NYANDARUA WEST CLUSTER

EXAMINATIONS

JULY 2018

443/1

AGRICULTURE

FORM 4

MARKING SCHEME

SECTION A (30Marks)

Answer all the questions in this section.

1. Give any two farming methods.

- *Organic farming*
- *Nomadic Pastorolism*
- *Mixed farming*
- *Shifting cultivation*

(Any 2 x ½ = l Mark)

2. List any three ecological factors which affect crop production in Kenya.

- *Rainfall*
- *Temperature/altitude*
- *Wind*
- *Topography*
- *Humidity*

(Any 3 x ½ = l ½ Marks)

3. State the difference between soil structure and soil texture.

Soil structure is the physical appearance of soil in relation to arrangement of soil particles to give a physical appearance

(Award each 2 x ½ = l Mark)

4. Explain the difference between liquid capital and working capital is an agricultural production.

Liquid Capital is money which can flow and be used in acquisition of any real capital assets

Working capital are raw materials used in production

(Any 2 x ½ = l Mark)

5. Give four factors influencing crop rotation

- *Crop root depth*
- *Soil structure*
- *Soil fertility*
- *Pests and disease control*
- *Weeding control*
- *Crop nutrient requirements*

(Any 4 x ½ = 2 Marks)

6. State four types of crop field pests that commonly affect crops.

- *Insects*
- *Nematodes*
- *Rodents*
- *Birds " Mites*
- *Domestic Animals*

(Any 4 x ½ = 2 Marks)

7. State three deficiency symptoms of Sulphur in crop production.

- *Stunted growth of the plant*
- *Leaf chlorosis*
- *Thin stems*
- *Reduced nodulation*

(Any 3 x ½ = 1 ½ Marks)

8. State the difference between Gross National production (GNP) and Gross Domestic Production(GDP). (2mks)

GDP is the total of goods and services produced by a country within a period of one year. GNP-is the total output from resources owned by the nationals of a country wherever these resources happen to be located

(Award as a whole 1x 1 = 1 Mark)

9. Mention any three types of farm records that a farmer should keep

- *Field operation records*
- *Production records*
- *Inventory records*
- *Marketing records*
- *Labour records*
- *Breeding records*
- *Workshop records*
- *Feeding records*
- *Health records*

(Any 3 x ½ = 1 ½ Marks)

10. Give three advantages of rotational grazing.

- *Maximum use of pasture*
- *Reduces the build up of pests and diseases*
- *Animal waste is distributed evenly in all paddocks*
- *Pasture area is given time to re-grow before it is grazed or again*
- *It is possible to apply fertilizers in parts of the pasture which are not in use*

11. Give two factors that determine the quality of hay.

- *Forage species used*
- *Stage of harvesting/leaf to stem ratio*
- *Length of the drying period*
- *Weather condition during the drying period*
- *Condition of the storage structure*

(Any 3 x ½ = 1 ½ Marks)

12. Give the beneficial effects of weeds.

- *Weeds add organic matter to the soil when they decompose*

- *Leguminous weeds fix nitrogen in the soil*
- *Weeds act as soil cover-controlling soil erosion*
- *Some weeds have medicinal effect/value*
- *Some weeds are edible by man and animals*

(Any 3 x ½ = 1 ½ Marks)

13. State four characteristics of a fertile soil.

- *Adequate nutrient supply*
- *Correct soil PH*
- *Free from excessive infestation of soil borne pests and diseases*
- *Ground water holding capacity*
- *Proper drainage*
- *Ground depth*

(Any 4 x ½ = 2 Marks)

14. State five ways of preparing planting materials before planting.

- *Breaking seed dormancy*
- *Seed dressing*
- *Leguminous seed innoculation*
- *Chitting*
- *Seed cleaning*
- *Root trimming of bananas, tree seedlings*
- *Seed inoculation alone*

(Any 5 x ½ = 2 ½ Marks)

15. Give six factors that influence the rate of soil erosion.

- *Slope of the land/topography*
- *The type of the soil*
- *The amount and intensity of the rainfall*
- *Soil depth*
- *Overstocking*
- *Vegetation cover*
- *Deforestation*
- *Planting of annual crops or steep slopes*
- *Indiscriminate burning of vegetation before cultivation*
- *Clean weeding*
- *Ploughing up and down the slope*

(Any 6x ½ = 3 Marks)

16. (a) Give the steps followed in the development of a gulley.

