

DRAFT MARKING GUIDE

MOCK 2019

UACE

P515/2.



1a) i) what is the pest popn on Crop X and Y in the month of April?

$$\text{Crop X} = 6,000 \text{ pests} \checkmark \times 1 = 1$$

$$\text{Crop Y} = 2,000 \text{ pests} \checkmark \times 1 = 1$$

ii) What was the rate of popn increase of *Planococcus* spp in crop X and Y?

- In Crop X increase is from Jan to July.

$$\text{Highest popn in July} = 30,000$$

$$\text{Lowest popn in Jan} = 0$$

$$\begin{aligned} \therefore \text{pop rise in pests} &= \text{Highest popn} - \text{lowest popn} \\ &= 30,000 - 0 \\ &= 30,000 \checkmark \end{aligned}$$

$$\begin{aligned} \text{Total popn in 7 months} &= (0 + 2 + 4 + 6 + 11 + 24 + 30) \times 1000 \\ &= \frac{77000}{7} \\ &= 11,000 \text{ pests per month.} \end{aligned}$$

$\therefore$  Rate of popn rise of pest in X

$$\begin{aligned} \Rightarrow \frac{\text{popn rise}}{\text{Total popn}} \times 100 &= \frac{30,000}{77,000} \times 100 \\ &= 38.96\% \checkmark \end{aligned}$$

In Crop Y increase in pest popn is between Jan and October

$$\text{popn rise} = 12 - 0$$

$$= 12 \times 1000$$

$$= 12,000$$

$$\begin{aligned} \text{Total popn in 10 months} &= (0 + 0 + 1 + 2 + 4 + 8 + 10 + 11 + 12 + 12) \times 1000 \\ &= 60,000 \checkmark \end{aligned}$$



$$\text{Rate of popn rise} = \frac{\text{popn increase}}{\text{total popn}} \times 100$$

$$= \frac{12,000}{60,000} \times 100$$

$$= 20\% \checkmark$$

b) (See graph paper)

