

INTERNAL ASSESSMENT EXAMINATIONS

Principles and practices of Agriculture

Paper 2

MARKING GUIDE

1. (a) The curve for lipids falls and continues to fall throughout the experimental period.

- ❖ This is because the lipid content decreases and continues to decrease throughout the experiment.
- ❖ The curve for sugar content rises and then falls.
- ❖ This is because the sugar content increased up to maximum and then decreased.
- ❖ The curve for total dry mass falls at first then rises and falls.
- ❖ This is because there was a decrease in total dry mass at first which then increased and decreased again.

6x1 = (6 marks)

(b) Explain the changes in lipid, sugar content and total dry mass.

G.nuts seeds store lipids and not sugars and the lipids hydrolyzed and converted to sugars to be used for energy and this causes a decrease in lipid content while there is an increase in sugar content.

- ❖ The increase in sugar content is not continuous because germination occurred in the dark and lipids in the seeds got exhausted and no more sugars are formed causing a decrease in sugar content.
- ❖ The total dry mass of seeds decreases at first because of lipids being converted into sugars and oxidized for energy.
- ❖ There is an increase in dry mass after 3 days because new cells are being formed on the embryo resulting into growth.
- ❖ After 6 days the total dry mass decreased because the food reserves in the seeds are exhausted and there is no more growth since the seedlings are not exposed to light for photosynthesis for new cells to be formed.

(10 marks)

(c) What would happen to sugar content and total dry mass if germination occurred in light?

The sugar content and total dry mass will continue to increase.

(1 mark)

(d) Conditions necessary for seed germination

- ❖ Favorable temperatures. – This is required activation of enzymes and regulation of metabolic activities.
- ❖ Optimum moisture to provide water needed to hydrolyze food reserves in the cotyledon.
- ❖ Oxygen needed to oxidize the sugars to release energy needed for growth.
- ❖ Light for some seeds to activate enzymes.

Any 3 explained points x 1 mark @ (3 marks) 6+10+1+3 = 20 marks

2. (a) Factors influencing effectiveness of chemical weed control.

- ❖ Formation of the spray – low concentration of the herbicide will not kill the weeds.
- ❖ Type of herbicide used – non selective herbicide will kill all the weeds in the garden.
- ❖ The extent of wetting of the plant – with contact herbicides, partial wetting will leave some parts not killed.
- ❖ Stage of weed growth – chemicals are more effective when applied on young weeds.
- ❖ Weather conditions- herbicides applied when it is about to rain will be diluted and washed away.

- Period from manufacture to use - chemicals stored for long before use may not kill the weeds especially if applied beyond their expiry date.

Mention $\frac{1}{2}$
Explanation 1

1 $\frac{1}{2}$ x 6 = 9 marks

- (b) The cultural methods of weed control – mulching – this limits light reaching the soil which limits germination of weed seeds.
 Crop rotation – this breaks the life cycle of parasitic weeds and starves them to death.
 Flooding which kills most of weeds that cannot survive high water conditions.
 Uprooting with hands – the weeds are uprooted and exposed to the sun to dry.
 Use of clean planting materials – this reduces on spread of some weeds on planting materials.
 Cove cropping – the cover crops suppress the growth of weeds.
 Early planting – this allows crops to establish faster and out compete the weeds.
 Proper spacing of crops – this allows crops to suppress the weed growth.
 Controlled grazing – this limits establishment of weeds in grazing areas.

Mention $\frac{1}{2}$
Explanation

1 $\frac{1}{2}$ x 7 = 10 $\frac{1}{2}$ marks

9+11 20 marks, $\frac{1}{2}$ for good work

3. (a) **Factors that encourage soil moisture conservation.**

- ❖ Mulching – This encourages water infiltration into the soil and reduces on evaporation of soil moisture.
- ❖ Deep ploughing – this improves on water infiltration into the soil
- ❖ Cover cropping – this reduces on the rate of water evaporation from the soil.
- ❖ Ridge ploughing – reduces on speed of surface run off and encourages water infiltration into the soil.
- ❖ Use of absorption banks – these trap and retain water to be used by crops.
- ❖ Terracing – this reduces on speed of surface runoff and encourages water infiltration into the soil.
- ❖ Application of manures/organic.
- ❖ Matter – this improves on water infiltration into the soil.
- ❖ Construction of ditches – These trap and retain water that is allowed to enter into the soil.
- ❖ Use of soil bands – These reduce on the speed of surface runoff and encourages water infiltration into the soil
- ❖ Rough cultivation – which reduces on the speed of surface runoff and encourages water infiltration into the soil.

Mention $\frac{1}{2}$
Explanation

1 $\frac{1}{2}$ x 6 = 9 marks

(b) **Importance of soil moisture.**

- ❖ It dissolves nutrients to be absorbed by plants.
- ❖ It is needed for seed germination
- ❖ It encourages decomposition of organic matter.
- ❖ It regulates soil temperature.
- ❖ It softens the soil for easy penetration of plant roots.
- ❖ It encourages weathering of rocks.
- ❖ It is absorbed by plants and used for photo synthesis.

