

443/1
AGRICULTURE
PAPER 1
MARKING SCHEME

SECTION A

1. - Provides market for industrial goods.
- Provides capital for industrial growth.
- Provides raw materials for industries. *Any 2 x 1/2 = 1 mark*
2. - Size of the farm.
- Environmental factors.
- Cultural factors.
- Availability of capital.
- Farmers' knowledge and skills
- Farmers' choice and preference. *Any 2 x 1/2 = 1 mark*
3. - Pruning.
- Weeding.
- Thinning.
- Wide spacing. *Any 2 x 1/2 = 1 mark*
4. - Encourages accumulation of soil borne pests.
- Encourages accumulation of soil borne diseases.
- Reduces rate of decomposition of organic matter.
- May lead to soil capping.
- Weeds with underground storage organs not effectively controlled. *Any 4 x 1/2 = 2 marks*
5. - Type of crop to be cultivated.
- Method of land cultivation.
- Moisture holding / retention capacity.
- Root penetration.
- Drainage / aeration of soil.
- Soil fertility / quantity of nutrients in the soil. *Any 4 x 1/2 = 2 marks*
6. - Weeding.
- Propping.
- Pest control.
- Disease control.
- Pruning.
- Thinning / desuckering. *Any 4 x 1/2 = 2 marks*
7. - Scarcity.
- Preference.
- Opportunity cost. *Any 3 x 1/2 = 1 1/2 marks*
8. (a) Amount of DAP
100 kgs of DAP contains 18kgs of Nitrogen.
Amount of Nitrogen required per hectare = 200kg
100kgs of DAP = 18kgs of Nitrogen
? = 200kgs of Nitrogen
100kgs of DAP x 200kgs of Nitrogen
18 kgs of Nitrogen
= 1,111 kgs of DAP. *Any 2 x 1/2 = 1 mark*
- (b) Amount of P₂O₅ to apply
100kgs of DAP contains 46kgs of P₂O₅
1,111kgs of DAP contains ?
1,111kgs of DAP x 46kgs of P₂O₅
100kgs of DAP
= 511.06 kgs of P₂O₅ *3 x 1/2 = 1 1/2 marks*
-

9. - Leaching.
- Monocropping / monoculture.
- Continuous cropping
- Change of soil PH
- Accumulation of salts.
- Burning.

4 x 1/2 = 2 marks

10. - Nearness to a source of water.
- Well drained deep fertile soil.
- Gentle slope.
- Previous cropping.
- Secure place.
- Accessibility
- sheltered but not shaded.

Any 4 x 1/2 = 2 marks

11. - Soaking in water.
- Slight burning / heat treatment.
- Scarification.
- Cutting hair brushes.
- Acid treatment
- Use of germination hormones, e.g. IAA.

Any 2 x 1/2 = 1 mark

12. - Maintenance of parental characteristics.
- Mass production of plantlets.
- Disease free plantlets are obtained.
- Plants mature early.
- High yields obtained.

Any 4 x 1/2 = 2 marks

13. - Acts as windbreakers, thus reducing splash erosion.
- Fallen and decayed leaves help to improve soil structure.
- Create a micro climate for rainfall formation.
- Roots bind soil particles together – reduces soil erosion.
- Reduce speed and volume of surface runoff.

Any 4 x 1/2 = 2 marks

14. - By piercing and sucking insects.
- By human beings when handling planting materials.
- Contaminated tools and equipment used in propagation.
- Use of unhealthy planting materials.

4 x 1/2 = 2 marks

15. - Locusts.
- Army worms.
- Crickets.
- Termites.
- Ants.
- Maize stalk borer.
- Cutworms.
- Grass hoppers.

Any 4 x 1/2 = 2 marks

16. - Broad based terrace.
- Narrow based terrace.
- Bench.
- Fanyajuu.
- Fanyachini.

Any 4 x 1/2 = 2 marks

17. - Infection by nematodes.

- Nodulation / nodules. *2 x 1/2 = 1 mark.*

- 18.** - Brown or dark spots or streaks on leaves.
 - Rotting of leaves, flowers, fruits, stems, roots.
 - Canker on stems.
 - Premature defoliation.

2 x 1/2 = 1 mark

SECTION B

- 19.** - Soil PH.
 - Soil structure.
 - Soil texture.
 - Nutrient level / status.

4 x 1/2 = 2 marks

- 20. (a)** - A – Side grafting.
 - B – Whip / tongue grafting.
 - C – Budding.

3 x 1 = 3 marks

- (b)** - Pear.
 - Plum.
 - Avocado.
 - Citrus spp.

Any 2 x 1 = 2 marks

- (c)** - Budding knife.
 - Grafting tape.
 - Grafting wax.

