AGRICULTURE PAPER
FORM 2
TERM 3 2017
2017

MARKING SCHEME

1. Define the following as used in agriculture. (2 marks)
(i) Plantation farming – *the growing of only one type of crop on large scale*.

(ii) Large scale farming: *the growing of crops and rearing of animals in large numbers for commercial purposes.*

2. Factors that cause farmers to adopt small - scale farming. (2 marks)
- ✓ *Limited capital*
- ✓ *Small land sizes*
- ✓ *Market trends / fluctuation of prices.*
- ✓ *Poor government policies*

3. Highlight **four** methods in which land can be reclaimed. (2 marks)
- ✓ *Draining swampy land*
- ✓ *Irrigating dry land*
- ✓ *Terracing steep land/ soil erosion*
- ✓ *Afforestation/ reafforestation/ planting trees in wasteland*
- ✓ *Control of tsetse flies*
- ✓ *Deforestation/ bush clearance/ clearing forests*

4. Give **four** reasons why water is treated before use in the farm. (2 marks)
- ✓ *Kill disease causing organisms*
- ✓ *Remove chemical impurities*
- ✓ *Remove bad smell and taste*
- ✓ *Remove sediments and other solids*

5. Identify **four** farming practices that improve soil structure. (2 marks)
- ✓ *Addition of organic matter*
- ✓ *Fallowing*
- ✓ *Mixed cropping including cereals and legumes*
- ✓ *Minimum tillage*
- ✓ *Good crop rotation programme*
- ✓ *Cultivation at right moisture content of soil*
- ✓ *Liming.*

6. Give **four** effects of wind to crops. (2 marks)
- ✓ *Physical damage*
- ✓ *Stress through evaporation / chilling*
- ✓ *Spread of pests, weeds, diseases*
- ✓ *Soil erosion*
- ✓ *Increase of water and mineral uptake by increasing transpiration*

7. Identify **four** features of ranching as a farming system. (2 marks)
   - ✓ *Done in marginal areas with poor pasture*
   - ✓ *System is extensive*
   - ✓ *Extension services provided*
   - ✓ *Improved pastures*
   - ✓ *Selective livestock breeding*
   - ✓ *High level livestock management*

8. List **four** tools and equipment used to maintain livestock healthy. (2 marks)
   - ✓ *Trochah and Canula*
   - ✓ *Bolus gun*
   - ✓ *Drenching gun*
   - ✓ *Hypodermic syringe and needles*
   - ✓ *Clinical thermometer*
   - ✓ *Strip cup*

9. Mention **four** components of soil. (2 marks)
   - ✓ *Mineral matter*
   - ✓ *Organic matter*
   - ✓ *Living organisms*
   - ✓ *Water*
   - ✓ *Air*

10. Mention **four** factors considered in choosing irrigation water pipes. (2 marks)
   - ✓ *Durability*
   - ✓ *Length of the pipes.*
   - ✓ *Diameter of the pipe*
   - ✓ *Water pressure*
   - ✓ *Resistance to heat from the sun*
   - ✓ *Resistance to pest damage*
   - ✓ *Cost of the pipes*

11. Give four ways in which livestock production is affected with parasites. (2 marks)
   - ✓ *Irritate livestock*
   - ✓ *Causes anemia in livestock*
   - ✓ *Some block alimentary canal*
   - ✓ *Lower rate of production in livestock*
   - ✓ *Increase cost of production when controlled*
   - ✓ *Some lower quality of hides and skins*
   - ✓ *Some absorb food meant for the livestock thereby lowering the level of production.*
   - ✓ *Some for example ticks transmit disease causing organisms.*

12. Apart from potassium, list **four** other macro-nutrients essential to plants. (2 marks)
   - ✓ *carbon,*
   - ✓ *hydrogen,*
   - ✓ *oxygen,*
   - ✓ *nitrogen,*
   - ✓ *phosphorus,*
   - ✓ *sulphur,*
   - ✓ *calcium*
   - ✓ *Magnesium.*

