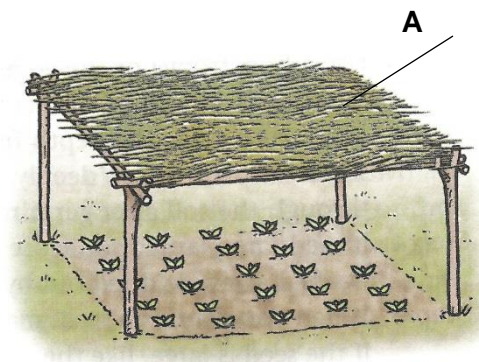
**Expected responses:**

- loamy/crumby soil;
- 30 cm deep;
- fertile soil;
- ideal pH/ pH 5.5 to 6.5

**Comments**

This question was fairly answered. Even though candidates who failed to score points described the crumb structure and the things to consider when choosing a garden site, for example near a source of water, sunny place, flat/slightly sloping land, no rocks

(b) **Fig. 1.1 shows a shaded seedbed.**



**Fig 1.1**

**Suggest two reasons why part A in Fig. 1.1 is important.**

**Expected responses:**

- prevents direct sunlight;
- prevents heavy rain drops/ snow.

**Comments**

This question was well answered. Candidates who did not score marks associated the shade with mulch and few candidates focused on the soil instead of the protection of seedlings.

(c) Describe the process of *hardening-off* of seedlings before they are transplanted.

**Expected responses:**

- gradual reduction of shade;
- watering less often/reduce watering.

**Comments**

This question was poorly answered. Candidates failed to describe the process as a gradual process. Most responses were centred around removed of shade but did not mention anything on reduction of watering.

(d) Give two reasons why seedlings should be transplanted with a ball of soil from the seedbed.

**Expected responses:**

- prevents damage to roots during transplanting;
- reduce transplant shock in new environment/ easily adapt to new environment.

**Comments**

This question was fairly answered. Most candidates were able to access one point on prevention of damaging roots with a few stating the easy adaptation and others referred to transplant shock as wilting.

(e) Suggest a disadvantage of '*protective spraying*' against pests.

**Expected responses:**

- incurring pesticide expenses of pests/ disease which may not occur.

**Comments**

This question was poorly answered. Candidates failed on the explanation/application of the concept, even defined "*protective spraying*" and few left the question unanswered. Common responses were expensive, kill natural responses and gain resistance.

(f) Suggest how digging the soil may reduce pests.

**Expected responses:**

- breaks lifecycle of pests/ exposes eggs to sunlight/ bury pests.
- decomposes infested plants

**Comments**

This question was fairly answered. Most candidates score one over two on the exposure and burying of pest/eggs and weeds respectively. Some candidates could not score marks by referring to disturb/break life cycle to cycle.

**Question 2**

**(a) Fig. 2.1 shows a drip irrigation system.**



**Fig. 2.1**

**(i) Describe how this system works.**

**Expected responses:**

- water at low pressure is moved through pipes;
- pipes have small holes / perforations at plant stations;
- water released slowly directly to the root zone.

**Comments**

This question was fairly answered. Most candidates did not refer to low water pressure and root zone. Most of their responses were general considering mostly the picture instead of showing their knowledge and understanding of drip irrigation.

**(ii) State two advantages this system has over other methods of crop irrigation.**

**Expected responses:**

- minimises water loss through evaporation;
- less labour intensive during operation;
- spread of water is restricted/ weed growth discouraged/ reduced; less water wastage.

**Comments**

This question was poorly answered. Common errors were, no water wastage, no soil erosion, saves water.

**(b) Discuss how irrigation can make crop production more profitable on a farm.**

**Expected responses:**

- enables use of dryland for crop production - crop production possible in drier regions;
- increases crop yield/ quality - continuous water supply at critical times;
- supplements inadequate rainfall - crops grown during drought or dry seasons;
- extends the growing season - crops grown all seasons.

**Comments**

This question was poorly answered. Misconception was high on this question. Candidates stated the importance of water in plants than irrigation. Most candidates did not score marks because they failed to attend to the command words, discuss how.

**(c) Explain how minimum tillage contributes to the conservation of soil water.****Expected responses:**

- reduced soil area exposed to air/ reduces air circulation;
- less evaporation

**Comments**

This question was poorly answered. Most candidates failed to explain how minimum tillage contributes to soil water conservation, instead they defined minimum tillage. Some describe the advantages, such as reduce soil erosion, while other associated the concept of minimum tillage to irrigation.

