SOUTH EAST EDUCATION DIVISION

2024 MALAWI SCHOOL CERTIFICATE OF EDUCATION MOCK EXAMINATIONS

AGRICULTURE PAPER I

PROVISIONAL MARKING KEY

1. a. - have strong walls.
   - dry and warm
   - sited on raised ground
   - well roofed/thatched to avoid leaking
   - well ventilated
   - easy to clean
   - well lit (have enough light)
   - large enough to accommodate the number of animals comfortably
   - have suitable isolations pens for sick or injured animals

(1 mark for each point)

b. - Creates job opportunities and economic activity for citizens.
   - Supplies raw materials to local agro-based industries.
   - Enables an area to get commodities that it does not produce.
   - Promotes efficient allocation of economic resources such as land, labour and capital

(1 mark for each point)

c. - Age of the grass at the time of cutting**(1 mark)**/younger grasses are more nutritious, more palatable and more digestible than mature plants**(1 mark)**.
   - Leafiness of pasture**(1 mark)**/ grasses with high leaf: stem ratio are more digestible and palatable**(1 mark)**
   - Moisture content**(1 mark)**/hay with high moisture content can rot or develop moulds **(1 mark)**
   - Presence of foreign materials**(1 mark)** /impurities such as stone, weed, pieces of wire, poisonous weeds reduce the quality of hay**(1 mark)**
   - Method of storage**(1 mark)** /shelter storage reduces the risk of over-drying hay/leak-proof storage facilities reduce the risk of hay dampness and rotting**(1 mark)**
   - Weather conditions**(1 mark)** / sunny weather facilitates good hay preparation**(1 mark)**

2. a. – Friesian (Holstein)
   - Guernsey
   - Jersey
   - Brown Swiss
   - Fleckvieh
   - Aryshire **(1 mark for each)**

   b. – Large udders
   - Wedge/triangular shape
   - Thin bodies
   - Large abdomen
   - Long lean necks **(1 mark for each)**

   c. Wood ash contains calcium and potassium which replaces hydrogen ions **(1 mark)** /hence reducing soil acidity (increasing soil pH) **(1 mark)**

3. a. – maturity of the mushroom
   - market requirements
   - marketing
   - plucking
   - storage
   - cleanliness **(1 mark for each)**

   b. - Setting traps
   - Keeping the surrounding clean
   - Keeping cats **(1 mark for each point)**

   c. i. Sub-surface drainage **(1 mark)**

   ii. – It does not reduce agricultural land.
   - It does not interfere with field operations.
   - It does not promote soil erosion**.** **(1 mark for each point)**

4. a. - Through drinking
   - Bound water (water contained in feeds)
   - Metabolic water (produced in the animal's body) **(1 mark for each point)**

b. - Type of animal(1 mark)/ruminants can digest roughages but non-ruminants cannot.
- Age of the animal(1 mark)/young animals need more protein in their feeds for growth and maintenance.
- Body size of animals(1 mark) /small animals require less feed than large animals(1 mark)
- Physiological condition of the animal(1 mark) healthy and pregnant animals eat a lot of feed.
- The purpose for which the animal is kept (level of production) (1 mark) /highly productive animals and draught animals required plenty of feed rich in proteins and energy(1 mark)
- Climatic conditions(1 mark) / animals need a lot of proteins when temperatures are high to achieve optimum growth(1 mark)
- Cost of the feed (1 mark) /expensive feed should to highly productive animals in order to recover the cost.
- Palatability of the feed(1 mark) /The feed should be acceptable to the animal to stimulate appetite and increase intake(1 mark)
- Digestibility of the feed(1 mark) /feed should be easily digested so that its nutrients can be released into the blood stream and be utilized by the animal's body(1 mark)
- Feeding rate(1 mark) /animals should be give an adequate amount of feed to avoiding wastage or starvation(1 mark)

c. - To help them live long and have a longer productive life
- To produce more products to meet the demands of the growing population
- To maintain their body to avoid weight loss
- To maintain their health to reduces production cost because the farmer spends very little on drugs
- To enable the produce healthy young ones
- To provide them energy to work very efficiently when used as draught animals
- To enable them to give high market value when sold
- To enable them provide high quality products **(1 mark for each point)**

d. i. Consumer cooperatives **(1 mark)**
ii. Savings and credit cooperatives (SACCO) **(1 mark)**

5. a. - Low agricultural production since most females perform farm operations manually hence work is not done times and efficiently
- Low farm income due to reduced production which results shortage of surplus for sale
- Food insecurity due to low farm yields.
- Increased poverty due to low income levels in the farming communities

- Low rate of national development due to reduced agricultural output since government cannot collect enough taxes

(1 mark for each point)

b. At Break-even point;

Price = $\frac{\text{Fixed Cost + Variable Costs}}{\text{Yield}}$ **(1 mark)**

= $\frac{\text{K125,000.00 + K175,000.00}}{\text{2000kg}}$ **(1 mark)**

= $\frac{\text{K300,000.00}}{\text{2000kg}}$ **(1 mark)**

= K150/kg **(1 mark)**

6. a. – It reduces soil erosion**(1 mark)**/hence maintains soil nutrients**(1 mark)**/