Title =  $\frac{1}{2}$

Scale =  $\frac{1}{2}$

Key =  $\frac{1}{2}$

Axes =  $\frac{1}{2}$

Plotting 6 alternative pts @  $\frac{1}{2}$  = 3 marks

Total for (b) = 5 marks



# GRAPHS SHOWING THE CHANGES IN PESTS POPULATION IN CROPS X AND Y.

Scale -

Vertical

1cm repr 2000 pest

Horizontal

1cm repr 1 month

↑  
pest popn '000

40

36

32

28

24

20

16

12

8

4

0

J

F

M

A

M

J

J

A

S

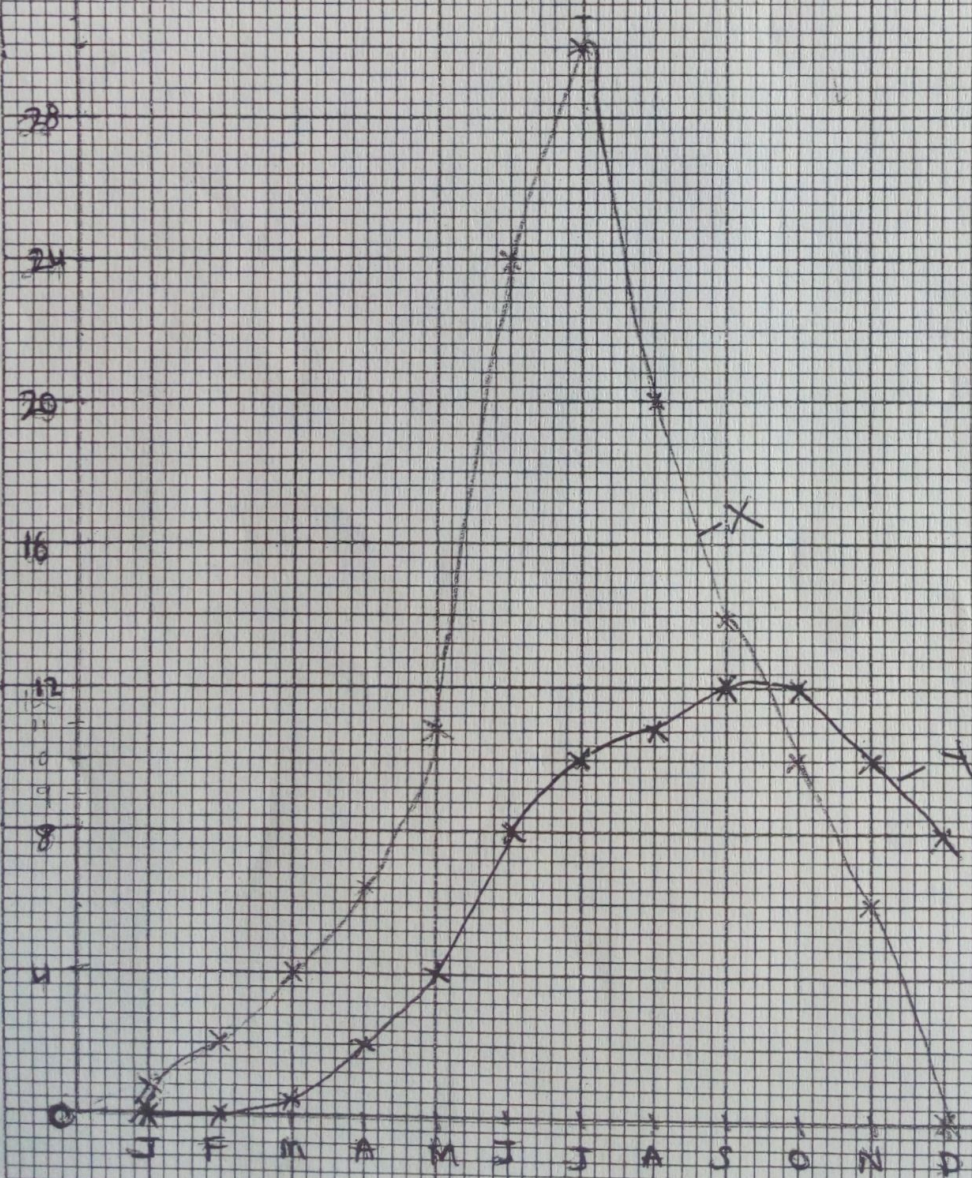
O

N

D

- 4 -

→ Months of the year





c) (i) Describe the trend of the graphs drawn above.

- For Crop X there was a sharp/rapid increase in pest popn to 30,000 by July and there after a sudden decline was seen until when pests disappeared in the field by December. ✓
- For Crop Y, there was a gradual increase in pest popn to a maximum after then a gradual decrease in popn but the small popn is seen at the end of the year. ✓
- In both Crops there was a general increase in pest popn to a maximum and there after a general decline was seen in popn. ✓

(ii) Explain the difference in pest popn in the two Crops between January and December

- At the beginning of the year pest popn increases faster in Crop X than in Crop Y. This may be due to the fact that Crop X grows faster than Crop Y and this provides adequate food to the pest.
- Generally in the first half of the year, the popn of the pest in Crop X is higher than that in Crop Y meaning that X is more vegetative than Crop Y. ✓
- Also the high vegetative growth in X could have provided a suitable environment for the pest. ✓
- Crop X could be seen as more nutritive and palatable to the pest than Crop Y. ✓



- Sudden decline and a lower popn in Crop X than Y at the end of the year could be due to earlier pest control measures that could have been put in place by the farmer starting with Crop X. ✓

- The more rapid decline in pest popn after July could also be a result of the crops becoming mature. The high fibre content and shedding of leaf ✓ fall at maturity can explain low nutrient availability for the pests.

- Crop X could also be seen as an annual crop since at the end of the year, there is no more vegetative growth to support pest nutrition; while Crop Y can be seen as a perennial crop that is able to continue growing after one year and giving nutrients to the pest. ✓

Award any 6pts @ 10Mk = 60Mk

Total Q1 = 20Mk

6-



2a) What are the general symptoms of disease occurrence in crop plants?

