4.15 AGRICULTURE (443)

4.15.1 Agriculture Paper 1 (443/1)

1.	- Date first symptoms were noticed; - Symptoms noticed; - Disease diagnosed/suspected; - Drugs used to treat the diseases; - Cost of treatment; - Remarks; - Date of treatment; - Animal affected; 4 x ½	(2 marks)
2.	- Increase soil aeration; - Improve water holding capacity; - Increases soil nutrient content; - Provides humus/food and shelter for micro-organisms; - Binds soil particles together/improves soil structure/controls soil erosion; - Buffers soil pH; - Reduces toxicity of plant poisons; - Improves soil temperatures; - Increase water infiltration; 4 x ½	(2 marks)
3.	- Sprinklers; - Water pumps; - Pipes; - Filters; 4 x ½	(2 marks)
4.	- Holds competitive agricultural shows/exhibitions; - Encourages breeding and importation of pure breeds of livestock; - Encourages and assists in official milk recording scheme; - Organizing national ploughing contests; - Publishing a monthly journal; - Organizing the running of young farmers clubs; - Awarding bursaries for local and overseas students; - Organizing tours for its members; - Organize national tree planting; - Organize national and international exchange programmes 4 x ½	(2 marks)
5.	Information found on delivery note. - Date of delivery; - Quantity and type of goods delivered (particulars); - Particulars/Item(s) delivered; - Person who receives the goods/signature of receiver; - Conditions in which goods are received; - Delivery note serial number; - Person who deliver/from; - Signature of the receiver; 4 x ½	(2 marks)

6.	Implements for primary cultivation. - Jembe or fork jembe/hoe; - Ox-plough; - Disc plough; - Mouldboard plough; - Rotary cultivator; - Subsoiler; - Chisel plough. $4 \times ½$	(2 marks)
7.	Factors influencing soil formation. - Parent rock/bedrock. - Climate; - Topography; - Time; - Living organisms/Biotic. $4 \times ½$	(2 marks)
8.	Importance of ridging in potato production. - For expansion of tubers; - To conserve soil moisture; - For easy harvesting; - To prevent soil erosion; - To improve soil drainage; - To prevent greening of tubers; 4 x ½	(2 marks)
9. (a)	Thinning is the removal of excess seedlings from the seedbed while rogueing is removal and destruction of diseased or infected plants. (Mark as a whole)	(1 mark)
(b)	Nursery bed is a small piece of land where small seeds are raised into seedlings before transplanting while seedling bed is a special type of nursery which receives excess seedlings from the nursery bed after pricking out. (Mark as a whole)	(1 mark)
10.	Methods of weed control. - Chemical method/use of herbicides; - Uprooting; - Biological method; - Cultural method; - Legislative; - Slashing/mowing; - Clean seedbed preparation; - Early planting; - Crop rotation; - Mulching; - Use of cover crops 4 x ½	(2 marks)

11.	Causes of crop disease. - Fungi; - Virus; - Bacteria; - Poor weather conditions; - Lack of essential elements/nutritional disorders; 4 x ½	(2 marks)
12.	Importance of land title deed. - Used to secure credit facilities for land development; - Land disputes are minimized; - Encourage farmer to carryout long term investment on the land; - Enables owner to lease the farm and thus get extra income; - Provide security of ownership; 4 x ½	(2 marks)
13.	Agents of erosion. - Water; - Wind; - Human activities; - Animals; - Ice; 4 x ½	(2 marks)
14.	- Forage has high dry matter content; - Has high cellulose content; - High lignin, tannin and silica which are indigestible; - Has low crude protein content; - Has low leaf : stem ratio; - Has low dry matter digestibility; 4 x ½	(2 marks)
15.	Agricultural practices that pollute water. (i) Use of inorganic fertilizers; (ii) Use of excess pesticides; (iii) Over cultivation; (iv) Over grazing; (v) Cultivation along river banks 4 x ½	(2 marks)