6x1 = (6 marks)

(c) **Problems of excess soil moisture.**

- ❖ It encourages leaching of nutrients.
- ❖ It encourages multiplication of pathogens like fungi
- ❖ It reduces on soil aeration that limits the activities of soil microbes.
- ❖ It makes the soil difficult to work on
- ❖ It leads to soil acidity
- ❖ It encourages soil erosion.

5x1 = (5 marks)

4. (a) **Characteristics of a natural pasture that needs improvement.**

- ❖ It is dominated by unpalatable plants
- ❖ It is infested with pests
- ❖ Most of the pastures are overgrown
- ❖ There is a lot of dry material.
- ❖ It is dominated by one pasture specie
- ❖ There is a lot of water logging.

6x1 = (6 marks)

(b) Improvement on natural pastures.

- ❖ Application of fertilizers and manures to increase on soil nutrient content.
- ❖ Irrigation to improve on soil moisture.
- ❖ Control of pests and disease to reduce on damage to pastures.
- ❖ Removal of unpalatable plants to encourage more pasture growth.
- ❖ Draining the poorly drained areas to encourage growth of new pasture species.
- ❖ Planting different pasture species to improve on the botanical composition.
- ❖ Cutting overgrown pastures to maintain the grazing level.
- ❖ Controlled burning of overgrown pastures to allow establishment of new and fresh pastures.
- ❖ Controlled grazing to reduce on over grazing that may allow establishment of unplantable plants.

6x 1 ½ = (9 marks)

(c) What influences utilization of pastures by nutrients.

- ❖ Age of the animals – young animals cannot utilize pastures well due to un developed stomach.
- ❖ Level of consumption. Excess consumption may lower utilization.
- ❖ Health status of the animal –sick animals may not utilize pastures consumed.
- ❖ Treatment of pastures – chopping of pastures improves on intake
- ❖ Stage of growth of the plants- over grown pastures may not be fully utilized by the animal.

5x1 = (5 marks)

6+9+5 = (20 marks)

5. (a) Causes of disease outbreak in poultry.

- ❖ Giving contaminated feeds.
- ❖ Providing dirty/contaminated water.
- ❖ Mixing birds of different ages.
- ❖ Overcrowding due to limited space.
- ❖ Poor ventilation in poultry houses.
- ❖ Use of dirty containers like feeders.
- ❖ Presence of a sick bird among health y ones.
- ❖ Presence of vectors/parasites.
- ❖ Allowing unauthorized people in the poultry house.
- ❖ Damp litter in poultry houses.

8x1 = (8 marks)

(b) Effects of diseases in livestock.

- ❖ They lower production in animals.
- ❖ They lower reproduction in animals
- ❖ They cause reduced growth in animals
- ❖ they reduce on the quality of products
- ❖ They cause death to animals
- ❖ They can lead to growth malformations
- ❖ They increase of costs of production.

5x1 = (5 marks)

(c) Signs and control of new castle disease.

Signs.

- ❖ There is gasping of chicks
- ❖ Birds develop cough
- ❖ There is occasional paralysis
- ❖ Layers produce soft shelled eggs
- ❖ Egg production may stop in layers
- ❖ There is paralysis and death of chicks.

5x1 = (5 marks)

Control

- ❖ Vaccination which can be done at the age of 1- 6 days or 6 - 8 weeks.
- ❖ Provision of clean food and water.
- ❖ Killing all the infected birds.

2 x 1 = 2marks,

8+5+7 = 20 marks

6. (a) **Importance of keeping records on the farm.**

- ❖ They indicate the history of the farm,
- ❖ They assist the farmer to recover debts
- ❖ They enable the farmer to compare the performance of different enterprises
- ❖ They enable the farmer to evaluate the efficiency of his farm as well as his managers.
- ❖ One can detect irregularities on the farm.
- ❖ They can be used to design changes on the farm.
- ❖ They assist in decision making for better planning
- ❖ The farmer can work out wages for workers.
- ❖ They can be used in valuing the farm – financial value of assets.
- ❖ They can be used in tax assessment.

8x1 = (8 marks)

(b) **Characteristics of a good farm record.**

- ❖ It is easy to interpret
- ❖ It has the correct format
- ❖ It is detailed enough
- ❖ It gives accurate information.

3x1 = (3 marks)

(c) **A BALANCE SHEET FOR Mr. Kalisa's farm business as per 31st December 2016**

Liabilities		Assets	
Bank loan	2,000,000=	Land value	4,500,000=
Owes his friend	1,000,000=	Livestock value	2,100,000=
Bank overdraft	800,000=	Crops in stores	900,000=
Debt payable	400,000=	Prepaid expenses	600,000=
Creditors	1,500,000=	Inputs for crops	300,000=
	5,700,000=	Cash in bank	300,000=
Owners capital	32,000,000=	Cash at hand	200,000=
	8,900,000=		
Total	8,900,000=	Total	8,900,000=

18x ½ = (9 marks)

8+3+9 = 20 marks

7. (a) **Differentiate between labour supply and labour efficiency**

- ❖ Labour supply is the number of men and women of working age who are able and willing to work in a given area/job.
- ❖ Labour efficiency is the ease with which labour can perform task or it is the production per worker per day expressed in the quality and quantity of output per unit of time.