- necrosis; death of plant tissues in certain parts of the crop;
- Stunted growth; failure of the crop plant to attain normal size with time;
- Wilting; lack of adequate water in the crop plant which may result from low rate of water intake by roots;
- rotting of some plant parts;
- gall formation; this may result from increase in size of the tissues;
- Curling of leaves resulting from uneven development in some plant parts;
- chlorosis - loss of green colour in the leaves;
- gummosis; excessive production of gum in tree plants;
- Mottling of leaves; development of light and dark patches on leaves;

1x8 = 8 marks

2b) Explain how crop diseases can be controlled in the field using cultural practices.

- roguing; uproot and destroy infected plants to control spread of disease to other plants;
- destroying crop residues to avoid breeding place for pathogens;
- use healthy planting materials to avoid spread of disease through planting materials;
- weed control; to avoid alternate host plants for pathogens;
- Crop rotation; to break the life cycle for the pathogens;



- early planting so that the crop escapes disease attack;
- Pruning to create unfavourable environment for pathogens;
- Proper Spacing to provide unfavourable conditions for pathogens;
- Manuring and fertilizer application to produce healthy plants that resist diseases.
- use of sterilized equipment eg. pruning knives to control spread of pathogens;
- plant resistant varieties so that the crop is not attacked by diseases
- Soil Sterilization to kill pathogens in the soil.
- Proper Seed bed preparation to create unfavourable conditions for pathogens.
- drainage to create unfavourable unfavourable conditions for pathogens.
- Intercropping and Mixed Cropping to reduce the rate of spread of diseases

Award any 13pts @ 1 mark

$$1 \times 12 = 12 \text{ marks}$$

$$\text{Total Q} = \underline{\underline{20 \text{ marks}}}$$



3 a) What are the effects of Soil erosion on the farm?

- destruction of crop plants by uprooting due to surface run off
- destruction of crop plants by covering with debris and soil from hilly areas
- It makes the soil bare and difficult to cultivate;
- erosion destabilises soil profile hence affecting root growth of crops
- It carries away top fertile soil and deposits it in areas that are not profitable;
- the top fertile soil may be covered by infertile soil washed from another area;
- It leads to spread of weeds.
- It leads to spread of crop diseases.
- It destroys farm structures like roads, building.
- It causes silting of water bodies.
- It can create deep and wide channels that make movement of machinery in the farm difficult.

8 pts @ 1 mark 1x8 = 8 marks

3 b) Describe the mechanical methods of controlling soil erosion.

- Contour ploughing; ploughing is done along contours and this does not encourage creation of channels that allow easy flow of water;
- use of contour bunds; soil is heaped across the slope and grass is planted on top of the heap of soil to reduce speed of run off.



- terracing: a ridge is constructed across the slope to ~~reg~~ reduce flow of water down the slope and encourage infiltration
- use of graded banks: the field is subdivided into smaller portions by use of banks. It reduces length of slope and rate of flow of water
- use of diversion channels; channels are constructed on the upper part of the field to catch running water and carry it away without running through the field;
- use of absorption banks/pits; these are constructed channels across the field to catch running water and retain it
- use of barrages/gabions; embankments are made out of stones and galvanized wire cages used to slow down the speed of water in a gully and encourage sedimentation;
- use of grassed water ways; grass is planted in the water channels to reduce speed of run off and roots of grass hold soil particles to control erosion;
- use of ridges; soil is heaped along contours at intervals to reduce speed of run off; crops can be planted on ridges
- use of stabilizers; structures can be added to soil surface to hold the soil and increase water infiltration.

Award any 6 pts @ 2 marks  $2 \times 6 = 12$  marks

Total Q = 20 marks

10-



4 (a) Explain how breeding efficiency in dairy cows can be increased.

- Proper feeding of dairy cows; give adequate and balanced diet to avoid nutrient deficiencies that may lead to infertility.
- Carrying out correct pregnancy tests after insemination to allow timely re-insemination in case of failed conception.
- Proper observation of signs of heat to allow timely insemination.
- Carry out timely insemination to allow conception take place.
- Treatment of sick animals to control breeding diseases that cause infertility.
- Providing cow with a rest period after calving to give time for the uterus to recover.