SECTION B (20 marks)

16.	(a) Nitrogenous / straight fertilizer.	(1 mark)
	(b) It neutralizes soil acidity;	
	• Neutral pH; acidity produced by ammonium ions is counteracted by calcium carbonate which is a liming material.	(1 mark)
	• It raises /increase soil pH.	
	• It has a liming effect.	
	(c) If 20kg N requires 100kg CAN ü	
	50kg N requires: $\frac{100\text{kg of CAN} \times 50\text{kg N}}{20\text{kg N}} = 250\text{kg of CAN ü}$	(1 mark)
		(1 mark)
	$\frac{250\text{kg}}{50\text{ka}} = 5\text{ bags ü}$	(1 mark)

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(a) Shading; (1 mark)

(b) Protects seedlings from direct sunlight;
Protects seedlings from heavy rainfall which damage seedlings / prevents splash erosion;
Conserve soil moisture/reduces evaporation; (2 marks)

(c) - Should be laid along North/South orientation;
- Should allow in sunlight early in the morning and late in the evening; 1 x 1 (1 mark)

(d) Raised nursery bed; Tree nursery; 1 x 1 (1 mark)

18.

(a) Root nematode; 1 x1

(b) Root swells/formation of root galls/knots;
Wilting of crop even when moisture is adequate;
Retarded growth;
Discolouration of leaves;
2 x1

(c) - Crop rotation;
- Use of nematicides; 2 x 1
- Fumigation of soil;
- Soil solanisation;
- Closed season;
- Planting resistant varieties; (5 marks)

19.

(a) Consumable goods inventory 1 x 1 (1 mark)

(b)

MWAMUZI FARM

		RECEIPTS			ISSUES	
DATE	COMMODITY/ ITEM	QUANTITY	DATE	ISSUED TO	QUANTITY	BALANCE IN STOCK
7/7/18	DAP fertilizer	20 bags (50kg)				20
21/7/18	DAP fertilizer	20 bags (50 kg)				40
			28/07/17	Gardener	8 bags DAP	32

(3 marks)

(c) It provides information used for drawing Profit and Loss Account and Balance Sheet. (1 mark)

(4 marks)

SECTION C (40 marks)

20.	(e) Risks and uncertainties in farming. (i) Fluctuation of commodity prices. (ii) Physical yield uncertainty where the farmer does not know how much to expect. (iii) Ownership uncertainty. Farmer lose produce through theft fire, death or change in government policy. (iv) Outbreak of pests and diseases which affect expected outcome. (v) Sickness and injury uncertainty. Farmer affected lose ability to work due to sickness or injury. (vi) New production technique and uncertainty. The farmer may not be certain as to whether technology is as effective as the previous one. (vii) Farmer investing in machinery which may become outdated (obsolete) within a short time. (viii) Natural catastrophes. Things like floods, drought, earthquakes, storms and strong winds may destroy the crops. 7 x 1	(7 marks)
	(b (i) - Results to failure in seed germination of seeds; - Results to restricted root development; - Results to moisture stress which reduces fruit weight; - Slow growth rate; - Reduced rate of photosynthesis; 3 x 1 (ii) - Slow growth rate of crops due to slowed photosynthesis; - High incidence of disease infection to crop e.g. late blight. - Lowers the quality of tomato fruits. 3 x 1	(3 marks) (3 marks)
	(iii) • Agent of soil erosion carrying top fertile soil reducing nutrients. • Causes lodging and damage to crops. • Increases rate of evaporation from soil leading to water loss. • Increases spread of pests and disease attack. 3 x 1 (c) Advantages of Tillage as a mechanical method of weed control. - Cheap therefore a good option for small scale farmers life i.e. economical. - Tillage opens up soil allowing infiltration of water to occur and thus minimize soil erosion. - During tillage, earthing up is done which encourages root growth. - During tillage, crop residue is incorporated into the soil to form organic manure. - Improves soil aeration. - Exposes soil borne pests and disease agents. 4 x 1	(3 marks) (4 marks)