2x1 = (2 marks)

(b) **Characteristics of labour force in Uganda.**

- ❖ Government is the largest employer.
- ❖ It is dominated by young group.
- ❖ It is dominated by males.
- ❖ It has high prevalence of target workers.
- ❖ Paid wage earners are few.
- ❖ A small percentage is skilled.
- ❖ It is increasing at a high rate with increasing population.
- ❖ It is poorly organized.
- ❖ There are high levels of unemployment.
- ❖ Wage difference is high especially between skilled and unskilled.

❖ It is predominantly illiterate.

6x1 = (6 marks)

(c) **Factors that influence labour efficiency level of education and training skilled labour is more efficient than unskilled labour.**

- ❖ Working conditions – good working condition increase on labour efficiency.
- ❖ Attitude towards work – good attitude improves on efficiency.
- ❖ Degree of specialization – high specialization increases on efficiency on labour
- ❖ Level of nutrition- poor feeding will lower efficiency of labour.
- ❖ Experience – experienced workers are more efficient.
- ❖ Health of workers good health workers are more efficient than poor health workers.

Level of supervision – efficient supervision increases on efficiency of labour.

- ❖ Incentives given to workers- provision of incentives to workers will increase on the efficiency to work.
- ❖ Level of technology used – improved technology increases on efficiency of labour.
- ❖ Quality and nature of co-operate factors – good quality land combined with
- ❖ Large amount of capital will increase on efficiency of labour.

Mention $\frac{1}{2}$
Explanation 1 }

$1 \frac{1}{2} \times 8 = 12$ marks
 $2+6+12 = 20$ marks

8. (a) Importance of farm buildings .

- ❖ They protect animals from elements of weather.
- ❖ They protect crop products from bad weather.
- ❖ They protect farm tools and machinery.
- ❖ They keep farm inputs.
- ❖ They provide shelter to the farmer and workers.
- ❖ They protect products form being stolen.
- ❖ They can be a source of income through rent.

4 x 1 = 4marks

(b) Factors that influence the choice of site for farm buildings.

- ❖ Water source – They should be constructed near a permanent source of water.
- ❖ Gradient – They should be on a gentle slope.
- ❖ Soil conditions - They should be constructed on firm and free draining soils and use infertile soils.
- ❖ Accessibility – They should be near communication lines.
- ❖ Relationship between the buildings. Food stores should be near animal houses.
- ❖ Security – Buildings of some enterprises like poultry, rabbits should be near the farmers house for easy supervision.
- ❖ Power supply – There should be a nearby power line.
- ❖ Position of the sun – They should not allow direct sunrays into the building.
- ❖ Direction of wind – They should be located on a leeward side.
- ❖ Allowance for expansion – There should be enough space for future expansion.

Mention $\frac{1}{2}$
Explanation }

$1 \frac{1}{2} \times 6 = 9$ marks

(c) **Qualities of a good store for produce.**

- ❖ The walls should be smooth with no cracks.
- ❖ It should be well ventilated.
- ❖ It should be raised above the ground to reduce on dampness.
- ❖ It should be on a raised place to limit floods.
- ❖ The floor should be concentrated and with no cracks.
- ❖ It should be vermin proof.
- ❖ It should have a leak proof roof.
- ❖ It should have strong and lockable doors.

7 x 1 = 7marks, 4+9+7 = 20 marks

9. (a) Farm practices that can be done using simple machines and giving an example.

- ❖ Castration of male animals using a burdizzor.
- ❖ Trimming of hedges using a shear.
- ❖ Carrying of building materials using a wheel barrow.

- ❖ Loading trucks with produce using inclined planes.
- ❖ Splitting wood for firewood using an axe.
- ❖ Fixing nails when fencing using a claw hammer.
- ❖ Drilling holes in wood using a hand drill.
- ❖ Holding two objects to be worked on using a G-clamp.
- ❖ Fixing ear tags using an ear tagging machine.

10x1 = 10marks.

(b) Problems of mechanizing agriculture.

- ❖ It is expensive to buy machines. The operation of machines requires skilled labour.
- ❖ Machines cannot be used on steep slopes.
- ❖ Machines cannot be used on fragmented land.
- ❖ Cultivation on a large scale with machines exposes the soil to erosion agents.
- ❖ Some farming systems like multiple cropping limit the use of machines.
- ❖ Machines may not be used in some practices like coffee harvesting.
- ❖ Lack of spare parts makes the use of machines difficult.
- ❖ Poor soil conditions in some areas limit the use of machines.
- ❖ Thick vegetation in some areas limit then use of machines.
- ❖ Poor communication in some areas limit the use of machines.
- ❖ Production with machines may lead to high output that result in lowered prices of products.
- ❖ Using machines reduces on employment opportunities.

10 x 1 = 10 marks, 10 + 10 = 20 marks.

END