**Question 3****(a) Define the following terms.****(i) Homozygous****Expected responses:**

- alleles having similar effect/ identical alleles in a loci

**Comments**

This question was poorly answered. Most candidate's definitions were incomplete. They referred to gene instead of alleles without mentioning their position on the chromosomes or similar effect for similar characteristics. A majority of the candidates gave examples instead of defining..

**(ii) Recessive****Expected responses:**

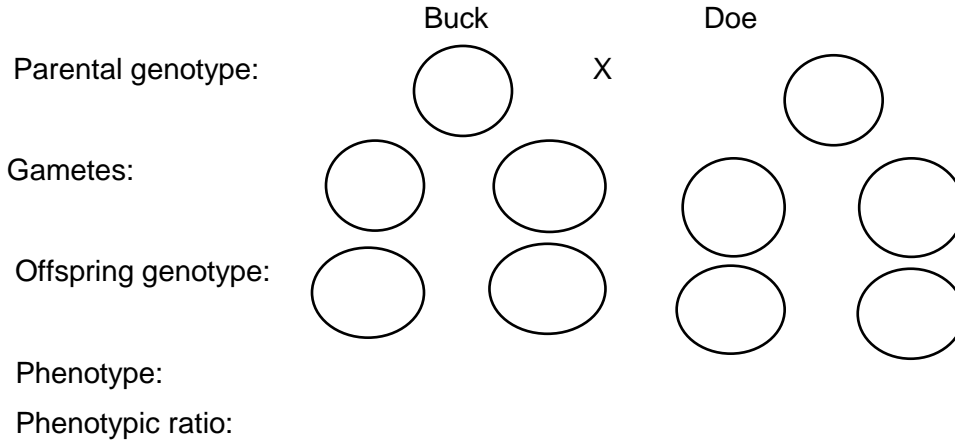
- allele that fails to express itself in a heterozygous gene pair

**Comments**

This question was poorly answered. Most candidates gave incomplete definition or responded using examples instead of defining.

- (b) Two heterozygous black rabbits were mated. The black allele (B) is dominant to white allele (b).

Complete the genetic diagram.



- (b) **Expected responses:**

	Buck		doe
Parental genotype	<b>Bb</b>		<b>Bb</b>
Gametes	<b>B b</b>		<b>B b</b>
Offspring genotype	<b>BB Bb</b>		<b>Bb bb</b>
Phenotype	<b>black black</b>		<b>black white</b>
Phenotypic ratio	<b>3: 1</b>		

**Comments**

This question was fairly answered. Candidates who did not score marks in this question are those who failed to understand heterozygous and those who failed on gametes, parental genotypes resulting in the error carried forward. Few of the candidates used their own letters instead of (B) for dominant allele and (b) for recessive allele from the question..

- (c) **Suggest two advantages to the farmer of using artificial insemination (AI) on cows.**

**Expected responses:**

- less chance of having injury to cow;
- know when calving is expected/facilitate record keeping.

**Comments**

This question was poorly answered. Most candidates did not relate the advantages to cows.

(d) Explain, with reasons, why a farmer would use embryo transfer in cows.

**Expected responses:**

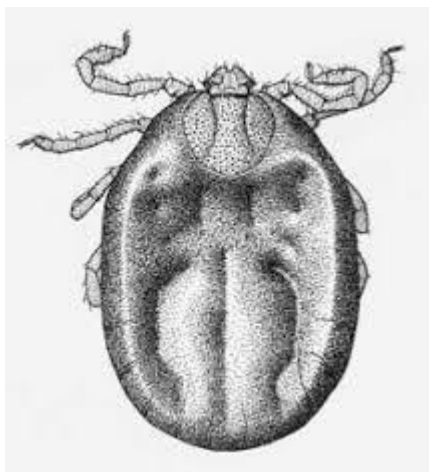
- supports genetic line which has difficulty reproducing / distant or lame donor cow could be used to produce embryos;
- embryos are harvested over time and stored even if the cow with desired traits dies the embryos could be available for use;
- develops disease free animals or breeding diseases could be easily controlled;
- to manipulate genetics / increases genetic process / frequency of desired matings / more offspring's are produced by desired donor cow over a short period of time;
- reduced expenses of keeping and maintaining a superior donor cow / cheaper to buy embryos than a cow;
- income could be generated by the sale of embryos

**Comments**

This question was fairly answered. Most candidates manage to get one mark as they were only making refer to donor cow injury, infertility, abortion but generally most candidate had no idea about embryo transfer, some candidates confused the concept of embryo transfer to AI.

**Question 4**

(a) Fig. 4.1 shows an external parasite.