Any 2 x 1 = 2 marks

- 21.** Plant population = $\frac{\text{Area of land}}{\text{Spacing}}$

$$1 \text{ ha} = 10000\text{m}^2$$

$$5.4 \text{ ha} = 54000\text{m}^2$$

$$= \frac{54000\text{m}^2}{0.45 \times 0.2\text{m}}$$

$$= 600,000 \text{ bean plants.}$$

5 marks

- 22. (i)** - Drainage.
 - Aeration.
- (ii)** - Easier to store awaiting favourable condition.
 - No root disturbance.
 - Easy to transport.
 - No competition.
 - Establish faster after transplanting.

2 x 1/2 = 1 mark

2 x 1/2 = 1 mark

- 23.** - Easy to harvest.
 - Easy to control pests and diseases.
 - Easy to apply fertilizers.
 - Easy to utilize.
 - High yields.
 - Maintains its herbage quality.

Any 4 x 1 = 4 marks

SECTION C

- 24. (a)** • Filtration at water intake – water leaves the source and is made to pass through a series of sieves before entering the intake pipe. Sieves trap large particles of impurities.
- Softening of water – water circulates and is mixed with soda ash (sodium bicarbonate) and Alum (aluminium sulphate). The chemicals are added into the water in equal proportions. Soda ash softens the water, while alum helps coagulate solid particles which finally settle down at the bottom of sedimentation tank.
 - Coagulation and sedimentation in the coagulation tank which is open, large and circular. Solid particles settle down. Fresh air enters into the water to remove bad smells. Water stays for 36 hours to kill bilharzia worms.

- Filtration in the filtration tank. All remaining solid particles are removed. The tank has layers of different sizes of gravel and a top layer of sand.
- Chlorination – Filtered water enters the chlorination tank where a small amount of chlorine solution is added by use of dosers. Chlorine kills micro organisms in water.
- Storage – Water is stored in a large tank before distribution. The tank should be properly covered and the area around it well fenced.

10 marks

- (b) - Increase soil aeration.
- Increase soil volume.
 - Raise soil temperature.
 - Increase microbial activities.
 - Reduce soil erosion.
 - Remove toxic substances.

Max 5 well outlined points x 2 = 10 marks.

25. (i) - Moderate rainfall 760mm – 1300mm p.a
- Warm climate of 20⁰ c – 25⁰c (day); 15⁰c – 17⁰c (night)
 - Altitude of 0 – 2100m above sea level.
 - Deep well drained fertile soils.

5 marks

- (ii) - Select a suitable site.
- Prepare the nursery bed to a fine tilth.
 - Make drills using a finger or stick, 10 – 15cm apart.
 - Drill seeds.
 - Cover seeds lightly.
 - Nursery bed should measure 1m wide.
 - Mulch.
 - Watering.
 - Remove the mulch and erect a shade.
 - Control weeds, pests and diseases.
 - Pricking out.
 - Hardening off.

8 marks

- (iii) - American bollworm – spray with insecticides.
- Cutworm – use appropriate pesticides.
 - Red spider mite – use appropriate pesticides
 - Nematodes - crop rotation
 - fumigate soil.

2 marks

- (iv) - Hand picking - for canning when fully ripe
- for fresh market pick when reddish colour starts to appear.

- Large wooden crates used to transport tomatoes.
- Fruits should be level with the tops of crates to allow piling of crates on top of each other without squashing the fruits. Total yields 100 tonnes per hectare.

5 marks

26. (a) (i) - Affects what to produce and consume.
- Some communities rely on crops others on livestock products and by products.
 - There is need to change cultural practices.
 - Religious beliefs dictate consumption pattern
 - More difficulty to change has limited agricultural activities.

6 marks

- (ii) - Agricultural products require cheap and efficient means of transport.
- Export products require quick means of transport.
 - Bulky products require heavy means of transport e.g. railway transport.
 - All weather roads are required to transport inputs to and from production areas.
 - Perishable products require refrigerated means of transport.
 - Market information and research require electronic media.
 - Communication information to farming zones should be made cheaper and affordable.

-
- Availability of electricity to enable use of computers so that email and internet can be used to text messages.
 - Mobile phones make marketing easy and should be affordable for most farmers. **6 marks**

(b) Advantages

- Most effective method
- Faster in controlling pests
- Results are more predictable
- Requires less labour.

4 x 1 = 4 marks

Disadvantages

- Are expensive hence increase the cost of production.
- Pollutes the environment.
- Requires skilled labour.
- Have residual effects.
- Harmful to soil useful organisms.

Any 4 x 1 = 4 marks