- It reduces water lost from the soil**(1 mark)**/hence crops are able survive even during dry spells**(1 mark)**
- It maintains soil structure**(1 mark)**/hence reducing the risk of erosion during rain season**(1 mark)**

b. .i. Bloat **1 mark)**

ii. Accumulation of gases in the rumen due to rapid fermentation **(1 mark)**

iii. – Exercising the animal by walking it around

- Giving the goat a laxative e.g. Epsom salts
- Insert trocar and cannula through the rumen to all the gas to escape

(1 mark for each point)

7. a. Garden sprayer **(1 mark)**

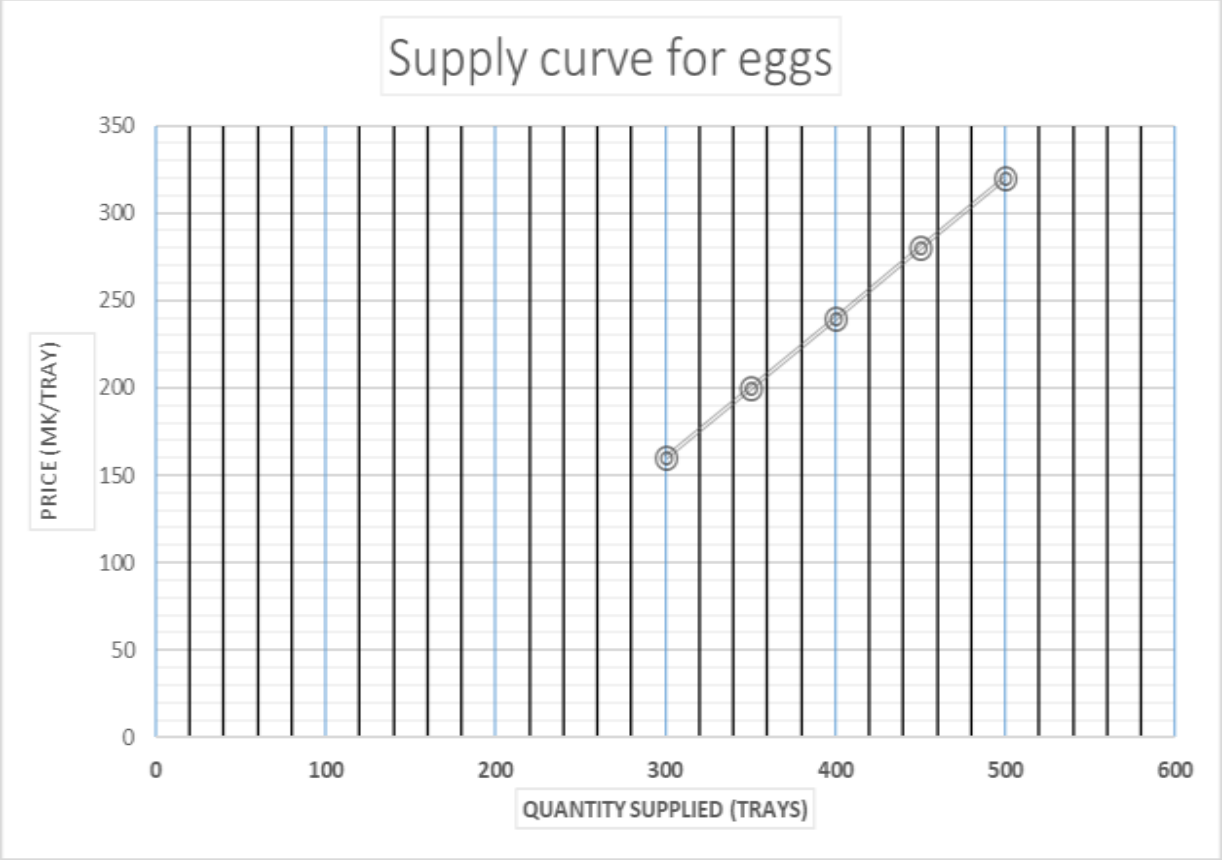
b. – Never spray against the wind direction to avoid drift to unintended areas.

- Wear protective gear such as masks, goggles or overalls when operating the sprayers.
- Wash your body and clothes thoroughly after use.
- Do not wash spraying equipment in any water source.
- Keep proper record of all chemical applications.
- Store chemicals away from food reserves and children. **(1 mark for each point)**

c. Human power **(1 mark)**

d. - It is slow.
- Can get tired.
- Can be affected by weather.
- Can fall sick.
- Can be expensive when high wages are demanded.
- Can be moody and even start a fight.
- Cannot handle large volumes of work.

8. a.



