**Mwakican agriculture paper 1 marking scheme term 1 2016**

* Should not come into con tact with chemicals.
* Should be planted when the soil is moist.
* They should be inoculated with the right strain of rhizobium. (2 x ½ = 1mk)

1. (i) Applying chemical powders on bean seeds to prevent attack by storage pests.
   * + 1. The act of removing beans from the pods.
       2. Cleaning of the bean involves removal of chaff through winnowing. (3x½=1½mks)

* Plant must be capable of rotting quickly.
* Highly vegetative or leafy.
* Fast growth.
* Nitrogen fixing.
* Resistant to drought.
* The plant should be hardy. (4x½ = 2mks)
* Leguminous crops should be included to improve soil fertility.
* Crops from the same families should be alternated in order to discourage excessive infestation of soil borne pest and disease.
* The inclusion of a grass ley and this allows for maximum soil disturbance (maintain good soil structure) (3x½=1½mks)
* Exposes pests to the sun heat / light.
* Exposes pests to predators.
* Burying the pest hence starving them. (3x½=1½mks)
* Soil colour
* Soil structure
* Soil texture
* Soil PH
* Soil depth. (4x½ = 2mks)

7. (i) Opportunity cost is the returns from the best alternative forgone (W.T.E) 1mk

(ii) Types of inventory records

* Permanent goods inventory
* Consumable goods inventory (2 x ½ mk) = 1mk

8. Importance of sub-soiling

* Encourages gaseous exchange in soil (aeration)
* Breaks hard pans
* Brings leached minerals to the surface
* Improves soil drainage (Any 2 x ½ mk) = 1mk

9. (i) Destructive effects of moles

* Destroys crop roots thus interfering with absorption of water and nutrients
* Pulls plants underground causing their death
* Spoils pastures by covering them with soil from burrowed tunnels (Any 2 x ½ )1mk

(ii) Other rodent pests

* Squirrels
* Rats
* Mice
* Porcupine
* Hedgehogs (Any 2 x 1 ½) = 1mk

10. Field pest that attack maize

* Maize stalk borer (ReJ: stalk borer)
* Army worm
* Aphid
* Birds
* Rats (Any 4 x ½) = 2mks

11. Apiculture is the rearing of bees in beehives

Aquaculture is the rearing of fish in fish ponds (Mark as a whole) 1mk

12. Ways through which burnings leads loss of soil fertility

* Destroys organic matter
* Ash accumulation leads to nutrient imbalance
* It kills/ destroys soil micro-organisms
* Exposes soil to agents of soil erosion
* Destroys soil structure increasing soil erodability
* Exposure of soil nutrients to high temperature causes increased volatilization of nutrients(Any 2 x ½) 1mk

13. Benefits of hardening off

* Reduces chances of drying-up of seedlings after transplanting
* Enables seedlings to establish themselves faster in the main field

14**. Examples of:**

a) **Organic manures**

* Farmyard manure
* Compost manure
* Green manure

b**) Straight fertilizers**

* Calcium Ammonium Nitrate (CAN) -Sulphate of Potash
* Single Superphosphate (SSP) -Double Superphosphate (DSP)
* Potassium Chloride/ Muriate of Potash -Sulphate of Ammonia
* Urea -Ammonium Sulphate Nitrate (ASN)

c) **Incomplete fertilizer**

* Diammonium Phosphate (DAP)
* Nitrophos (20:20:0)
* Monoammonium Phosphate (MAP)—(11:48:0)
* 23:23:0

15. **Macronutrient for:**

i) **Protein synthesis**----- Nitrogen

ii) **Root establishment**---- Phosphorus

16. **Factors that increase seed rate:**

* Low germination percentage
* Low seed purity
* More seeds per hole
* Close spacing

17. **Role:**

a) Aluminiumsulphate -- Coagulation of tiny particles in water

b) Chlorine -- Kill disease causing organisms.

c) Sodium bicarbonate – Softening of water

18. Soil constituents

(a) Soil air

(b) Soil water

(c) Mineral matter

(d) Organic matter

(e) Living organisms 3 x ½ (1 ½ mk) max 1½ mk

19. How nitrogen is lost from the soil

* Volatilisation
* Leaching
* Combustion
* Denifrification (Any 3 x ½ mk) 1 ½ mk

**SECTION B**

20. a) i) Trelising (½ mark)

ii)

* Facilitate easy carrying out of routine practices e.g. spraying
* Prevent soiling of fruits/clean fruits harvest
* Control fruits from being infected by soil borne pests
* Plant is well aerated (2x1=2)

b) Plant population = (4mx100) x 3mx100

spacing 60cmx60cm =33+ 1 (1½marks)

21. a) P – Sugar care sett/cutting (½ mark)

Q – Green top sugar cane (½ mark)

b) P – produce roots easily as Q

may rot easily before root production (1 mark)

22. a) H – single stem pruning (½ mark)

J – multiple stem pruning (½ mark)

b)

