

FORM FOUR END OF SECOND TERM EXAM

Kenya Certification of Secondary Education

AGRICULTURE

Paper - 443/1

July/August 2018

Marking Scheme

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- | | |
|---|--|
| <p>1.- make transplanting easier.
- encourage development of dense and strong rooting system.
$2 \times \frac{1}{2} = 1 \text{ mark}$</p> <p>2. Nitrate ions (NO_3^-)
Ammonium ions (NH_4^+)
$2 \times \frac{1}{2} = 1 \text{ mark}$</p> <p>3. Purchase order
Delivery note
Invoice
Receipt $2 \times \frac{1}{2} = 1 \text{ mark}$</p> <p>4.- Destroys organic matter
- destroys micro-organisms
- exposes soil to agents of erosion.
- ash leads to nutrient imbalance.
- destroys soil nutrients.
$2 \times \frac{1}{2} = 1 \text{ mark}$</p> <p>5.- prevents strong winds.
- reduces evapotranspiration
$2 \times \frac{1}{2} = 1 \text{ mark}$</p> <p>6.- Using chemicals/chlorine
- Boiling
- Filtration
- Aeration
$4 \times \frac{1}{2} = 1 \text{ mark}$</p> <p>7.a) Metal pipes
- Galvanised iron
- Aluminium pipes
$2 \times \frac{1}{2} = 1 \text{ mark}$</p> <p>b) Hose pipes
- Rubber
- Plastic
$2 \times \frac{1}{2} = 1 \text{ mark}$</p> <p>8.- Reduces speed of run-off increasing infiltration.
- Reduces evaporation of soil water.
$2 \times \frac{1}{2} = 1 \text{ mark}$</p> | <p>9. a) Fixed costs
- Rent
- Salaries of permanent labour.
$2 \times \frac{1}{2} = 1 \text{ mark}$</p> <p>b) Variable costs
- wages of casual labour.
- fuel costs
$2 \times \frac{1}{2} = 1 \text{ mark}$</p> <p>10.
a) Soda ash - softens water $1 \times 1 = 1 \text{ mark}$</p> <p>b) Alum - coagulates solid particles.
$1 \times 1 = 1 \text{ mark}$</p> <p>c) Chlorine - kills micro-organisms.
$1 \times 1 = 1 \text{ mark}$</p> <p>11.- Remedy to deforestation.
- Source of income.
- Environmental benefits.
- Labour saving
- Aesthetic value
$4 \times \frac{1}{2} = 2 \text{ marks}$</p> <p>12.a)- Where there are no alternative.
- where resources are unlimited (abundant)
$2 \times \frac{1}{2} = 1 \text{ mark}$</p> <p>b) - Scarcity.
- Preference and choice
$2 \times \frac{1}{2} = 1 \text{ mark}$</p> <p>13.- Provide raw materials to industries.
- Provides market to industrial goods.
$2 \times \frac{1}{2} = 1 \text{ mark}$</p> |
|---|--|

- 14.**
- Mutual benefit between crops and livestock.
 - guards against total loss./diversification.
 - maximum utilisation of resources e.g. labour.
 - high yields.
 - animals provide power.
- $4 \times \frac{1}{2} = 2 \text{ marks}$**

- 15.-Encourage tuber expansion.**
- ease harvesting.
 - controls erosion.
 - conserves moisture.
- $4 \times \frac{1}{2} = 2 \text{ marks}$**

- 16. - Nitrogen**
- Magnesium
 - sulphur
 - potassium
- $4 \times \frac{1}{2} = 2 \text{ marks}$**

- 17. Consumable goods inventory records goods that get used up in production process while permanent goods inventory records goods that do not get used up in the production process**
- $2 \text{ marks} - \text{mark as a whole.}$**

SECTION B (20 marks)

- 18. a) Law of diminishing Returns.**
- b) Zone I
The output (total product) increases at an increasing rate with each additional unit of input. (1 mark)
- Zone II
The output increases at a decreasing rate with each additional unit of input.
 $1 \times 1 = 1 \text{ mark}$
- c) Zone II **$1 \times 1 = 1 \text{ mark}$**
The output decreases (declines) with each additional unit of input. **$1 \times 1 = 1 \text{ mark}$**
- 19.**
- a) Couch grass (Digetaria scalarum)
 $1 \times 1 = 1 \text{ mark}$
- b) i) Perennial weed **$1 \times 1 = 1 \text{ mark}$**
- ii) Narrow leaved weed **$1 \times 1 = 1 \text{ mark}$**
- c)- Use of herbicides
- Cultivation /Tillage **$2 \times 1 = 2 \text{ marks}$**

- 20. a) To compare porosity / water-holding capacity.** **$1 \times 1 = 1 \text{ mark}$**
- b) A - sandy soil.
B - loamy soil
C - clay soil **$3 \times 1 = 3 \text{ marks}$**

- c)- Addition of organic matter.
- Addition of lime / liming
 - improve drainage.
- $2 \times 1 = 2 \text{ marks}$**

