GATUNDU FORM 4 EVALUATION EXAM

AGRICULTURE PAPER 1(ONE 443/1
MARKING SCHEME
SECTION A (30 MRKS)

1. Difference between olericulture and pomoculture
- Olericulture – Growing of flowers
- Pomoculture – growing of fruits

2. Physical weathering agent
   - Wind
   - Water
   - Temperature changes (1 ½ mrks)
   - Moving ice /glacier

3. Methods of farming
   - mixed farming
   - Nomadic pastoralism
   - shifting farming
   - Organic farming
   - agro-forestry

4. Variable and fixed cost in broiler production
   a) Variable cost
      cost of the feed
      cost of drug
   b) Fixed cost
      - cost of feeders and waterers
      -- Cost of structure/Depreciation of poultry house
      - Cost of chicks

5. Advantages of crop rotation (2mrks)
   - Improve soil structure
   - Control soil borne pest and diseases
   - Ensure maximum utilization of farm labour (2mrks)
   - Aids in weed control
   - Improve soil erosion
   - Security in case of failure on one crop
- Add nitrogen through N-fixation by Rhizobium bacterial when legume are included

6. Factors considered when classifying crop pests
   - crop attacked /mode of felling
   - whether field /storage pest/stage of attack (2mrks)
   - Crop part attacked
   - science classification e.g. insect mite, rodent

7. Reasons why water logged oil is unsuitable for most crops (1 ½ marks)
   - It is not aerated (as water expels air)
   - It lacks micro-organism
   - It is always acidic
   - Low temperature

8. Advantage of tissue culture (2mrks)
   - Used to establish pathogen free plant
   - Used in mass production of propagules
   - It is fast and require less space than use of cutting
   - Used to propagate plants that don’t produce seeds

9. Observable indicators of economic development of a nation (2mrks)
   - Development of infrastructure
   - Housing status of the citizen
   - Increase in recreation facilities
   - Ratio of teachers to students
   - Improvement in the level of technology
   - Number of patients per doctor
   (more illustration )

10. Three indictors of well decomposed manure (1 ½ mrk)
    - Absence of bad odour
    - Material are light in weight
    - Manure is blown in colour

11. Condition where opportunity cost does not exist (2mrks)
    - where there are no alternative
    - If anything is given for free

12. Management practices that promote high herbage yield in pasture production (2mrks)
13. **Reasons why primary cultivation should be done early before the onset of the rains.** (1 ½ marks)
- Give time for the soil organism to act on organic matter
- Allow gaseous exchange to take place thus carbon dioxide diffuses out of the soil.
- Allows other operations to take place in time.

14. **Two examples of farm records that are general in nature** (1 mark)
- Production records
- Inventory
- Field operation records
- Breeding records
- Feeding records
- Health record
- Marketing record
- Labour record

15. **Roles of nitrogen in plants** (2 marks)
- Vegetative growth
- Chlorophyll formation
- Build up of protoplasm
- Improves leaf quantity in leaf crops such as tea and cabbage

16. **Benefits of possessing a land title deed to farmer**. (2 marks)
- Can be used as security for credit
- Encourage long term investments
- Reduce land disputes
- Motivates the farmer to conserve soil and water

**SECTION B (20 MRKS)**

**Answer all the question in this section in the space provided.**

17. The diagram below illustrates a feature observed after digging the soil several metres. Study it carefully and answer the questions that follow.

a) Soil profile (1 mark)
b) Transitional zone (1 mark)
c) Because sometimes minerals are leached from the soil and accumulate in the layer b (1mrk)
d) Ways in which the knowledge of the above feature would be of benefit to a farmer (2mrks)
- Decides what crop to grow
- How best to cultivate the land

18a) Tissue culture
b) Banana & passion fruits
c) Three ingredients used when preparing tissue culture
- Sugar (1 ½ mrks)
- Inorganic minerals
- Vitamins

19a) Profit and loss account for Mr Juma’s farm for the year ended on 31st March 2015

<table>
<thead>
<tr>
<th>Purchase and expense £</th>
<th>Sales and receipts £</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ksh</td>
</tr>
<tr>
<td>Opening valuation</td>
<td>100,000</td>
</tr>
<tr>
<td>Calves</td>
<td>72,000</td>
</tr>
<tr>
<td>Hired labour</td>
<td>21,000</td>
</tr>
<tr>
<td>Rent</td>
<td>9,000</td>
</tr>
<tr>
<td>Feed</td>
<td>5,300 v£</td>
</tr>
<tr>
<td>Seed</td>
<td>1,700</td>
</tr>
<tr>
<td>Fertilizer</td>
<td>4,700</td>
</tr>
<tr>
<td>Pesticides</td>
<td>1,250</td>
</tr>
<tr>
<td>Depreciation</td>
<td>650</td>
</tr>
<tr>
<td>Repair and maintenances</td>
<td>950</td>
</tr>
<tr>
<td>Interest on loans</td>
<td>200</td>
</tr>
<tr>
<td>Total</td>
<td>216,750 £</td>
</tr>
<tr>
<td></td>
<td>B/F/loss</td>
</tr>
<tr>
<td></td>
<td>Total</td>
</tr>
</tbody>
</table>