- *Movement of water from the water shade*
- *Channel erosion caused by flowing water*

- *Wearing of the sides of the channel*
- *Scoring of the floor of the channel by moving water*

(Any 4 x ½ = 2 Marks)

(b) State the two types of gulley erosion

- *U - Shaped gullies*
- *V - Shaped gullies*

(Any 2 x ½ = 1 Marks)

17. Name any four physiological diseases of a tomato crop.

- *Blossom end rot*
- *Splitting of tomato fruits*
- *Concentric and radial rings*
- *Cat's face*
- *Sun's scald*

(Any 4 x ½ = 2 Marks)

SECTION B (20 Marks)

18. The diagram below illustrates materials and a method of vegetative propagation. Study it and answer the questions that follow.

(a) Identify the method of propagation illustrated above.

- *Tissue culture*

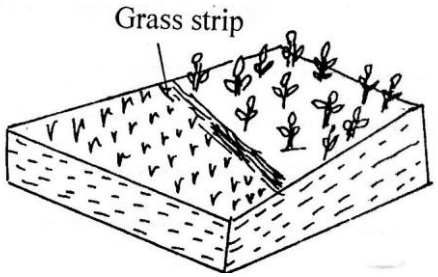
(1x 1 = 1 Mark)

(b) Give two advantages associated with then method named above.

- *Used in the mass production of propagules.*
- *Used to recover and establish pathogens free plants*
- *It is fast and requires less space*

(Any 2 x 1 = 2 Marks)

19. Study the diagram below which illustrates a method of soil conservation and answer the questions that follow.



(a) Identify the method of propagation illustrated above

- *Contour farming and strip cropping.*

(Mark as a whole 1 x 1 = 1Mark)

(b) Under which condition should the farmers would apply these methods.

- *slopping land*

(1 x 1 = 1Mark)

(c) State the role played by the grass strip in the diagram above.

- *Act as barriers to the following water*

(1 x 1 = 1Mark)

20. A farmer was advised to apply 150kg CAN/ha while top dressing the maize crop. CAN contains 20%N.
Calculate the amount of nitrogen applied/ha

150Kg CAN SUPPLY

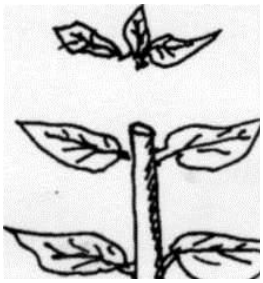
100 Kg CAN=20KG

t50KgCAN=20Kgxl50kgCAN/100KG C

=30 KGCAN

(1 x 1 = 1Mark)

21. The diagram below illustrates a method of pruning.



(a) Identify the method of pruning shown above

- *Pinching out*

(1 x 1 = 1Mark)

(b) Give any two advantages of pruning in crops.

- *To facilitate picking*
- *Control cropping*
- *To remove the diseased and unwanted parts of a plant e.g extra suckers.*
- *To train the plant so that it can have the required shape.*
- *To easy the penetration of spray.*
- *It controls pests and diseases.*

(Any 2 x 1 = 2 Marks)

22. The table below shows the production of maize at various levels of N.P.K fertilizer application. Study it carefully and answer the questions that follow.

Fixed factor of land (1 ha)	Variable input(NPK in kg)	Total product (TP) (maize in 90kg bags)	Marginal product(MP) (maize in 90kg bags)	Average product (AP)(maize in 90kg bags)
1	50	10	10	10
1	100	27	**17** √ ½	**13.5** √ ½
1	150	42	15	14
1	200	56	**1** √ ½	14
1	250	63	7	12.6
1	300	65	**3** √ ½	**10.8** √ ½
1	350	65	**0** √ ½	9.3
1	400	60	-5	7.5
1	450	52	**8** √ ½	**5.8** √ ½
1	500	42	-10	4.2