* Allow easy picking/spraying
* No breakages of the stem/branches
* Provide good ground cover 2x1 = 2 marks

c) i) Annual pruning

ii) Removal of secondaries, tertiaries and laterals which have produce two crops

iii) Changing of cycle after 4-8 years (2x1 = 2 marks)

23. a) V – platy structure (½ mark)

W – Blocky structure (½ mark)

b) V- top horizon of forest soil/clayed soils (½ mark)

W – clay soils (½ mark)

c)

* Poor soil aeration
* Poor drainage leading to water logging

Poor root penetration/root tuber expansion

24.a) Method – Four heap system *(1 x 1 = 1 mk)*

b)

**X**

**Y**

**X**

**z**

***(4 x ½ = 2 mks)***

c) i) Volume of X = Half the size of Y ***(1 x 1 = 1 mk)***

ii) 4 -5 weeks

**SECTION C**

25.Establishment of cabbage under the following subheadings

1. Nursery establishment and management

* Select a suitable site where members of the Brassica family have not been grown for the last three years.
* Dig the site deeply to remove all perennial weeds and stones
* Harrow the site to a fine filth
* Make shallow drills, 10 cm apart. The drills should be made evenly on the nursery bed.
* Place he seeds in the drills and cover them with light soil.
* Apply mulch material evenly on the nursery bed and water
* Remove the mulch after the seeds have germinated, then erect a shade over the nursery bed.
* Water the seedlings regularly
* Harden off before transplanting. ***(8 x 1 = 8 mks)***

1. **Land preparation**

* Prepare the land early enough when the weather conditions are dry. This allows enough time for the weeds to die
* Clean all vegetation and remove any tree stumps
* Plough deeply to remove all perennial weeds
* Harrow the land to a fine filth
* Make holes 10cm deep at a spacing of 90 cm x 60cm depending on the variety. ***(4 x 1 = 4 mks)***

1. **Transplanting**

* Cabbage can be sown directly into the field or first established in a nursery bed.
* Transplant the seedlings at the age of three to four weeks.
* Transplant during a cloudy or cool day
* Water the nursery bed thoroughly before transplanting
* Lift the seedlings with a ball of soil to avoid damaging the roots
* Water he field well before transplanting
* Apply handful of farmyard manure or one tablespoonful of double superphosphate to each hole.
* Apply suitable insecticides to control soil borne pests.
* Plant seedlings at the same depth as they were in the nursery.
* Firm the soil well around the base of the seedlings***. (8 x 1 = 8 mks)***

26 (a)

Role of phosphorous

* + - * + Root development
        + Development of flower /flowering
        + Fruit and seed formation
        + Hasten ripening of fruits
        + Play role in metabolic processes e.g respiration
        + Take part in cell division and crop growth
        + Farms part of nucleo protein
* Strengthen plant stem ( 5 x 1 = 5mk)

b) Policies government use to regulate amount of imported agricultural goods

* + - * + Heavy taxation of imports in order to protect local industries
        + Subsidizing the growing of locally produced commodities
        + Quality controlled to ensure production of high quality goods for export and domestic market
        + Conservation of natural resources e.g fossils , water catchment areas, wildlife and soil
        + Stepping up to control diseases and parasites that affect crops and livestock

c) Uses of farm records

* + - * + Help compare performances of different enterprises within the farm
        + Show the history of the farm
* Guide farmer in planning and budgeting of farm operations
  + - * + Help defect loses or theft on the farm
        + Help in assessment of income tax to avoid over or under taxation
        + Help determine value of the farm i.e determine assets and liabilities of the farm
        + Make it easy to share profits and loses in partnerships
        + Help in settling disputes eg when a farmer dies
        + Show whether the farm business is making profit or loss
        + Help in supporting insurance claims
        + Provide labour information like terminal benefits

27.

(a) Human factors influencing agriculture.

* + Level of education and technology – A more knowledgeable farmer produces high yields of high quality

than an illiterate farmer.

* + Health/HIV/AIDS – Sick farmers are less productive.
  + Economy – Farmers with high capital goods produce more than a farmer with little capital.
  + Transport and communication – Good roads available easy transport of inputs and outputs hence high yield.
  + Market forces of demand and supply – the higher the demand the higher the produce and rise versa.
  + Government policy – Government may subsidies prices of inputs to encourage production.
  + Cultural and religious beliefs – Some cultures and religious beliefs may discourage or encourage production. (5 x 2 = 10mk)

1. Factors to consider when choosing the planting time.
   * The onset of rains – Crops planted at the onset of rains establish early and make maximum used rains.
   * Weather conditions and harvesting time – Crops e.g. cotton, maize and wheat need a dry season for ripening and harvesting hence planting can be delayed for a while.
   * Prevalence of pests and diseases crops planted early escape attack from pests and diseases.
   * Soil moisture content – Right moisture facilitates germination of seeds and allows early crop establishment.
   * Make demand off season – Vegetables are always planted late to target high market demand when there is shortage of food supplies.
   * Type of crop to be planted,