**Fig. 4.1**

(i) Name the parasite shown on Fig. 4.1.

**Expected responses:**

- tick.

**Comments**

This question was well answered, except for few candidates who identity the tick as a mite/crab/weevil/crab.

**(ii) For which disease in cattle is this parasite a vector.****Expected response:**

- red-water / heart-water / gall sickness

**Comments**

This question was well answered, except for a few who responded by general statement like tick borne disease, brucellosis, red blood.

**(iii) State two pasture management practices that help control this parasite.****Expected responses:**

- burning; rotational grazing.

**Comments**

This question was well answered. Candidates who failed to score marks had misconception on crop rotation, zero grazing, strip grazing, and biological control.

**(b) Give any one control method for internal parasites.****Expected response:**

- deworming

**Comments**

This question was well answered. Candidates who failed to score marks had misconception on vaccination, dipping, injection and dosing gun.

**(c) A pasture has a carrying capacity of one cow per two hectares. It is divided into four paddocks. The area of each paddock and the cattle they contain are given in Table 4.1.****Table 4.1**

<b>Paddock</b>	<b>Number of cattle</b>	<b>Area of paddock (hectares)</b>
<b>X</b>	65	125
<b>W</b>	75	150
<b>V</b>	85	175
<b>Y</b>	95	200



(i) Calculate the stocking rate of paddock X.

**Expected responses:**

$$\frac{\text{Number of hectares}}{\text{Number of cattle}} = \frac{80 \text{ Ha}}{99 \text{ LSU}} = 0.808 \text{ Ha/LSU} \text{ or } \frac{\text{Number of cattle}}{\text{Number of hectares}} = \frac{99 \text{ LSU}}{80 \text{ Ha}} = 1.23 \text{ LSU/Ha}$$

**Comments**

This question was poorly answered. Most candidates score one mark due to omission of units.

(ii) Which paddock has the correct stocking rate?

**Expected responses:**

- W.

**Comments**

This question was well answered. Almost all candidates were able to identify paddock W a correctly stocked.

(d) Suggest the effects on a pasture of under grazing.

**Expected responses:**

- excessive growth of grasses/increasers/invasive plants/bush encroachment;
- loss of palatable species due to selective grazing;
- loss of palatability in grasses as they become fibrous/woody

**Comments**

This question was fairly answered, whilst common errors were, hiding of thieves, bushfire, snake, grass being tall than livestock and, a confusing decreases and increasers.

**Question 5**

(a) Fig. 5.1 shows the reproductive system of a cow.

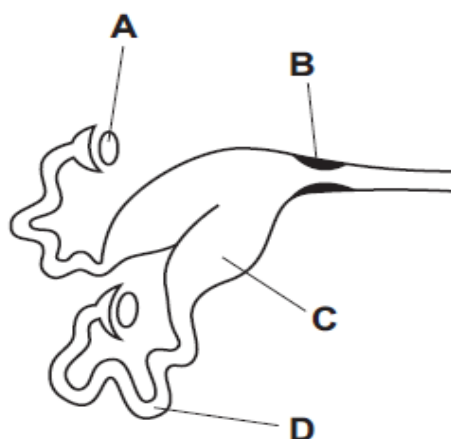


Fig. 5.1

(i) Name parts C and D shown in Fig 5.1.

**Expected responses:**

- C = uterus R womb
- D = oviduct / fallopian tube.

**Comments**

This question was poorly answered. Candidates confused the reproductive system of a cow with the digestive system of the cow and male reproductive system of the bull as a results marks were lost.

(ii) Give the functions of part A and B shown in Fig. 5.1.

**Expected responses:**

- A - produce ova; produce sex hormones/ oestrogen/ progesterone
- B – seals the uterus/ prevents entrance of pathogens / open to allow passage of semen / calf.

**Comments**

**A** - This question was fairly answered. Candidates had common errors, produces ovary, production of ovules, where fertilization takes place.

**B** - This question was poorly answered. Common responses that were not accepted include, allows sperms, prevent fertilization, closes vagina.

**(b) Describe the process of selective breeding used to improve hardiness in livestock.****Expected responses:**

- select cows with desired trait/hardiness; mate cows with a hardy bull;
- select/ repeat mating of off springs over many generations **ECF**

**Comments**

This question was poorly answered. Most candidates were describing cross breeding and artificial insemination. While others failed to state how selection was done in this case. Many candidates confused hardiness with resistance to diseases.