116 = 6 marks

4(b) Describe how a cow on heat can be inseminated using any one method.

• use of recto-vaginal method

- A cow on heat is restrained;
- Inseminator washes hands with plenty of water and soap.
- Inseminator puts on a pair of clean inseminating clothes;
- Clothes are lubricated using soapy water;
- Thaw the semen by putting semen straw into water at room temp;
- Sterilize the inseminating equipment eg syringe,



- The Semen Straw is inserted into inseminating Syringe.
- Insert the left hand into the rectum to remove any dung;
- Wash the anal region and vulva with plenty of water and Soap;
- Insert the left hand through the rectum to locate the position of the Cervix;
- the inseminating equipment is then guided through the vagina gently through the Cervix by the right hand;
- the Semen is released into the lower part of the uterus
- Gently remove the inseminating Syringe using both hands;
- release the Cow.

$$\begin{array}{l} \text{or} \\ \text{Total} \end{array} \quad \begin{array}{l} 1 \times 14 = 14 \text{ Marks} \\ = 20 \text{ Marks} \end{array}$$

#### + The Speculum Method

- the Cow on heat is restrained;
- the inseminator washes hands with plenty of water and Soap;
- the Semen is thawed by putting the Semen Straw into water at room temperature;
- the equipment to be used i.e. inseminating Syringe and Speculum are sterilized;
- the Straw of Semen is put into inseminating Syringe.
- the inseminator puts on gloves.
- the gloves are lubricated with soapy water
- wash the vulva with clean water and Soap.



- sterilized Speculum is then gently inserted through the vulva and cervix is located;
- Insert the inseminating Syringe through the Speculum
- Push the Semen into the uterus when the Syringe reaches the cervix.
- remove the inseminating Syringe,
- remove the Speculum gently,
- release the Cow.

Award any 14 p/3 answer;  $1 \times 14 = 14$  marks  
 Total Q = 20 marks.



5 (a) Outline the steps to be followed when constructing a good fish pond. (8 marks)

- Select a suitable area for a fish pond;
- Clear vegetation from the area;
- demarcate the area for a fish pond i.e measuring  $15m \times 15m$  (use pegs);
- dig out the top soil from the area;
- remove stones and tree stumps from the site;
- dig deep upto the sub soil and place this soil aside;
- build the walls firmly using the sub soil mixed with sand.
- fix inlet and outlet pipes ~~allow water to flow into the pond~~ for good drainage;
- make the ~~water~~ floor slightly sloping towards the lower end;
- cover the floor with lime to maintain good pH in pond water;
- walls of the pond are covered by top soil and grass planted to control erosion;
- allow water to flow into the pond;
- fence the pond to ensure security.

1x08 = 08 marks

5 (b) Explain the management practices that are carried out on a fish pond. (2 marks)

- slashing the vegetation around the fish pond to control predators;
- removing weeds from the pond since some plants can be poisonous to the fish;



- Maintaining good level of water in the pond by ~~opening~~ ensuring that the pipes (inlet and outlet) are not blocked;
- draining foreign materials from the floor to avoid condition that can encourage diseases.
- addition of lime to the floor regularly to maintain good pH of pond water;
- provision of feeds to the fish in the pond for proper growth of fish;
- Maintaining a fence around the pond for security and control of predators;
- Cement the walls of the pond to control leakage of water.
- Harvest fish when mature to control competition for nutrients
- fertilizer application to the pond to encourage growth of natural foods;

Award any ~~spts~~ 8pts @  $1\frac{1}{2}$

$$1\frac{1}{2} \times 8 = 12 \text{ marks}$$

$$\text{Total Q} = 20 \text{ marks}$$



6a) Why are Storage Structures important on a farm?