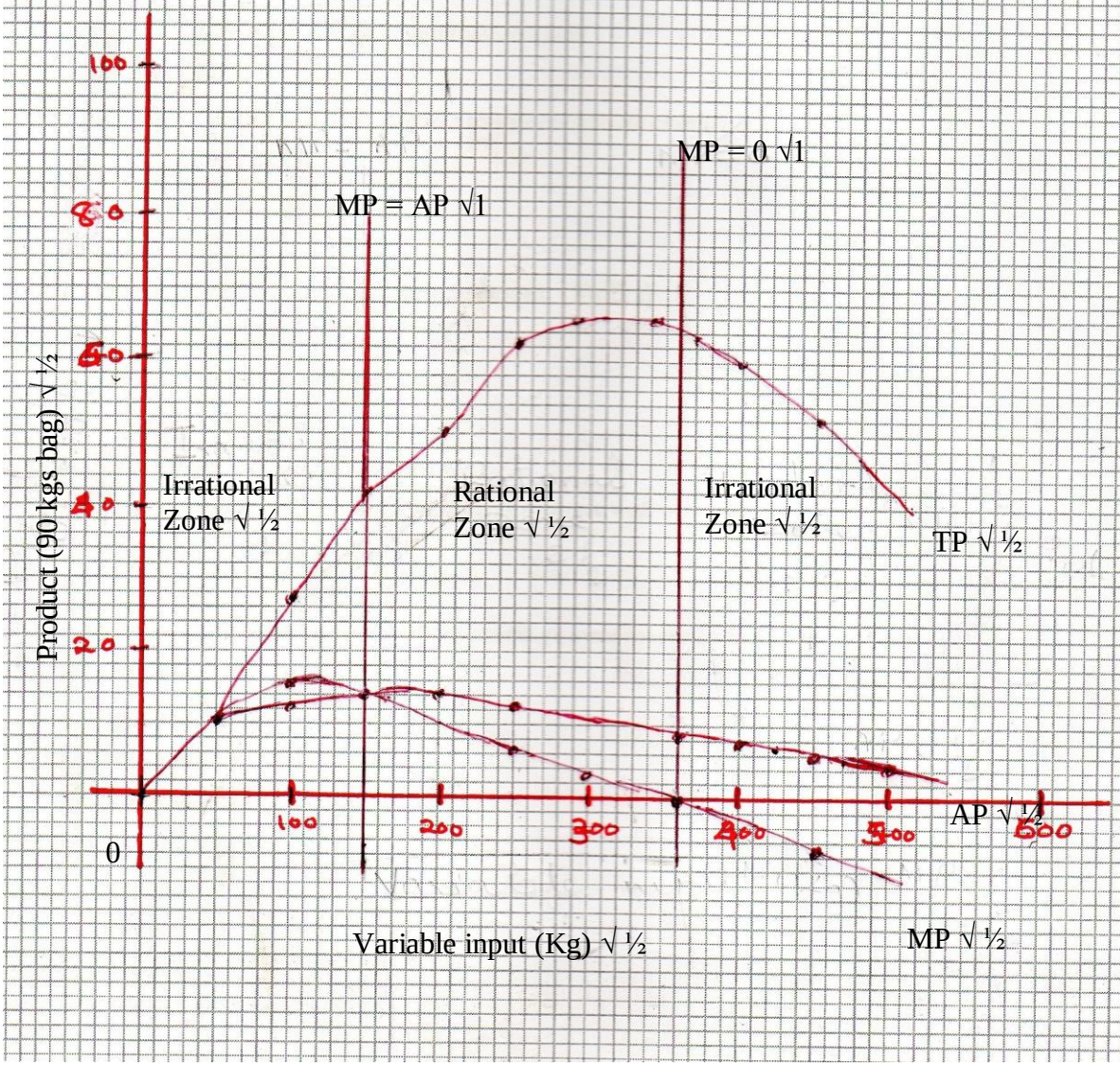
a) Complete the table above

(8 x ½ = 4 Marks)

b) Using the graph paper provided; draw a graph of total product, marginal product and average product against variable input on the same axis and mark the zones of production.

- *On graph paper*

TOTAL PRODUCT (TP) MARGINAL PRODUCT (MP) AND AVERAGE PRODUCT (AP) AGAINST VARIALBLE INPUT



Total = 6 Marks

SECTION C (40Marks)

23. Describe the production of tomatoes under the following sub headings,

(a) Nursery establishment and management

- *Clearing land*
- *Carryout primary and secondary to get level seedbed of fine tilth and 1 m wide*
- *Make drills 15cm apart.*
- *Apply phosphatic fertilizer and mix well with soil.*
- *Drill seeds singly and cover with not move than 1cm thickness of soil.*
- *Mulching.*
- *Water*
- *Establish shade/erect shade.*

(5 x 1 = 5 Marks)

MANAGEMENT

- *Water regularly*
- *Remove mulch when germination starts*
- *Control weeds*
- *Control pests and diseases using appropriate chemicals*
- *Prict out*
- *Harden off seedlings*

(5 x 1 = 5 Marks)

(b) Field establishment and management.