**(c) Explain why rations given to ruminants during gestation vary.****Expected responses:**

- increased nutrient levels; for actively growing foetus / complete development
- provided with all nutrients; for complete development/ milk production
- female builds body reserves; for calving

**Comments**

This question was poorly answered. Most candidates scored one over two, did not score maximum points as they failed to relate to increase of nutrients with the increase in the development of the foetus.

**(d) Discuss the reasons for weaning calves from their mothers.****Expected responses:**

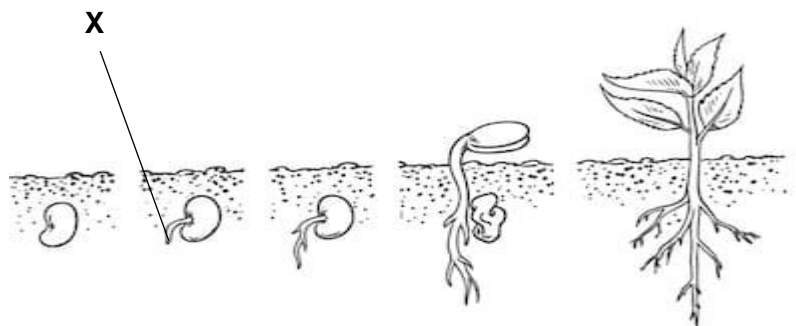
- Cow gain weight / builds body reserves to improve growth and development;
- drying off the cow in preparation for calving;
- to maximise milk production for market in dairy;
- to improve digestive system of the calf to improve / good development;
- prevent transmission of diseases from cow to calf such as mastitis;
- encourage early mating / oestrus.

**Comments**

This question was poorly answered. Most candidates failed to adhere to the common word "discuss" instead the candidates stated the general points with no discuss and that resulted in them scoring zero marks.

**Question 6**

(a) Fig. 6.1 shows the stages of germination.



**Fig. 6.1**

(i) Name part X.

**Expected responses:**

- radicle.

**Comments**

This question was fairly answered, although radicle was confused with root, shoot, plumule

(ii) What is the type of germination shown in Fig. 6.1?

**Expected response:**

- Epigeal.

**Comments**

This question was fairly answered, although other candidates did not score the mark for hypogeal germination. The spelling for epigeal was challenging to most candidates.

(b) State two reasons why germination is poor on clay soil.

**Expected responses:**

- less air/ oxygen / poor aeration;
- compacted / closely packed;
- low temperatures; poorly drained / high water content.

**Comments**

This question was fairly answered. Common wrong responses were no air, no nutrients, poor root penetration.

**(c) Discuss how organic matter affects soil quality.**

**Expected responses:**

- food for microbes to increase microbial activity;
- organic matter breaks down to improve soil temperature;
- forms humus to release plant nutrients;
- breaks down to humus to provide / improves soil structure by binding soil particles.

**Comments**

This question was poorly answered. Candidates did not discuss but stated points. While other candidates responded by give disadvantages of using organic fertilizer, encourages growth of weeds, soil acidity and increase in pests and diseases.

**(d) Explain why the nutrient content is low on sandy textured soils.**

**Expected responses:**

- large pore spaces; leads to high leaching / highly drained; leading to leaching;
- less organic matter; leads to poor fertility;
- low adsorption/ sand is inert; does not hold nutrients on its surface;
- highly eroded; leading to poor fertility.

**Comments**

This question was fairly answered, although candidates did not explain their points but could only describe the properties of sandy textured soils.

**Section B**

Answer any **two** questions from this section

**Question 7**

**(a) State the importance of sexual reproduction in animals and plants.**

**Expected responses:**

- variation/genetic diversity/hybrid; viable for longer / promote storage;
- reduce spread of viral diseases;
- seeds/ planting material not bulky;
- formation of seeds / fruits.

**Comments**

This question was poorly answered. Variation was the only popular response given. While common unacceptable response included, allows pollination, promote biodiversity, produces more plants

**(b) Describe asexual propagation of sweet potatoes.**

**Expected responses:**

- stem cutting/vines 25-45 cm;
- lower leaves / all leaves removed;
- vines inserted half way;
- at 45 degrees;
- vines in ridges;
- vines planted 30 -40 cm apart;
- ridges at 90cm apart

**Comments**

This question was poorly answered. The process was not well described with most candidates referring to the vines/stem cuttings as runners, leaves, tubers and rhizomes. While ridges were referred to as hills, furrows, mountains. It was also noted that the planting spacing, length of vines, and removal of leaves and planting angle was not known.