- To keep farm produce/<sup>PROPERTY</sup> safe from theft;
- To keep farm produce in good condition;
- ~~Control~~ maintain quality of produce;
- To control damage of produce by pests;
- To control effect of bad weather that can reduce quality of produce;
- To keep produce and sell later at higher prices;
- To keep farm implements safe from bad weather;
- To keep produce for future use eg food crops;
- Water storage structures ensure adequate water supply on the farm throughout the year;

1x6 = 6 marks

6b) Explain the factors to consider when selecting materials for constructing a farm building.

- type of building; different buildings require different types of materials;
- Cost of materials; Select cheaper materials;
- availability of materials; Select materials that are readily available;
- Skill to use; Select materials that can be used by the available skill;
- ease of transportation; Select materials that are easy to transport;
- acceptability; Select the materials that are accepted by the people using the building;



- Security of the enterprise; Select the materials that give adequate security to the enterprise being carried out;
- Capital available; Select the material depending on the amount of capital available;
- type of soil; Certain types of soil require particular materials;
- farmer's preference; a farmer may select a material according to preference;
- ease of use; Select the material that is easy to use in construction;
- flexibility; Select the material that is flexible in use and can easily be removed and reused easily;

Award any 7pts @ 2marks;  $2 \times 7 = 14$  marks

Total = 20 marks



7a) What are the limitations of using Manpower for farm work?

- Health Condition of the workers: workers with poor health condition do not provide adequate power output;
- high payment rates in some cases makes it very expensive and cost of production becomes very high;
- nature of tools used influence power output
- Short working hours; man power can not be used for a very long time in farm work;
- lack of necessary skills for better farm work;
- effect of age; very young or very old workers are not very useful in farm operations.
- Slow rate of doing farm work leading to limited output;
- limited supply of workers especially during time of peak demand for farm power;
- poor feeding of workers affects power output.
- poor attitude of some workers this will limit power output.
- harsh weather conditions eg very hot weather or in rainy ~~sea~~ weather makes it difficult to use man power.

$$1 \times 10 = \underline{10 \text{ mms}}$$

7b) How can you ensure optimum power output from animal power?

- Health of the animals: ensure good health for high power output;



- Proper feeding; adequate feeds provide the energy for work. Give adequate feed and water to the animals;
- weather conditions; use animals in a cool weather to ensure high power output.
- nature of yoke used; use a smooth and light yoke for high power output.
- proper training; train animals to follow commands with ease;
- Animal handling during work; ensure kind handling of animals during work;
- Size of the animals; animals of the same size should be used together in their pairs to aid draft.
- Age of the animals; ensure that mature animals are used since they have a high power output.
- Linkage of the implement; ensure the implement used is properly connected to the draft chains.
- breed of the animals; select a suitable breed of the animal that gives a high power output eg zebu bulls.
- topography; use animals on generally flat land.
- use a suitable load/implement to have high power output;

$$1 \times 10 = 10 \text{ Mkrs}$$

$$\text{Total Q} = \underline{\underline{20 \text{ Mkrs}}}$$



8a) What are the main reasons for introduction of Plan for Modernisation of Agriculture (PMA) in Uganda.

- To increase house hold income by increasing agricultural production and produce sold in the market.
- To improve on quality of life in Uganda through getting quality food and income;
- To ensure adequate food security so that the population has enough food of high value throughout the year.
- To provide employment opportunities in agro processing industries;
- To promote sustainable use and of natural resources like forests, lakes and soil, for continued
- To ensure proper management of natural resources that enhances production.

(1x4 = 4marks)

8b) How has Plan for Modernisation of Agriculture been implemented in Uganda?

- Introduction of NADS to give technical guidance to farmers on better farming techniques;
- Carrying out research in different research institutes to develop better crop varieties and animal breeds that give high yields.
- technological innovations to develop machinery that is used to increase production on farms;
- development of agro processing industries to add value to products hence yielding high income to farmers;



- development of infrastructure like roads for easy marketing, electricity for processing and irrigation schemes to increase production in dry areas.
- Market research, to locate places where farmers can sell their produce at a high price.
- provision of loans, these help farmers to ~~to~~ in production and marketing financing.
- land reforms to ensure proper utilization of the available land for agriculture;
- Agriculture education to provide necessary information to farmers hence increasing productivity;