NB v£ = 1 ½ marks (entries) = 3
£ = ½ x 8 = 4
b) loss (½ mark) 7 marks

20a) Maize stalk borer (1/2 mark)
B-) millet (1/2mrk)
- Sorghum
- Sugarcane

c) crop rotation (3mrks)
- Early planting
- Rogueing
- Clean seedbed
- Planting clean seeds
- trap cropping
- proper nutrition
- proper spacing
- timely planting

SECTION C (40 MRKS)

Answer any two questions in this section in the spaces provided (6 marks)

21a) Six advantages of rotational grazing (6mrks)
- The livestock make maximum efficient use of pasture.
- It reduces the buildup of pest and diseases.
- Animals waste is distributed evenly in all paddock or field
- Excess pasture can be harvested and conserved
- It is possible to apply fertilizers and control weeds, pest and diseases in the pasture that are not in use
- It allows a resting period for the pasture to regenerate before been grazed on again (6mrks)

b) Eighty ways in which soil fertility can be maintained. (8mrk)
- Adding manure to the soil to enrich it with nutrients.
- Using inorganic fertilizers which releases nutrients in forms that are readily available to plants.
- Practicing crop rotational to ensure balanced nutrients use.
- Using appropriate tillage, for instance minimum tillage.
- Regulating soil pH though liming
- Controlling soil erosion
- Practicing a forestation and reforestation
- By irrigation which increases availability and uptake of plant nutrients and reclaims saline soil
- Through mulching
- By weeding to reduce competition for nutrients.
- By practicing inter cropping preferably with legume to enhance nitrogen fixation.

c) Six factors considered when drawing a farm plan. (6mrks)
- Size of the land
- Environment factors
- The current trend in labour market
- Farmers objectives and preference
- Possible production enterprises
- Existing market condition and price trends
- Availability and cost of farm inputs
- Government regulation/policy
- Security
- Communication and transport facilities (6mrks)
22a) Factors that influence the type of irrigation to be used in a farm (8 marks)
- Topography
- Soil type
- Type of crop to be irrigated
- Amount of water available
- Distance of the source of water to the field
- Capital available, skill available
- Climate factors of the area

b) Six reasons for pruning coffee (6 marks)
- To train the plant so that it can have the required shape
- To remove the diseased and the unwanted parts of a plant such as extra suckers, leaves, branches, flowers or even stems
- To control cropping
- To facilitate picking to ease penetration of the spray
- To control pest and diseases.

c) 6 ways in which labor productivity can be improved on a farm (6 marks)
- Training the labor force
- Efficiency supervision of labor
- Mechanizing farm operation or providing more efficiencies tool and equipment.
- Giving incentive such as proper housing, transport, bonuses and medical services.
- Proper regulation of the workers
- Assigning task to workers according to their skills, ability and interest.

23 Importance of agro forestry in soil and water conservation (6 marks)
- Improve soil fertility though nitrogen fixation
- Add organic matter to the soil which increases water infiltration
- Acts as wind break preventing wind erosion
- Provide shade to crop reducing evapotraspiration
- Trees intercept the rain drop reducing erosion rate
- Tree roots hold soil particle preventing their movement

b) Procedure of silage making
- Prepare silo before harvesting the crops
- Harvest crop at appropriate size
- Wilt the crop for 6-12 hours
- Fill the silo with crop compacting every 10-12 layer
- Check the temperature regularly to ensure correct ensiling temperature
- Cover the ensiled material with polythene paper
- Cover the silo with thick layer of the soil to maintain a ridge/hump to prevent rain water entering the silo
- Dig a trench all around the silo to drain water away to rain water/seepage.

c) Effects of over application of nitrogenous fertilizer
- Occurrence of blossom and rot diseases
- Delayed maturity of plants
- Fruits crack when young.
- Grow more vegetative parts and produces less fruits
- Scorching effective on leaves
GATUNDU FORM 4 EVALUATION EXAM

AGRICULTURE PAPER 2
443/2
MARKING SCHEME

SECTION A (30MRKS)