**(c) Explain how the inclusion of grass in a crop rotation may benefit the soil.**

**Expected responses:**

- rebuilds soil structure; decompose to improve fertility;
- breaks life cycle of pests/diseases;
- grass covers ground completely / grass roots bind soil particles to reduce soil erosion

**Comments**

This question was poorly answered. It was noted that the candidates were failing to adhere to the command word "explain" instead stated the benefits of including grasses in a crop rotation plan. Surprisingly a majority of the candidates associated grass with fixing of nitrogen in the soil.

**Question 8****(a) State how wooden posts may be preserved in creosote.****Expected responses:**

- Sap displacement/end diffusion; freshly cut posts put to stand in; creosote solution;
- Soaking method; wooden post are soaked in creosote for 3 days.
- Pressure method; insert logs in a chamber and heat them with creosote.

**Comments**

This question was poorly answered and very few candidates chose question 8. Methods were not stated and then describe how. Although it was noted that candidates were spraying, oiling and painting the poles with creosote.

**(b) Describe the construction of wooden fence suitable for handling cattle in a spray race.****Expected responses:**

- post and rail fence;
- wooden post are vertically secured into the ground/ using concrete;
- cross members fitted horizontal to vertical posts; with nails/wires;
- appropriate width of spray race at 1.5m – 1.7m.

**Comments**

Poorly done as most candidate describing the construction of a fence, common mistakes was including corner post, strut, droppers and barbed wire.

**(c) Discuss the advantages of different types of fencing.****Expected responses:**

- wire fence;
- easy/faster to setup as they come already made;
- durable / strong as they are galvanised;
- suitable for handling small livestock as they have small holes

**Comments**

This question was poorly answered as most candidates were either describing or stating the general functions of a fence (set out boundaries, keep in or out thieves, intruders, livestock) and those who understood the question were stating the right points instead of discussing them.

**Question 9****(a) State three uses of a farm budget.****Expected responses:**

- planning;
- estimating yield / income and costs / estimating / calculating expected profit or loss;
- decision making / comparing enterprises to select / making major business changes.

**Comments**

This question was fairly answered, common words which were expected include, calculate, estimate predict instead of want to know or see words which were mostly used.

**(b) Describe the three types of loans and their uses.****Expected responses:**

- Short-term loan – secured for operating some expenses, may run for the duration of agricultural productivity which is between 3-18 months.
- Intermediate / medium term loan – are repaid between 18 months and 5 years; are for financial assets such as machinery, equipment, breeding stock.
- long-term loans – are repayable over 5 years; are normally for constructing and developing farm structures such as buildings, buying land.

**Comments**

This question was fairly answered, although most candidates were lacking on the length of the repayment periods of the loans. Candidates who did not score marks in this question were those who referred to the types of loans as, shylock loan, revolving loan, bank loan, personal loan, collateral loan instead of long term, medium term and short-term loan.

**(c) Explain the impact of environmental risks on maize production.****Expected responses:**

- drought - lowers plant growth and yield;
- floods - leaches nutrients and washes away crops;
- fire - burns/destroys crops;



- storm - breaks plants/ stem lodging;
- diseases/pests - reduce growth, yield and quality;
- extreme temperatures destroy crops reducing yields.

### **Comments**

This question was poorly answered Poorly done: candidates were listing general risks, climate change, pollution, thieves, livestock feeding instead of explaining environmental risks. Even those who were able to identify the environmental risks did not explain them.

### **Comments on the question paper**

- A majority of candidates attempted all the questions as per the instructions.
- Very few candidates attempted Question 8, the optional essay question.
- The allocated time of 1 hour 30 minutes was adequate for writing this paper.

### **Candidates had no challenges of time management.**

There was no common misinterpretation of the rubric.

The 2022 candidates performed poorly than the comparable cohort of 2019.

### **Advice to Agriculture Teachers**

- The assessment covers all sections of the syllabus, from the first unit (general agriculture) up to the last unit (agricultural economics). All questions were fairly attempted by the candidates.
- Emphasis should be made on description of experimental procedures and processes in chronological order.
- Candidates should be taught and tested on all levels i.e. in reference to the command words used in the syllabus.
- Further emphasis should be made on the appropriate usage of technical terms used in agriculture when explaining concepts. In most cases, where technical terms are not used appropriately, candidates' responses become unacceptable.
- The performance of candidates in most sections has improved compared to previous years. Further focus is necessary to ensure all sections of the assessment syllabus are sufficiently taught.
- A further need to relate practical work to theoretical facts remains key for understanding of some concepts.
- Teachers should make use of Examination Reports from the previous years as they teach their candidates.

