

443/ 1 AGRICULTURE (2017)
PAPER 1

MARKING SCHEME

1. Pastoralism is the rearing of livestock on natural pastures whereas nomadicism is moving from the place to another with livestock. 1mk

2. -Mutual benefit between livestock and crops.
 - Income is earned throughout the year
 - Diversification of farm enterprises / security of income.
 - Livestock eg oxen are used to provide farm power.
 - Enables good distribution and use of farm power. Any 4x ½ =2mks

3. *Two reasons Agriculture is important*
 - Source of food
 - Provide employment
 - Earn the country foreign exchange
 - Source raw materials for the industries
 - Provide market for the industrial goods
 - Sources of income for the country 2x ½ =1mk

4. -Temperature
 - Light
 - Rainfall
 - Wind
 - Humidity 4 x ½=2mks

5. i) Short term
 ii) Medium term
 iii) Long term 2 x 1 = 2mks

6. Makes cultural practices like harvesting, spraying easier
 - Prevent decolouration of fruits
 - Prevent fruits from getting dirty
 - Controls pests and diseases
 - Maintains quality of fruits 2 x 1 = 2mks

7. - Help in culling sickly animals (reject culling sick animals)
 - Help in selection of animals for breeding
 - Help in calculation of veterinary/ treatment cost
 - Assist the farmer in knowing the prevalent diseases 2 x 1 = 2mks

8. -Light intensity
 - -Light duration
 - -Light wavelength/ quality 2 x ½ =1mk

9. *Importance of land title deed*
 - It is a proof of ownership
 - Reduce land ownership disputes
 - Can be a security in acquisition of loan
 - The owner can courageously lease out whole or part of his land for income
 - It is an incentive for investment by the farmer on long term project 3 x 1 = 3mks

10. Four structures used to store water in a farm

-Dam	-Weir	-Plastic tank	
-Concrete tank	-Pond	-Well	4x ½ =2mks

11. Reduces the speed of running water and hence erosive force of water. Facilitates water infiltration into the soil 2 x 1 = 2mks
12. Broad leaved weeds 2 x 1 = 2mks
- Narrow leaved weeds
- 13 a) It is the use of a combination of more than one method to control pest. 1x1= 1mk
- b) Concentration of pesticide 2x ½ =1mk
- Timing of application / development stage of pest
- Weather condition at the time of application
- Persistence of pesticide
14. (i) Slope of the land /topography 4x ½ =2mks
(ii) Climate
(iii) Vegetable cover
(iv) Human activities
15. -Date of transaction 4x ½ =2mks
- People involved in the transaction
- Invoice number
- Type of goods
- Amount of money involved
- Notice of payment and /when due.
16. -Type of soil. 4x ½ =2mks
- Profitability of irrigation.
- Type of crop to be grown.
- Availability of water /rainfall pattern.
- Topography.
- Size of land.
17. a) Blossoms-end rot 1mk
- b) -Excess nitrogen in the early stages of growth. 3x 1 =3mks
- Deficiency of calcium in young fruit.
- Infrequent watering
- c) Control measures 2x 1 =2mks
- Regular / frequent watering
- Addition of calcium containing fertilizers e.g. C.A.N
18. (a) Soil water capillarity. 1 x 1 =1mk
- (b) Q sandy soil R loam soil
S clay soil 3 x1 =3mks
- (c) R coarse textured (1mk)
S fine textured (1mk)

19. (a) *Contribution land reform to improved crop production.*

- More efficient utilization of land hence high yields / better supervision/management.
- New lands put into use
- Security of land achieved hence higher investment.
- Better control of soil erosion
- Credit facilities are made available due to land registration.
- Encourages farmers to undertake long term projects. 4 x 1 = 4mks

(b) *Contribution of settlement schemes to –agriculture.*

- Increased production
- Land has improved intensively
- Better use of extension services is realized
- Increased agriculture credit
- Marketing co-operatives increased
- Farmers introduced to cash economy/ increase in commercial farming.
- More improved livestock and planting material are made available easily to farmers.
- Development of infrastructure is accelerated. 4 x 1 = 4mks

(i) Land preparation.

- Clear land and remove the stumps
- Cultivate and harrow land to fine tilth
- Prepare land early / during the dry season / before rains.
- Ensure that land is free from weeds
- Firm the seed bed using rollers before planting
- Select desirable variety of seed grass for the ecological zone of the area. (1 x 6)

(ii) Planting

- Use certified seeds/ healthy seeds
- Plant / sow the seeds at the onset of rains just before rains / during planting / early planting.
- Apply phosphatic fertilizer at planting time at appropriate rates.
- Drill or broadcast the seeds evenly on the seed bed.
- Use a recommended seed rate for the variety chosen.
- Bray twigs or gunny bags to cover the seeds.
- Lightly with soil or plant 3-5 times the diameter of seeds.
- Firm the seed using rollers after sowing / planting seeds. (1 x 7)

(iii) field management practices

- Control weeds by uprooting or applying appropriate herbicides.
- Apply nitrogenous fertilizers about 6 weeks after germination in split application.
- carry out reseeding
- Avoid grazing when pasture is too young.
- Irrigate in dry season.
- Cut back / practice light grazing in the initial phase of establishment to encourage lateral growth.
- To control pests e.g. moles.
- Use the correct stocking rate to avoid overgrazing. (1 x 7)

20. (a)(i) stage of harvesting

- 4 – 4 ½ months after planting when balls open.
- Start picking as soon as the 1st balls open.
- Do it on weekly intervals to prevent discolouration of lint. (3 x 1)

(ii) Method and procedure of harvesting

- Picking is done manually.
- The seed cotton is sorted into two grades AR- first grade free from insect damage and foreign matter and be clean white. BR- may not have all these qualities.
- The picker carries two containers while harvesting one for grade AR and the other for BR.
- The seed cotton is sorted into two grades AR (Safi) BR (Fifi) (4x1)

(iii) Precautions in harvesting.