13. Mention **four** roles of potassium to plants. (2 marks)
   - ✓ *Increases plant vigour and disease resistance.*

- ✓ *Increases the size of grains and seeds.*
- ✓ *Reduces the ill-effects due to excess nitrogen.*
- ✓ *Prevents too rapid maturation due to phosphorus.*

14. Give **four** characteristics of nitrogenous fertilizers. (2 marks)
- ✓ *Highly soluble in water.*
- ✓ *Highly mobile in the soil hence it is applied as a top dress.*
- ✓ *Easily leached because of the high solubility hence does not have residual effect on the soil.*
- ✓ *Has scorching effect on young crops during wet seasons.*
- ✓ *Easy to volatilize during hot season.*
- ✓ *They have a tendency to cake under moist conditions.*
- ✓ *They are hygroscopic hence should be stored in dry condition.s*

15. maize is planted at a spacing of 75 x25 cm, calculate the plant population in a plot of land measuring 4x3 m. (2 marks)

Area of land = 400cm x 300 cm
Spacing of maize = 75 cm x 25 cm
Therefore, plant population = $\frac{400\text{ cm} \times 300\text{ cm}}{75\text{ cm} \times 25\text{ cm}}$
= 64 plants.

SECTION B

Answer all questions in this section.

16. A farmer was asked to apply fertilizers as follows:
200kg/ha of DSP (40% P_2O_5)
150kg/ha of muriate of potash (60% K_2O)
150kg/ha of sulphate of ammonia (20% N)

(a) How much P_2O_5 didthe farmer apply per acre? (2 marks)

$$\frac{40}{100}\text{x}200 = 80\text{ kg/ha}$$

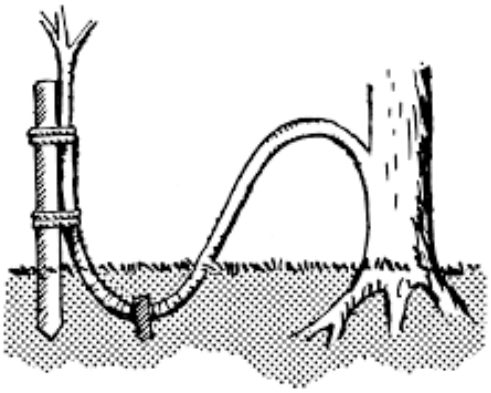
(b) How much K_2O did the farmer apply per hectare? (2 marks)

$$\frac{60}{100}\text{x}150 = 90\text{kg/ha}$$

(c) How much N did the farmer apply per hectare? (2 marks)

$$\frac{20}{100}\text{x}150 = 30\text{ kg/ha}$$

17. Below is a method of crop propagation. Use it to answer questions that follow.



(a) Identify this practice. (1 mark)

Layering

(b) State **three** advantages of the practice. (3 marks)

- ✓ *The parent plant supplies the new individual with water and food until it makes its own food and hormones.*
- ✓ *Comparatively bigger plant could be obtained through layering.*
- ✓ *It is possible to avoid mutagenic effects in certain species that happened if propagated by cutting.*
- ✓ *It is possible to generate few individuals of important species with minimum propagation facilities.*
- ✓ *It is possible to propagate difficult to root plants vegetatively.*

(c) Give **two** disadvantages of the method of propagation above. (2 marks)

- ✓ *This method of propagation is limited to plants which form growing points readily.*
- ✓ *It is difficult to produce large number of plants through this method. (does not use propagation material economically)*
- ✓ *This method is short but time consuming and little difficult in some cases.*
- ✓ *This method is expensive.*

18. The picture below shows a method of irrigation. Study it and then answer questions that follow.

(a) Name the method of irrigation. (1 mark)

Drip/ trickle irrigation

(b) Give **five** advantages of above method of irrigation. (5 marks)

1. *Maximum use of available water.*
2. *No water being available to weeds.*
3 *Maximum crop yield.*
4. *High efficiency in the use of fertilizers.*
5. *Less weed growth and restricts population of potential hosts.*
6. *Low labour and relatively low operation cost.*
7. *No soil erosion.*
8. *Improved infiltration in soil of low intake.*
9. *Ready adjustment to sophisticated automatic control.*
10. *No runoff of fertilizers into ground water.*
11. *Less evaporation losses of water as compared to surface irrigation.*
12. *Improves seed germination.*
13. *Decreased to tillage operations*.

