

4.15 AGRICULTURE (443)

4.15.1 Agriculture Paper 1 (443/1)

SECTION A (30 marks)

1.	<ul style="list-style-type: none"> - Pastoralism; - Fish farming; - Apiculture; - Poultry rearing; 	4 x ½	(2 marks)
2.	<ul style="list-style-type: none"> - Application of herbicides; - Mulching; - Timing cultivation; - Restricted cultivation to planting areas; - Cover cropping; - Uprooting/slashing; 	- 4 x ½	(2 marks)
3.	<ul style="list-style-type: none"> - Strength of the pipes; - Amount of water to be conveyed; - Cost of the pipe; - Diameter/size of the pipe; - Durability; - Colour of the pipes; 	4 x ½	(2 marks)
4.	<ul style="list-style-type: none"> - Springs; - Wells; - Boreholes; 	2 x ½	(1 mark)
5.	<ul style="list-style-type: none"> - Manure crop may exhaust soil moisture at the expense of the main crop; - Nutrients are used by micro-organisms to decompose the green manure; - Green manure crops and food crops; - Decomposition takes long; 	4 x ½	(2 marks)
6.	<ul style="list-style-type: none"> (a) - Permanent goods inventory; - Consumable goods inventory; 		(½ mark)
	<ul style="list-style-type: none"> (b) - Determine the goods to acquire and replace; - Detect theft and losses on the farm; - Show assets owned by the farm; 	2 x ½	(1 mark)
7.	<ul style="list-style-type: none"> (a) - Suckers; - Crowns; - Slips; 	3 x ½	(1½ marks)

	<ul style="list-style-type: none"> (b) - High germination percentage; - Free from pests and diseases; - Suitable to the ecological conditions; - Free from physical damage; - True to type; - Clean; 	3 x ½	(1½ marks)
8.	<ul style="list-style-type: none"> - Minimize root damage during transplanting; - Easy to transport seedlings; - Seedlings establish faster; - Easy to control soil borne pests and diseases; - Allows transplanting to occur when conditions are suitable; - Easy to trim roots awaiting transplanting; 	4 x ½	(2 marks)
9.	<ul style="list-style-type: none"> - Company may engage in monopolistic practices; - In case of inefficiency, heavy losses occur; - Proceeds may only benefit the mother country of the company; - Poor management leads to labour and social problems; 	4 x ½	(2 marks)
10.	<ul style="list-style-type: none"> - Bean aphids; - Bean bruchid; - American bollworm; - Bean fly; - Golden ring moth; - Bean thrips; 	4 x ½	(2 marks)
11.	<ul style="list-style-type: none"> (a) - Lucerne; - Silver leaf desmodium; - Green leaf desmodium; - Stylo; - Kenya White Clover; - Purple vetch 	3 x ½	(1½marks)
	<ul style="list-style-type: none"> (b) - Weed control; - Topping; - Over sowing with leguminous pastures; - Fertilizer application; - Irrigation; - Pest control; 	4 x ½	(2 marks)

12.	(a) - Purchase book; - Sales book;	2 x ½	(1 mark)
	(b) - Item description; - Cost per each item; - Quantity purchased; - Amount paid for each item; - Discount allowed;	4 x ½	(2 marks)
13.	- Participating in exhibitions at ASK shows; - Undertaking agricultural projects at school level; - Participating in YFC annual rallies; - Participating in national tree planting activities; - Involvement in exchange programmes; - Participations in national ploughing contests; - Involvement in workshops/seminars related to agriculture;	4 x ½	(2 marks)
14.	(a) Practices of growing trees/shrubs together with crops/fodder crops and keeping livestock on the same piece of land; (b) - Alley cropping; - Multi-storing cropping; - Wood lots;	2 x ½	(1 mark)

SECTION B (20 marks)

15.	(a) Stem cutting;		(1 mark)
	(b) - Top parts tend to rot when planted; - Bottom takes long to root;	2 x 1	(2 marks)
	(c) - Place it in water until it is planted to prevent dehydration. - Each cutting should have a leaf and a bud for photosynthesis and establishment respectively; - Use a sharp knife or blade to prevent breaking of the cutting; - Make slanting cuts to prevent accumulation of moisture;	2 x 1	(2 marks)