1. Appropriate tools for
   a) removing metal chippings in the files
      - wire brush (1x1) (1mrk)
   b) Cutting wood along grains
      - rip saw 1x1 (1mrk)
   c) Branding
      - Branding iron 1x1=1mrk

2. Characteristic of boran cattle
   - Compact, deep and wide body
   - Long, wide, dropping rump
   - Large hump and dewlap
   - Usually white in colour hence radiates heats
   - Slow growth rate and late maturity
   - Resistant to high temperature
   - Cows weigh 410-450kg, bulls 550-650 kg (4x1/2 =2mrks)
   Used to improve zebu

3. Function of useful bacteria in livestock production
   - Digestive of grass and fibre in the rumen
   - Fermentation of yoghurt/milk products 2x ½ =1mrk

4. Function of lipids
   - Consistuent of body cell/part of body cell
   - Carries far soluble vitamins A,D,E, K
   - Insulate body / prevent body heat loss
   - Provide energy stored in reserves 4x ½ (2mrks)

5. Ways of reducing friction in moving parts of farm tools
   - oiling
6. **Types of fences used in mixed farm**
   - Electric
   - Plain wire
   - Barbed wires
   - Wooden fence
   - Woven wire fence/chain link
   - Stone/brick fence/block fence

7. **Method of out breeding**
   - Out crossing
   - Cross breeding
   - Grading up/Up grading

8. **Reason for tailing in sheep production**
   - Prevent blowfly infection
   - Prevent sailing of wool with urine and feces
   - Facilitate even distribution of fat in the body

9. **Parts of cow’s udder**
   - Lobule
   - Alveolus
   - Lobe
   - Teat cistern
   - Teat canal
   - Gland cistern
   - Teat sphincter muscles
   - Annular fold

10. **Ways of transmitting livestock diseases**
    - Open wounds
    - Body contact with affected animals
    - Inhalation of pathogens
    - Insect vectors
    - Ingestion of contaminated food and water
    - Contaminated surgical instruments

11. **Features of improved grain bin**
- Raised above ground
- Have rat guard on supporting posts
- Have impermeable wall to guard against rain water.
- Proper ventilation to control variations.
- Have proper roofing to protect grain from sunlight and rain 4x1/2=(2mrks)

12. **Types of calving complications** (3x1/2 =1 1/2mrks)
- Breech presentation
- One or both forelegs bent backward
- Head twisted backward to either side
- Whole reproductive trait twisted

13. **Advantages of zero grazing**
- High milk yield
- Quick accumulation of manure
- Easy control of parasite and diseases
- Less wastage of feed
- Large number of animals reared in a small area/allow high stocking rate .

4x1/2=(2mrks)

14. **Function of queen bee**
- Lay eggs
- Production of pheromone which keeps colony together

2x ½ =(1mrk)

15. **Symptoms of anaplasmosis**
- Constipation/hard dung
- Fever
- Paleness of gum eye lips – Fast breathing and heart beat
- Yellow urine, animal do not chew cud
- No milk flow from udder

4x1/2=(2mrks)

16. **Terms**
   a) Caponisation – Sterilizing male bird
   b) Bullock – Mature castrated male cattle
   c) Epislasis – A combination of inferior gene which individually could express themselves

**SECTION B**
A) **Type of cooling system**
- Air cooled system 1x1=1mrk
b) **parts**
   - J-Finned cylinder
   - K-crank case
   - L-metal cowling
   - M-fly wheel (blower)
   
   
   
   
   
   $4 \times \frac{1}{2} = (2 \text{mrk})$

   c) **Problem associated**
      - Uses heavy lubricating oil which are expensive
      - Get hot quickly
      - Cooling not adequate when carrying heavy load
      
      $2 \times 1 = (2 \text{mrks})$

   **18. Method of extracting honey**
   a) Heat method
   b) **Why x should not be heated directly**
      - To prevent destroying honey by heat $1 \times 1 = (1 \text{mrk})$
   c) **Parts**
      - W-Honey combs
      - Y-water
      
      $2 \times 1 = (2 \text{mrks})$

   d) **Other method of honey extraction**
      - Crushing and straining
      - Centrifugal method $1 \times 1 = 1 \text{mrk}$
      
      $1 \times 1 = 1 \text{mrk}$

   **19 a) practice illustrated**
   - Ear notching $1 \times 1 = 1 \text{mrk}$
   b) Illustration for number 37

   ![Illustration](attachment:image.jpg)

   c) **Other method of identifying piglet**
      - Ear tagging
      - Ear tattooing
      
      $2 \times 1 = (2 \text{mrks})$

   **20a) activity shown**
   - Hand milking
      
      $1 \times 1 = (1 \text{mrk})$
b) Activity carried out before the operation
- Restraining animal
- Providing food
- Washing udder of animal
- Wiping udder dry
- Testing for mastitis