(c) Mention **two** limitations in using the above method of irrigation. (2 marks)

1. *Sensitivity to clogging*
2. *Moisture distribution problem*
3. *Salinity hazards*
4. *High cost compared to furrow.*
5. *High skill is required for design, install and operation*.

SECTION C (40 Marks)

Answer all the questions in the spaces provided.

19. (a) Distinguish between seed dressing and seed inoculation. (2 marks)

Seed dressing is the coating ofseeds with fungicides or an insecticide or a combination of the two chemicals while seed inoculation is the coating of seeds with an inoculants in areas of nitrogen deficiency.

(b) Explain **four** methods of breaking dormancy in seeds. (8 marks)

✓ *Mechanical method: This is a method which aims at scratching the seed coat to make it permeable to water. Scarification is done by rubbing small sized seeds against hard surface such as sand paper, while filling or nicking the seed coat with a knife is done to large sized seeds such as croton seeds.*
✓ *Heat treatment: this involves the use of hot water or burning the seeds lightly. It softens the seed coat making it permeable to water and thus is able to germinate. The seeds are soaked in hot water about 80'c for 3-4 minutes after which the water is allowed to drain off.*
✓ *Chemical treatment:*
seeds are dipped in specific chemicals such as concentrated sulphuric acid, for two minutes and then removed.
✓ *Soaking in water: seeds are soaked in water for a period of between 24 –48 hours until they swell. They are then removed and planted immediately.*

(c)State **five** factors a farmer should consider in timing planting. (5 marks)

- ✓ *The rainfall pattern/moisture condition of the soil.*
- ✓ *Type of crop to be planted.*
- ✓ *Soil type.*
- ✓ *Market demand.*
- ✓ *Prevalence of pests and diseases.*
- ✓ *Weed control.*

(d) Give **five** advantages of timely planting. (5 marks)

- ✓ *Crops make maximum use of rainfall and suitable soil temperature, leading to vigorous growth.*
- ✓ *Crops usually escape serious pestsand diseases attack.*
- ✓ *Crops benefit from nitrogen flush which is available at the beginning of the rain.*
- ✓ *For horticultural crops, proper timing ensures that the produce is marketed when prices are high.*
- ✓ *Crops establish earlier than the weeds, hence smothering them.*

20. (a) State **five** advantages of using seeds as planting materials. (5 marks)

- ✓ *Seeds are easily treated against soil borne pests and diseases.*
- ✓ *They are not bulky therefore storage is easy.*
- ✓ *They are easy to handle during planting making operation easy.*
- ✓ *When planting seeds, it is easy to use machines like seed planters and drillers.*
- ✓ *It is easy to apply manures and fertilizers together with seeds during planting.*
- ✓ *Fertilizers and manures application can be easily mechanized.*
- ✓ *It is possible to develop new crop varieties due to cross pollination*

(b) List five factors affecting rooting of cuttings. (5 marks)

- ✓ *Temperature:*
- ✓ *Relative humidity*
- ✓ *Light intensity*
- ✓ *Oxygen supply*
- ✓ *Chemical treatment*
- ✓ *Leaf area*

(c)Discuss **five** factors that determine spacing of crops. (10 marks)

✓ *The type of machinery to be used.*

The space between the rows should allow free passage of the machinery which can be used in the field.

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✓ *Soil fertility.A fertile soil can support high plant population. Therefore closer spacing is possible.*

The size of plant.Tall crop varieties require wider spacing while short varieties re
quire closer spacing.

✓ *Moisture availability.*

Areas with higher rainfall are capable of supporting a large number of plants hence closer spacing than areas of low rainfall.

✓ *Use of crop.*

Crop grown for the supply of forage or silage material is planted at a closer spacing than for grain production.

✓ *Pest and diseases control.*

When crops are properly spaced, pests might find it difficult to move from one place to the other

✓ *Growth habit.*

Spreading and tillering crop varieties require wider spacing than erect type.