16.	<p>(a) (i) Get rid of soil moisture; (ii) Destroy soil organic matter;</p> <p>(b) Water – Fresh soil – 40gms – 10gms = 30gms; - Dry soil – 35gms – 10gms = 25gms - Water = 30 – 25 = 5gms $\% \text{ of water} = \frac{5}{30} \times 100 = 16.6667\%;$ Organic matter – 25 – 22 = 3gms $\% \text{ of organic matter} = \frac{3}{30} \times 100$ = 10%;</p>	<p>(1 mark) (1 mark)</p> <p>(3 marks)</p>																																																						
17.	<p>(a) Transplanting; (b) It ensures a seedling is lifted with a ball of soil around the roots; (c) After 6 – 12 months; (d) - Watering before lifting the seedling; - Planting at the same depth it was in the nursery; - Shading; - Watering; - Mulching; - Protection;</p>	<p>(1 mark) (1 mark) (1 mark)</p> <p>2 x 1 (2 marks)</p>																																																						
18.	<p>(a)</p> <table border="1" data-bbox="378 1171 1442 1671"> <thead> <tr> <th>DAP Fertilizer Input in (50kg bags)</th> <th>Maize yield in (90kg bags)</th> <th>Total revenue (KSh.)</th> <th>Total cost (Ksh.)</th> <th>Marginal revenue (Ksh.)</th> <th>Marginal cost (Ksh.)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>15.0</td> <td>45000</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>1</td> <td>35.6</td> <td>106800</td> <td>2500</td> <td>61800</td> <td>2500</td> </tr> <tr> <td>2</td> <td>52.0</td> <td>156000</td> <td>5000</td> <td>49200</td> <td>2500</td> </tr> <tr> <td>3</td> <td>68.5</td> <td>205500</td> <td>7500</td> <td>49500</td> <td>2500</td> </tr> <tr> <td>4</td> <td>71.0</td> <td>213000</td> <td>10000</td> <td>7500</td> <td>2500</td> </tr> <tr> <td>5</td> <td>71.5</td> <td>214500</td> <td>12500</td> <td>1500</td> <td>2500</td> </tr> <tr> <td>6</td> <td>71.5</td> <td>214500</td> <td>15000</td> <td>0</td> <td>2500</td> </tr> <tr> <td>7</td> <td>68.5</td> <td>205500;</td> <td>17500;</td> <td>-9000;</td> <td>2500;</td> </tr> </tbody> </table> <p>(b) At the stage where marginal revenue is equal or almost equal to marginal cost;</p> <p>(c) (i) 5 bags; (ii) KSh. 1500;</p>	DAP Fertilizer Input in (50kg bags)	Maize yield in (90kg bags)	Total revenue (KSh.)	Total cost (Ksh.)	Marginal revenue (Ksh.)	Marginal cost (Ksh.)	0	15.0	45000	0	0	0	1	35.6	106800	2500	61800	2500	2	52.0	156000	5000	49200	2500	3	68.5	205500	7500	49500	2500	4	71.0	213000	10000	7500	2500	5	71.5	214500	12500	1500	2500	6	71.5	214500	15000	0	2500	7	68.5	205500;	17500;	-9000;	2500;	<p>(2 marks)</p> <p>(1 mark) (1 mark) (1 mark)</p>
DAP Fertilizer Input in (50kg bags)	Maize yield in (90kg bags)	Total revenue (KSh.)	Total cost (Ksh.)	Marginal revenue (Ksh.)	Marginal cost (Ksh.)																																																			
0	15.0	45000	0	0	0																																																			
1	35.6	106800	2500	61800	2500																																																			
2	52.0	156000	5000	49200	2500																																																			
3	68.5	205500	7500	49500	2500																																																			
4	71.0	213000	10000	7500	2500																																																			
5	71.5	214500	12500	1500	2500																																																			
6	71.5	214500	15000	0	2500																																																			
7	68.5	205500;	17500;	-9000;	2500;																																																			

SECTION C (40 marks)