- 21. a) Earthing up.** **$1 \times 1 = 1 \text{ mark}$**

- b)- improve tuber formation in Irish and sweet potatoes.
- Promotes production of the seeds in groundnuts.
 - Improves drainage in tobacco.
 - Prevent lodging in maize.
- $\text{any } 3 \times 1 = 3 \text{ marks}$**

SECTION C : 40 marks

22.a) Advantages of mulching

- Conserve soil moisture by reducing evaporation.
 - Control soil erosion.
 - Control weeds by smothering them.
 - Improves water infiltration by reducing speed of surface run-off.
 - add plant nutrients when organic mulch decomposes.
 - Moderates the soil temperatures.
 - Upon decomposition, organic mulch adds humus that improves the soil structure.
 - Control incidence of crop pest attack e.g. banana weevil, coffee thrip.
- $\text{any } 5 \times 1 = 5 \text{ marks}$**

b) Activities undertaken in organic farming

- Use of organic manure / organic fertilizers.
- Planting resistant varieties
- minimum tillage.
- Cover cropping.
- Maintain field hygiene.
- Carry out rotational grazing.
- Mulching within crops using organic mulch.
- Using extracts from pepper, use of ash to control pests/ use of medicinal plant products to control disease and parasites.

- c) Benefits of using vegetative propagation in production of citrus.
- such materials mature faster than those from seeds.
 - show uniformity in qualities such as diseases resistance, seed size, colour, keeping quality, chemical composition.
 - its possible to produce many varieties of compatible crops on the same root stock.
 - use of vegetative materials is easier and faster especially where seeds show prolonged dormancy.
 - resulting plant has desirable shape and size for ease of harvesting and spraying.
 - it facilitates propagation of crops which are seedless / not viable/ have long dormancy period.
- any 5 × 1 = 5 marks**

- d) Management practices carried on pastures.
- weeding - to reduce competition for space, moisture, nutrients, sun.
 - top dressing to replenish soil nutrients.
 - topping to stimulate fresh growth.
 - re-seeding to prevent soil erosion after denudation and prevent growth of weeds
 - Controlled grazing for efficient utilization of pastures.
 - Pest control to reduce denudation e.g. as moles dig underground tunnels and cover pastures with soil.
- any 5 × 1 = 5 marks**

- 23.a)-** Continuous cropping without giving land a rest.
- burning.
 - ploughing along the slope.
 - deforestation.
 - ploughing along river banks.
 - cultivation soil when is too dry or wet.
 - overgrazing / overstocking.
 - flooding.
 - over cultivating the land to fine tilth / pulverizing soil. **any 8 × 1 = 8 marks**

- b) Pesticides base on made of action
- Stomach poisons.
 - Systemic poisons.
 - Contact poisons
 - Suffocants.
 - Anti-feedants
 - Repellents.
- any 5 × 1 = 5 marks**
(reject if no explanation)

- c) Procedure of harvesting pyrethrum.
- Pick flowers selectively.
 - pick flowers with horizontal petal (ray forests) with 2 - 3 rows of disc florets open.
 - use fore fingers and the thumb.
 - pick by twisting the heads so that no stem is left attached.
 - put the picked flowers in woven basket.
- any 4 × 1 = 4 marks**
- ii) Precautions.
- Pick starts 3-4 months after planting to maintain quality.
 - picked flowers are put in wooden baskets to allow ventilation and avoid fermentation of flowers.
 - wet flowers should not be picked as they heat up and ferment.
 - wet flowers should not by compacted to avoid heating up and fermenting
 - suitable picking interval (14-21) days is maintained to avoid harvesting overblown flowers.
- any 3 × 1 = 3 marks**

24.a)

Principles that govern running of cooperatives.

- open membership regardless of race, tribe, sex, region, education or political inclination.
 - equal voting rights based on democratic principles of one person, one vote.
 - voluntary withdrawal of membership.
 - loyalty of cooperative society and faithful.
 - Non-profit motive.
 - Selling of produce through cooperative is upto a specified maximum limit.
 - distribution of dividends is on the basis of share ownership.
 - education to members.
 - free withdrawal of membership.
- any 8 × 1 = 8 marks**

b) Field management

- thinning 2 weeks after germinating to attain a distance of 3 - 4cm (appropriate distance between plants within the row)
- weeding done by uprooting or shallow cultivation / when weeding earth up soil around the plant to encourage root expansion.

- Top dressing with a nitrogenous fertilizer at the recommended rate/60kg N/ha when the crop reach 10cm high / appropriate height.
- Irrigation / watering when conditions are dry / to supplement rainfall.
- control pests like aphids / red spider mite / leaf hopper /beetles by use of appropriate pesticide.
- control disease like leaf spot by use of appropriate fungicide.

any 5 × 1 = 5 marks

ii) Harvesting

- Harvesting 3 to 5 months after planting.
- Lift the plant out of the ground using a fork jembe/uproot manually cut off the top leaves.
- wash the root tubers.
- pack the root tubers in clean containers ready for marketing

any 2 × 1 = 2 marks

c) Maize streak control

- early / timely planting.
- practice close season.
- destroy crop residue.
- practice field hygiene.
- uproot volunteer crop.
- control of vector.
- practice rogueing.
- crop rotation.
- use certified seeds.

any 5 × 1 = 5