**EGCSE AGRICULTURE****Paper 6882/03****Practical Activities****Practical activities**

This paper tests the practical skills, which is objective C of the syllabus. Even this year practical were developed by the Examination Council of Eswatini (ECESWA). Each practical had two sections: practical assessment sheet and process skills. The practical activity was assessed by the teachers in the Centres using the descriptors provided by ECESWA. The process skills were written as an exam paper in Centres and were marked by the teachers in the Centres. A majority of the Centers were able to submit their practical to ECESWA on time.

All Centres are encouraged to submit their work within the stipulated time.

**Registers**

Almost all Centres submitted their registers. Even this year registers were incorrectly filled by teachers. In some registers there were no page totals, dates, invigilator's name and signature. In some Centres the registers showed only the sampled students in the column for scripts submission.

**Expected:** All students who had submitted their practical work must be indicated in the registers. Teachers are reminded to complete the registers, sign them, show date of completion, as well as the name of the teacher responsible.

**Teacher's File**

This year some Centres submitted the teacher's file, however some Centres did not submit this file. In some centres the teacher's file had the following challenges:

- Student cards were in the teacher's file
- Pictures in the teacher's file

**Expected:** All Centres are expected to submit the teacher's file. It should have the following:

- Diaries for the Centre if needed by the practical. This diary should give a guide on what is expected to be seen in the candidates' diaries. It should have correct dates.
- Number of hens in the Centre and the number of pens
- Results for soil analysis test

The teacher's file is important as it guides the moderation with the correct dates for activities in each Centre, it also highlights challenges faced in the Centres. It also helped to explain deviation from the marking guide given by ECESWA.

The teacher's file should be according to the instructions for the practicals and questions from the process skills in that particular year.

### **Sampling**

This year some Centres had incorrect samples. Teachers are expected to sample a wide range of scores: top students, average students and low students. They are to indicate with asterisks (\*) the sampled candidates on the Summary Sheet. Packaging of the student files should be according to the scores of the candidates, with the top students at the top and low students at the bottom. Centres are expected to sample the following number of candidates as indicated in the syllabus:

- Below 10: all candidates
- 11 – 50: 10 candidates
- 51- 100: 15 candidates
- Above 100: 20 candidates

Practicals that are not sampled should be submitted in a separate envelope from the sampled work and the envelope should also indicate that these are not sampled work.

### **Student Card**

All Centres submitted sampled students' cards. In some centres however, the student's cards were not placed in the candidate's file. Some were found in the teacher's file others were loose not fasten in the individual file. In some Centres the student cards lacked the marks for the process skills, which made the marks in the Summary Sheet to be incorrect. Some student card had decimals.

**Expected:** The student cards must be placed inside the student file and must be on top of the work. Whole numbers should be used when filling the individual student card. Marks obtained by the student on the process skills must be included on this card.

Teachers are encouraged to ensure all candidates write all three process skills and do all three practicals as they are all needed in the computing of the final mark of the candidate. Teachers are also reminded to include the process skills mark in the first column of the student card. Teachers are also reminded to place the student cards on top of the work done.

## Summary sheet

This year there was an improvement on the summary sheets. However, the following challenges were still noted on some Summary Sheets:

- Some Centres had decimals
- Some Centres had totals which were not correlating with the marks awarded (incorrect adding)
- Few Centres had no Centre details, that is Centre name or number
- Candidates with no marks or indication of being absent
- No teacher's details (name or contact number)
- No principal stamp or signature
- Loose sheets
- In some Centres it was difficult to read numbers, as some teachers would write on top of another number or the numbers not clearly written
- Process skill marks not included
- Some Centres did not have asterisk (\*) for the sampled candidates

Centres are encouraged to indicate in the Summary Sheet if a student is absent or missing it should correlate with the register. They should thoroughly check if the marks are completed, and the totals are correct.

No decimal should appear on the Summary Sheet. All Summary Sheets should have the teacher's detail, principal signature and school stamp.

## Practical Tasks

The practicals received this year were as follows:

- Seedling Production
- Layer Management
- Soil Analysis

All Centres were able to do all three tasks. Centres are also encouraged to use the vegetables that are stated in the syllabus.

## **Teacher's comments**

Even this year there was a decline in teacher's comments. Some Centres had no teacher's comments at all. Those with comments were of lower quality. Comments that were provided included the following: good, fair or excellent. In some Centres the comments were just based on one descriptor. Teachers are encouraged to make comments as they serve as a justification for the mark awarded.