- Ensure no foreign matter such as leaves and twigs are mixed with seed cotton.
- Avoid picking when cotton is wet.
- Avoid handling harvested cotton using sisal bags since their fibres may mix with the seed cotton creating problems during ginning. (3 x1)

(b)

- Crop rotation –breaks life cycles of pathogen.
- Rogueing – checks disease spread.
- Planting certified/ clean seeds-prevents introduction of pathogens into the field.
- Early planting / timely planting – crops establish faster before the outbreak of diseases.
- Proper spacing – creates unfavorable micro-climate for some pathogens.
- Weed control – removes alternate hosts of some pathogens.
- Use of clean tools and equipment – reduces chances of contaminating crops with pathogens.
- Pruning – removes diseased plant parts and creates unfavorable micro –climate.
- Quarantine – prevents spread of pathogens.
- Heat treatment – kills pathogens.
- Destruction of crop residue –kills pathogens and destroys breeding grounds.
- Pest control – reduces disease vector.
- Proper fertilizer / manure application- controls deficiency diseases.
- Close season- breaks life cycles of pathogens (stating ½ mark explanation ½ mark)
(½ x 20)

21. (a) Ecological requirements.

- Beans do best in well drained cam soils rich in organic matter.
- Beans cannot tolerate water logged soils.
- It requires moderate rain fall.
- Heavy rain is destructive during flowering stage.
- Beans grow well at an altitude between 0-2700 above sea level.
- It requires less humid conditions.

(b) Seedbed preparation should be done early enough.

- Clear the land and remove stumps.
- Remove all weeds ensure that underground roots are exposed to the sun
- Carry out primary
- Carry out secondary cultivation
- carry out secondary cultivation to achieve medium till

(c) Planting

- Timely planting should be observed.
- Beans should be planted at the onset of rains.
- Any delay in planting results into low yields.

- Dry planting can be done in semi-arid areas.
- Use certified seeds.
- Seed rate of 50 kg -100kg /ha depending on Variety (pure stand)
- Use the spacing of 60 x 15cm for indeterminate varieties and 30-45 x15 cm for determinate varieties.
- Use 200kg DSP/ha pure stand 200 kg/ha can also be used on pure stand crop.
- Place fertilizer along planting furrows or holes and mix with soil before planting the seeds.
- Place 2 seeds per planting hole.
- Cover the seeds or holes well.

(d) - Bean fly - Early planting, crop rotation seed dressing spraying with dimethoate, malathion

malathion. - Bean aphid —spray regularly especially during dry season with dimethoate,

- Flower trips —spray with malathion, diazinon, dimethoate.

- American bollworm —spray with malathion diazinon

Bean bruchid

Cutworm

Golden ring moth
diazinon.

Pea pod borer

Spiny brown bugs

} spray with suitable pesticides e.g

- Pest identification.

- Control.

22. a) Explain five advantages of mulching in crop production. (5mks)

- Has an insulating effect thus modifies/regulates soil temperatures
- Prevents water evaporation therefore moisture is retained in the soil for the plant use.
- Controls soil erosion by intercepting rain drops before they hit the soil,
- Reducing the speed of runoff and increasing rate of water infiltration.
- Organic mulch decomposes into humus thereby improving soil structure/water holding capacity/drainage/aeration
- After decomposition it improves soil fertility by releasing nutrients.
- Controls weed by covering the soil and suppressing their growth
- After decomposition organic mulch better soil PH/increases calcium exchange capacity. (5mks)

(b) Outline five activities that may be undertaken in organic farming. (5mks)

- Mulching
- Application of organic manure/organic fertilizers
- Crop rotation
- Use of medicinal plant products to control diseases and parasites
- Rearing of livestock on natural/feedstuffs without use of chemical additives
- Physical/cultural /pests/weed/parasite and disease control

(Accept any specific measure of control) 5x1= (5 mks)

(c) Discuss ten benefits a farmer is likely to get by using vegetative propagation in production of oranges (10mks)

- Production/development of early maturing crop
- Development of high yielding orange crop

- Makes the plant to assume the desired shape/size e.g. budding spread sideways/easy to manage.
- Can obtain two or more orange varieties on the same root stock.
- Ensures maintenance of genetic/clonal characteristics to ensure uniformity.
- Facilitates development of drought resistant crop
- It facilitate propagation of seedless orange varieties
- It's used to develop tree plant that are less thorny
- Facilitates fast multiplication of the desired crop/variety of oranges
- Is utilized to develop orange crop that is resistant to diseases
- Is utilized in repair/treatment of damaged parts of orange trees. (10mks)