21.	(a) Planting of maize in the field. - Plant suitable varieties; - Plant early at onset of rain/dry plant; - Plant at 2.5cm to 10cm depth; - Spacing at 20cm to 30cm by 75cm to 90cm; - Apply DAP (100-150kg per ha/phosphatic fertilizer at planting; - Apply a handful of well decomposed manure per hole; - Plant at 25kg seed per hectare. - Place one or two seeds per hole; - Plant by hand or machine planter; - Cover the seeds with soil; 7 x 1	(7 marks)
	(b) Factors determining spacing crops (i) Type of machinery used; use of machines require wider space; (ii) Soil fertility; fertile soil – closer spacing; (iii) Type of beans/varieties of beans; spreading beans require wide spacing; (iv) Moisture availability; High rainfall – closer spacing; (v) Use of the crop – forage crop – closer spacing. (vi) Pest and disease control; wider spacing control pest spread. (vii) Growth habit of the crop; indeterminate /spreading type requires wider spacing. (viii) Number of seeds per hole; more seeds require wider spacing; 7 x 1	(7 marks)
	(c) - Facilitates production of many seedlings in a small area; - Routine management practices are easily and timely carried out in a nursery than in the main seed bed; - Makes it possible to provide the best conditions for growth such as fine tilth, levelled field and shade; - Facilitates the planting of small seeds which develop into strong seedlings that are easily transplanted; - It ensures transplanting of only those seedlings that are healthy and vigorously growing; - Excess seedlings from the nursery may be sold, thus become a source of income to the farmer; - Reduce maturity period in the field; 6 x 1	(6 marks)
22.	(a) Maintenance of plucking table in tea. (i) Cut back the tea bush to 5cm; above the last pruning height after 2 – 5 years; (ii) Carry out tipping after 3 months; (iii) After many such pruning, tea bush is cut down to 45cm above the ground; (iv) Rehabilitation/changing the cycle done after every 40 – 50 years; (v) Use of plucking stick during harvesting; 5 x 1	(5 marks)

	(b) Procedure for transplanting onions seedlings. (i) Water the nursery bed one day before transplanting; (ii) Selecting healthy and vigorous growing seedlings; (iii) Lift the seedlings using a garden trowel and put them into a container for transporting to the seedbed. (iv) Plant one seedling per hole at the same depth as it was in the nursery. (v) Firm the soil around the base. (vi) This should be done preferably late evening or during a cloudy day. (vii) Mulch the seedlings and water them regularly. (viii) Put appropriate amount of phosphatic fertilizers/manure into planting holes and mix with soil. (ix) Transplant when seedlings are about one month old/3 weeks old/pencil size thick. (x) Plant at spacing of 30cm between rows by 10cm between plants. 7 x 1	(7 marks)
	(c) Micro-catchments (i) Negarim micro catchment; Are closed grid of diamond shape or open-ended "V"s formed by constructing small earth ridges with infiltration pits for purpose of collecting water. (ii) Contour bunds; These are earthen bunds constructed along the contours' and are spaced 5m to 10m apart. (iii) Contour Ridges; Are small earth ridges constructed along contours and are spaced 1.5m to 5m apart and are used to conserve water. (iv) Semi-circular bunds; These are semi-circular shaped earth bunds with tips, constructed along contour. Used in rangeland hence appropriate for pasture and tree planting. (v) Trapezoidal bunds; Are earth bunds which are trapezoidal in shape. They capture surface flow and allows the excess; water to overflow around wing tips. (vi) Contour stone bunds; Formed by heaping small stone bunds along the contours to slow surface flow and filter eroded soil. (vii) Rock dams; Constructed across valleys to slow surface flow. (viii) Water spreading bunds; They are used to divert water from watercourse onto crops or pasture. 8 x 1	(8 marks)