Award, any 8pts @ 2mms; 2x8 = 16mms

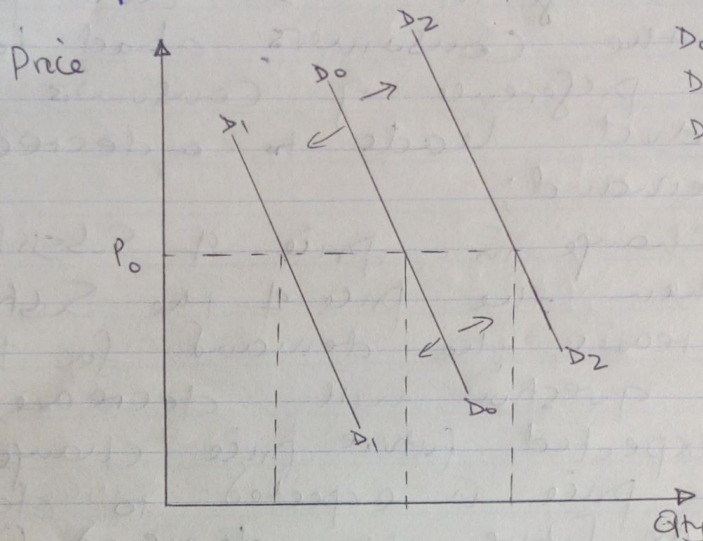
Total

20mms



Q.9) Use illustration to describe the difference between change in demand and change in quantity demanded in marketing of a farm product. (6 marks)

+ change in demand;

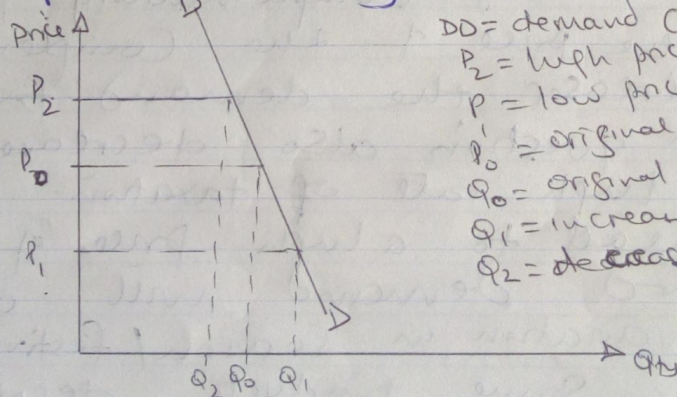


$D_0$  = original demand  
 $D_1, D_1$  = decreased demand  
 $D_2, D_2$  = increased demand  
 $P_0$  = Constant price

- The quantity of product demanded either increases or decreases when the price is constant. ✓

- When the curve shifts to the right demand increases and a shift to the left is a decrease in demand. ✓

+ change in quantity demanded.



$DD$  = demand curve  
 $P_2$  = high price  
 $P$  = low price ✓  
 $P_0$  = original price  
 $Q_0$  = original quantity demanded  
 $Q_1$  = increased demand  
 $Q_2$  = decreased demand.

- More or less of a product is demanded, due to change in price. ✓

- when the price decreases more is demanded, when price increases less is demanded. ✓



q(b) Explain why demand of a firm product may decrease when the price is constant.

- Decrease in income of the consumer leads to a drop in demand;
- Change in taste and preference of the consumer; a bad taste or low preference of consumer to the product leads to a decrease in demand;
- Change in price of substitute product; when the price of the substitute product decreases, the demand for the product in question will decrease;
- expected future price change; when the price is expected to decrease in near future, the demand for the product will also decrease;
- Size of house hold; when the size of house hold decreases, demand for the products also decrease;
- Lack or poor advertisement; when product is not properly advertised, demand will decrease;
- Price of Complementary product; when the price of the Complementary product increases, the demand for the product in question also decreases.
- High rate of taxation; high taxes lead to a high price of the product and demand will decrease.
- variation in season / festival; demand for some products decreases when it's not time for a festival;

Award any 7 PB @ 2 marks;  $2 \times 7 = 14$  marks  
Total 20 marks