**Expected:** Teachers should make specific and detailed comments and they must be relevant for the practical.

## **Evidence**

This year showed an improvement on the evidence given by Centres. However, the quality of the evidence given was low. Some Centres submitted diaries that are scanty, and some were not marked. Most diaries were lacking critical information and observations were not clearly stated. Some candidates were confusing activities with observations. In some Centres, some of the events were not logical e.g. opening planting rows before broadcasting NPK fertilizer. Centres are encouraged to write detailed information pertaining all activities and observations. Most diaries had detailed information on land preparation to planting the seeds on the seedbed and scanty information on the management practices. This year more Centres had pictures as evidence.

## **Process skills**

### **1. Diaries**

Candidates were expected to carry out some activities and as well as to make some observations as they carried out the activities.

Comments: Most candidates were able to carry out the activities and the dates for the activities were indicated. In some Centres the activities were not well detailed e.g., basal dressing, lacking spacing, variety used, litter management to mention a few. However, most candidates failed to make relevant observations. In some Centres the observation section was left blank or with few observations noted. Centres are encouraged to write detailed activities showing all management practices expected for that particular enterprise with logical dates. They are also encouraged to make observations based on the activity at hand.

### **2. Calculations**

Centres were expected to show clear formula on calculation where need be, show working and use the correct units. Some of the calculations should correlate with the relevant data given to predict the future outcomes.

Comments: Some Centres had challenges with calculations. In some Centres working was not shown but only the answers, whilst in other Centres wrong units were used. Centres are encouraged to state the formula (if need be), show working and use relevant units.

### **3. Tables**

Candidates were expected to complete given tables using relevant data from their diaries or data given on the question paper.

**Comments:** In some Centres the tables were left blank or were incomplete. Some of the tables were without units e.g (%) for the laying percentage.

Centres are encouraged to fill all the needed details in the tables with the correct units.

### **4. Graphs**

Comments: Drawing of graphs continued to be a challenge for some Centres. Some graphs had incorrect scaling making it difficult to plot. Some of the axes were not well labelled, plotting was mostly incorrect and most graphs had no titles. In some Centres the graphs were not drawn at all. Centres are encouraged to draw graphs with titles, label all axis and use correct scale in order to plot correctly.

### **5. Predictions**

Centres were expected to draw predictions using information on the graph. Comments: This was the most challenging section to most Centres. Most candidates were unable to put up the relevant predictions. Centres are encouraged to predict the performance of the crops or animals based on the observations and measurements obtained.

### **Marking of processed skills**

Centres were expected to allocate marks according to the facts given by the candidates. Comments: Most Centres allocated marks that did not tally with the facts written by the candidate. In some Centres marks were allocated without ticks, whilst others had ticks without marks being allocated. Some Centres allocated marks more than the expected mark for the question. Teachers are encouraged to mark all the work written by candidates and award marks according to the facts given and using the mark scheme sent by ECESWA.

### **General comments**

The number of absent students was low this year. Teachers are encouraged to grade and submit the work done by the candidates.

### **Cover letter**

All absent candidates and Summary Sheets with zeroes should be accompanied by a covering letter with a valid reason. This letter should be checked and signed by the principal.

### **Packaging**

Few Centres still fail to use simple folder and strings for their packaging. In some Centres, they submitted loose materials in the individual candidate file. The individual files should have strings to avoid the candidate's work being misplaced or mixed-up during handling and moderation. Very few Centres had no files at all. In some Centres paper 3 and 4 were packed in the same candidate's file. All Centres are encouraged to submit their work in simple folders fastened secured with strings. Centres are discouraged to bind their work.

### **Recommendations**

Teachers who had just joined the profession are encouraged to consult ECESWA regarding the expected procedures for assessment. It is also recommended that teachers continue to share ideas within the department to minimize variation in the standard of work submitted by the Centres. Teachers are still encouraged to respond promptly when clarity is required regarding their course work.

## EGCSE AGRICULTURE

Paper 6882/04

Project Work

### General Comments

This paper tests students on practical skills, which is objective C in the syllabus. There was a slight drop in the quality of the work presented in this paper, compared to last year, 2021.

### Appropriateness of the projects chosen

Most of the topics chosen were relevant and specific; however, very few topics were irrelevant. This year, there was an improvement in the quality of topics chosen. Most Centres presented projects that were concentrated on vegetables and livestock and there was no spread/ distribution of topics across the syllabus.

Teachers should ensure that topics are within the scope of the syllabus content.

### Teacher supervision

This year, there was a slight drop in teacher supervision, compared to the previous year, 2021. The performance of the candidates this year declined, and teachers should supervise the candidates throughout the project (both practical and write-up aspect of the project).