- *Field establishment*
- *Prepare land early to kill all weeds*
- *Ensure median tilth*
- *Make holes lmxlm and 15cm deep.*
- *Apply manure and phosphatic fertilizers and mix well with soil.*
- *Water before lifting seedlings.*
- *Lift seedlings using a trowel*
- *Plant to cover with soil up to where seedlings were covered when in the nursery*

(5 x 1 = 5 Marks)

c) Management

- *Mulching*
- *Watering*
- *Weed control*
- *Disease control*
- *Gapping*
- *Staking*
- *Pruning*

(5 x 1 = 5 Marks)

24. (a) State the advantages of farm yard manure over straight fertilizer. (6mks)

a)

- *Farmyard improves soil structure and water holding capacity compared to straight fertilizer*
- *It suppliers more than one plant nutrient than straight fertilizers*
- *It is locally available compared to straight fertilizers*
- *It moderates soil temperature by importing a dark colour to the soil*
- *Improves soil cation exchange or buffers soil PH*
- *It has a longer residual activity in the soil than straight fertilizer*

(Any correct 6 x 1 = 6 Marks)

b)

- *Soil fertility- a fertile soil support more plant population hence close spacing is possible*
- *The type of machinery to be used; the space between the rows should allow free passage of the*
- *machinery which can be used in the field*
- *The size of the plant; tall crop varieties required wider spacing, then short varieties*
- *Moisture availability; areas with higher rainfall are capable of supporting a large number of plants*
- *hence closer spacing*
- *Use of the crop; crop grow for the supply of forage or silage material is planted at a closer spacing*
- *than for grain production*
- *Pest and disease control; when crops are properly spaced, pests might find it difficult to move from*
- *one place to the other e.g in groundnuts*
- *Growth habit of the crop; spreading varieties and tillering crop varieties require wider and tillering than erect type*

(Any correct 5 x 1 = 5 Marks)

c)

- *ControlEs soil erosion by reducing the speed of running water*
- *Acts as an insulator thus modifies or regulates the soil temperature*
- *Presents water evaporation thus maintaining moisture in the soil for crop use*
- *Controls weeds by suppressing their growth*
- *Improve soil fertility by releasing nutrients after decomposition i.e organic materials*
- *Organic materials are decomposed by soil micro-organisms resulting into humus that improves soil*
- *structure and water holding capacity*

(Any correct 4 x 1 = 4 Marks)

25. (a) Explain any eight functions of an agricultural market.

a) Buying/selling small lots of goods and bulking up for sale.

- *Selling or merchandizing activities through proper display, advertising, packaging, distribution etc.*
- *Storage of agricultural goods to be made available later either for consumption or processing.*
- *Transportation to ensure movement of goods from producers to consumers.*
- *Processing by changing the commodity from its raw form to a more acceptable form.*
- *Standardizing/grading to ensure establishment and maintaining uniform measurements.*
- *Financing to provide capital to finance all activities from original goods procurement to final sale.*
- *Marketing intelligence colleting and analyzing relevant market information*
- *Risk bearing instituting insurance cover against loss or damage of agricultural goods.*
- *Market management to harmonies and co-ordinate all market activities and implement all decisions..*

(Any correct 8 x 2 = 16 Marks)

(b) Diversification to give security incase enterprises fail.

- *Selecting more reliable and steady enterprises to ensure farmers of continuous income.*
- *Contracting -Farmers are ensured of constant and fixed market for their producer.*
- *Insurance farmers have an insurance cover guaranteeing them of compensation against loss or failure.*
- *Input rationing-farmers may be forced to control the quantities of inputs to guard against huge losses.*
- *Flexibility in production methods -farmers to be in a position to convert structure from one use to another.*
- *Adopting modern methods of production -to decrease the degree of risks in production.*

(Any correct 4 x 1 = 4 Marks)