(4 marks)

Mark allocation

- ***1 mark for correct labelling on the price variable***
- ***1 mark for the correct on the quantity demanded variable***
- ***2 marks for correct plotting of the coordinates (1 for correct coordinates, 1 for joining the coordinates)***

b. Price elasticity of supply = $\frac{\%\text{ change in quantity supplied}}{\%\text{ change in price}}$ **(1 mark)**

$\frac{\text{initial quantity} - \text{new quantity}}{} \times 100$

$$= \frac{\text{new quantity}}{\frac{\text{initial price} - \text{new price}}{\text{new price}} \times 100}$$

$$= \frac{\frac{(400 - 350)}{400} \times 100}{\frac{(240 - 200)}{240} \times 100}$$ **(1 mark)**

$$= \frac{12.5\%}{16.67\%}$$ **(1 mark)**

= 0.75 **(1 mark)**

c. Inelastic supply **(1 mark)**

9. **a.** - The cost of buying and keeping male animals is eliminated.
   - Transmission of sexually transmitted diseases is reduced since there is no mating.
   - The sperms can be stored for some time and used when required.
   - Semen from one male animal can be used to serve many females.
   - It is easy to plan the breeding programme.
   - Semen from heavy males can be used serve small females which would be difficult under natural circumstances.
   - It helps in maintaining accurate breeding and calving records.
   - The semen can be used even after the death of a particular bull.

(1 mark for each point)

b. i. It gives the soil time to rest **(1 mark)** hence allowing the broken structure to recover**(1 mark)**

ii. It helps in maintaining soil cover **(1 mark)** /hence reducing the impact of raindrops on the soil**(1 mark)**

10. a. .

i. Work out the germination percentage.

Germination % = $\frac{\text{number of seeds germinated}}{\text{number of seed planted}} \times 100$ **(1 mark)**

= $\frac{180{,}000}{200000} \times 100$ **(1 mark)**

= 90% **(1 mark)**

ii. Seed rate = $\frac{\text{expected plant population per hectare}}{\text{seed size x purity \% x germination \%}}$ **(1 mark)**

= $\frac{2{,}000{,}000/\text{hectare}}{600{,}000/\text{kg} \times 85\ \% \times 90\ \%}$ **(1 mark)**

= 4.36kg/ha **(1 mark)**

b. i. producing pure lines **(1 mark)**
ii. producing new hybrid varieties **(1 mark)**

11. - Deforestation and clearing of land for settlement and cultivation(1mark) exposes soil to erosion (1mark)

- Overstocking and overgrazing due to high population(1mark) destroy land cover and expose soil to erosion(1mark).
- Cultivation of marginal lands such as steep slopes and river banks due to land scarcity (1mark)/encourages soil erosion. (1mark)
- Increased soil pollution(1mark) due to increased volumes of industrial wastes. (1mark)
- Over cultivation of land due to land scarcity(1mark) causes destruction of soil structure and loss of soil fertility(1mark)
- Over-exploitation of forest for domestic use (1mark) depletes the forests and exposes the soil to erosion. (1mark)

(1 marks for each point)

12. - It increases yields**(1 mark)**/production technologies such as the use of machines, fertiliser, commercial

feeds, etc enables farmers to produce high quality food to be available most of the times(1 mark)

- It reduces post-harvest losses(1 mark)/food storage technologies such as silos enables people to keep food for a long time(1 mark)
- It improves nutritional content of food(1 mark)/fortification improve nutritional quality of foodstuffs to meet the dietary needs of consumers(1 mark)
- It helps in food processing(1 mark)/processing and packaging technologies increase the shelf-life of food products(1 mark)
- It promotes efficient food distribution(1 mark)/efficient road network and other infrastructure can promote fair distribution of food so that all parts of the country1 mark)
- It reduces food wastage(1 mark)/food packaging and labelling technology reduces food wastage at point of consumption by providing clear expiry date labels and clear storage and preparation instructions(1 mark)
- It increases profits(1 mark)ICT helps farmers in better farm management leading to high income or profits which can be used to buy food for the family(1 mark)

13. - Achieve crop and product uniformity (1 mark)/uniformity can be in terms of fruit size, germination time, growth rate, flowering time, crop height, maturity time, etc. (1 mark)

- Promote dwarfness in crops(1 mark)/to reduce plant lodging in crops such as maize and rice(1 mark)/ to make harvesting easier in fruit trees(1 mark)
- Increase biomass of the plant (1 mark)/crops should be able to produce and retain a high amount of vegetative matter through increased growth rate, greater plant vigour and faster recovery after cutting or grazing(1 mark).
- Improve partition(1 mark) /crops should be able to divert manufactured food to the desired harvestable parts of the plant(1 mark)
- Increase crop resistance to pests and diseases(1 mark)/ crops should be able to give high yields even in the presence pathogens and insect pests(1 mark)
- Improve seasonal adaptability (1 mark) /the growth and maturity of crops are matched with the length of the growing season in order for crops to fully utilise the growing season(1 mark).
- Increase the crops' tolerance to harsh environmental conditions(1 mark) /crops are made to survive and give high yield even in poor conditions such as droughts and waterlogging(1 mark).

END OF PROVISIONAL MARKING KEY