### Selection of questions (Hypothesis)

The hypothesis must show the null and alternative hypothesis. Teachers are advised to assist candidates in writing a hypothesis with two levels, which are brief and specific. This year, some Centres had hypothesis which was one sided. A few of the Centres this year wrote the hypothesis as paragraphs, others wrote hypothesis for each objective, while others showed the hypothesis with 3 levels. Teachers are advised to ensure that learners write two hypothesis (null and alternative) only, for the whole project. The hypothesis should be neutral, and it should contain all the variables and the parameters.

### Objectives of the study

A few Centres still presented objectives which were not measurable. Some Centres presented the same objective measuring one variable three times. Teachers are advised to compare variables being investigated, especially with experimental projects, and ensure that they have a stem. The project must have objectives. Survey projects should have research questions.



## **Plan and principles**

This year, there was a slight decline in the presentation of the project plan. Most Centres still presented a scanty plan. The plan should be detailed, showing research design, materials used and their uses, procedures (showing dates when work was done), layout, randomization, replication, population and sampling, data collection, data analysis and data presentation format.

Some Centres presented a procedure which was shallow and without dates when work was done, materials without uses. Some Centres presented a plan with the procedure but without data collection, data analysis and data presentation format. Others were confusing data analysis with data presentation format.

## **Handling of evidence**

This year, there was a slight decline this section. There were few Centres that presented the data with tables which were interpreted, graphs labelled, with proper scaling and drawn in lined papers. Tables have to be labelled and interpreted, graphs drawn on graph paper. The key is always necessary.

Some Centres still presented a shallow data. Tables and graphs for some Centres were still not labelled and without brief interpretations, there was very little variation in data presentation i.e., tables, pie charts, histograms used for different objectives. Some Centres did not present data for all objectives. Very few others did not have data at all. Some Centres presented unrealistic data in this section.

Teachers are encouraged to ensure that candidates do the investigatory practical and ensure that data is properly collected.

## **Ability to make deductions**

This year, there was an improvement in citations in this section. The major challenge of this section is that a majority of the Centres did not justify or express their results and give reasons for the differences. This section is the core of the project. It should give a clear picture and understanding of the whole project. The deductions should cover each of the objectives under study.

## **Summary, Conclusion and Recommendations**

Most Centres had a summary based on the whole project, conclusion and recommendations. However, a few Centres excluded this component in their projects.

### **Summary**

Very few Centres did not include findings of the study in the summary.

## **Conclusion**

Most Centres were able to relate their conclusion with the hypothesis, however a few Centres still had a challenge in relating the conclusion with the hypothesis.

## **Recommendations**

There was a slight improvement in the presentation of recommendations this year by most Centres. Candidates are expected to recommend based on the findings of the study; not on problems encountered during the study.

## **Limitations**

Limitations are problems encountered during the study. This section continued to be a challenge.

Limitations were listed without explaining how they affected the study (assessment) and suggesting possible solutions to them. Some Centres were writing this section in future tense while some omitted this section completely, resulting in candidates losing marks. Centres are encouraged to ensure that candidates identify, assess, and suggest improvements to at least five limitations per project.

## **Presentation and originality**

Most Centres had all the components of the project. A few Centres presented work which was not original. Very few projects were beyond the scope of the Candidates. Some presented scanty work. Teachers must refrain from using statistical packages e.g. SPSS, which are beyond the level of the candidates. Candidates must use averages, totals, percentages etc. The project must include all the components of an investigatory project. The Literature Review is still an important component of the project.

## **Quality of practical work**

Most Centres did not submit evidence in the form of diaries or pictures. Teachers are encouraged to ensure that learners attach adequate evidence of work done in the form of pictures and detailed diaries for the entire project. Pictures should show the work done, showing the learner while doing the practical.

## **References**

This section should be written based on the scientific principles to maintain standards. A majority of the Centres had a poorly presented list of references. Most Centres were unable to properly present the references. References should be in line with the Literature cited in the candidate's project work.

## General Comments

The standard of projects has slightly dropped. Some Centres were submitting loose projects without files. A few projects were incomplete with one or two chapters. Absent students should be accompanied by a covering letter and candidate's work must be recorded up to the period when he/ she left school.

Teachers are discouraged from awarding zeroes to candidates when they have been in the Centre participating in learning. Proper sampling should be done across the mark range. Proper calculations of marks should be done. Sampled candidates should be indicated with an asterisk in the summary sheet. Whole figures should be written in summary sheets, without decimals. Punching and stapling of MS1 is unacceptable. Marks should be entered and shaded correctly in the MS1. In the case of an absent student, an A should be written and shaded, using HB pencils only and not ink, in the MS1.