19.	<p>(a) - Use of heavy machinery creates hardpans; - Over cultivation which over pulverizes soil; - Cultivating very wet soil using heavy Machinery creates hardpans; - Deforestation destroys soil cover; - Overstocking destroys soil cover; - Burning cracks the soil and destroys soil cover; - Continuous cropping over pulverizes soil;</p> <p>(b) (i) - Elongation of apical meristems; - Protein synthesis; - Formation of middle lamellae - Cell division; - Strengthens plant cell walls;</p> <p>(ii) - Easily leached; - Some have scotching effects; - Some are corrosive to users; - Some inhibit soil microbial activities; - Some change/alter soil pH;</p> <p>(c) - Stomach poisons which impair the digestive system of the pest; - Systematic poisons which spread to the entire body of the pest and impair it; - Contact poisons destroy the parts of the pest which come into contact with the pesticide; - Suffocants deprive the pest of air; - Anti-feedants impair the feeding mechanisms of the pest; - Repellants make the pest to avoid the plant;</p>	<p>6 x 1 (6 marks)</p> <p>4 x 1 (4 marks)</p> <p>4 x 1 (4 marks)</p> <p>6 x 1 (6 marks)</p>
20.	<p>(a)</p> <ul style="list-style-type: none"> • Grass strips/filter strips; These are narrow uncultivated strips along the contour left between cultivated strips. • Cover cropping; The establishment of a crop that spreads out over the surface of the soil to provide it with a cover. • Contour farming; Carrying out all land operations along the contour. • Mulching; Covering of the soil with either organic or synthetic materials. • Crop rotation that involves the use of cover crops • Correct spacing to ensure adequate soil cover 	

- Inter-cropping ensures the soil is adequately covered
- Ridging/furrowing to prevent surface runoffs and accumulate water
- **Controlled grazing;** Proper stocking rate, rotational grazing to ensure soil cover is not depleted.
- **Strip cropping;** Growing crops which give little ground cover in alternate strips with crops such as beans which have a good ground cover.
- Afforestation ~ growing of trees where non-existed.
- Re-afforestation - growing of trees where they have been cut down.
- Agroforestry - land use that involves the growing of trees in combination with crops and pastures on the same piece of land.

6 x 1 (6 marks)

- (b) - **Wind** which deflects herbicides to unwanted areas;
- **Rain** which may wash away the herbicide from the weeds;
 - **Soil** should be moist soak the herbicides to have prolonged effects on weeds;
 - **Light** should of high intensity to optimize the uptake of the herbicide;
 - **Temperature** should be optimum to ensure that the weeds are physiologically active;

(4 x 1 factor)
(4 x 1 explanation) (8 marks)

- (c) - Threshing to seed seeds from pods;
- Drying to reduce the moisture content of the seeds;
 - Cleaning to separate seeds from husks;
 - Sorting to separate the different qualities;
 - Grading to fix prices/value to the different qualities to facilitate marketing;
 - Dusting to protect the crop from storage pests;
 - Packaging in different units e.g. bags, packets, to facilitate storage and marketing;

6 x 1 (6 marks)

21.	<p>(a) (i) - Harvested after 4 – 5 months/when leaks start to dry; - Bent the tops of the neck; - Dig up the bulbs; - Put the bulbs under shade to dry; - Turn the bulbs to ensure uniform drying; - Grade the bulbs according to size; - Put bulbs in slatted boxes; - Marketed in net bags;</p> <p>(ii) - Avoid mixing cotton with foreign matter; - Do not pick when wet; - Do not use sisal bags; - Pick balls that are fully open; - Use separate bags for the grades AR (Safi) and BR (Fifi);</p> <p>(b) - Lack of collaterals; Diversion of loans to other uses; High interest rates; Assets used as collaterals may be auctioned for non-repayment; Lack of knowledge/skills to manage finances; Lack of proper record keeping;</p> <p>(c) - Open membership; Equal rights; Principle of share limit; Interest on shares; Withdrawal from membership; Loyalty; Education; Co-operative principle; Non-profit motive;</p>	<p>6 x 1 (6 marks)</p> <p>4 x 1 (4 marks)</p> <p>5 x 1 (5 marks)</p> <p>5 x 1 (5 marks)</p>
-----	--	---