1x1=(1mrk)

c) Procedure of carrying out practice
(i) - Assemble milking equipments
(ii) - Provide food
(iii) - Put cow in milking shed and restrain it
(iv) - Wash udder using warm water
(v) - Dry the udder with clean towel
(vi) - Use strip cup to test mastitis
(vii) - Milk animal / strip the teat dry
(viii) - Dip teats in antimastitis solution
(ix) - Apply milking jelly / milk salve on teats
(x) - Release cow

3x1=(3mrks) mark as whole
Stop marking where procedure is broken

SECTION C (40 MRKS)
21. a) Management practice on a fish pond to ensure maximum fish harvest
- Control stocking rate
- Control water pollution
- Supply adequate food regularly
- Provide appropriate feed
- Ensure constant in flow and out flow of water / aerate water
- Control predators
- Harvest fish at the correct maturity age.
- Maintain appropriate water level always

7x1=7mrks

b) Importance of farm mechanization
- Farm operation are achieved on time
- Large areas can be covered within short time
- Reduce drudgery / makes work easier and enjoyable
- Increased efficiency / better job done mechanically
- High yield due to timely operation
- Pest and disease outbreak controlled in a shorter time
- Encourage farmer to consolidate land
Farmer benefit from economic of scale
Uses less labour

6x1=6mrks

c) Short term maintenance practice on a tractor
- Check level of engine oil using a dip stick
- Check fuel tank to ensure there is enough fuel
- Check level of electrolyte in battery and adjust accordingly
- Check level of water in radiator and top up if necessary
- Grease/oil moving parts
  - Check for belt tension and condition and adjust accordingly
  - Check the air cleaner to ensure there is no dirt/check level of oil
  - Check the tyre pressure before work and adjust accordingly
  - Tighten loose nuts, bolts and pins
  - Remove dirt from sediment bowl

7x1=(7mrks)

2) Short term maintenance practice on a tractor
- Check level of engine oil using a dip stick
- Check fuel tank to ensure there is enough fuel
- Check level of electrolyte in battery and adjust accordingly
- Check level of water in radiator and top up if necessary
- Grease/oil moving parts
  - Check for belt tension and condition and adjust accordingly
  - Check the air cleaner to ensure there is no dirt/check level of oil
  - Check the tyre pressure before work and adjust accordingly
  - Tighten loose nuts, bolts and pins
  - Remove dirt from sediment bowl

7x1=(7mrks)

b) Factors that influence the work of the output of a draught animal
- Age of the animal – very young and very old have lower output compared to mature animals.
- Level of training – Well-trained animals are more efficient than poorly trained ones – They are able to follow simple instructions.
- Method or harnessing – Well-harnessed animals are more efficient than poorly harnessed animals.

Body condition – A well-fed draught animal is strong and healthy hence it has a higher work output compared to one that is poorly fed.
- Weather condition – Adverse temperature (very high, very low) reduces the work output of draught animals. The animal work best under suitable weather conditions.
Duration/ hours of work – Overworked animals tend to have a low work output, draught animal should be given sufficient time to rest.
Condition of working implement, well maintained implement are easy to work with and this improves the work output of the animal.

Any 5x2=(10mrks)

23a) Methods of controlling tick (10x1=(10mrks)
- Use of natural enemies e.g. ants and birds
- Self licking to dislodge ticks
- Burning infected pastures land to expose eggs to the sun
- Top dressing pastures with lime
- Fencing off pasture land.
- Keeping animals away from infected pasture to stave ticks.
- Rotational grazing help to break life cycle.
- Deticking from livestock and killing them.
- Spraying with acaricides or dipping in acaricides
- Hand dressing using pye-grease.

b) The management of grower up to the point of lay
- Feed the grower on adequate growers mash per bird per day.
- Supplement the grower’s mash with grains and greens.
- Introduce soluble grit / oyster shells at 20th week
- Provide adequate clean water and libitum.
- Adjust floor space; allowance; as the bird age appropriately
- Give a booster vaccine against new castle disease at 20 weeks of age at the 18th week, vaccinate against fool pox
- Drench the birds regularly against internal parasites.
- Dust the bird with the appropriate pesticides against external pests.
- Control predator such as rat / cats.
- Feeders and waterier should be cleaned and disinfected daily.
- Maintain foot bath at the entrance of the poultry house.
- Keep the litter as dry as possible / turning it regularly.
- Introduce the layer mash from the 18th week and increase gradually.
- Provide roosts / perches for the birds to perch on from the 9th week.
- Birds start laying at 18-21 weeks of age depending on the breed.

Any 12x1=12mrks)