SECTION A

1 The four types of records that a farmer should keep

- Field operations records.
- Production records
- Consumable goods inventory.
- Permanent goods inventory.
- Market records
- Labour records
- Breeding records.

Benefits of labour 4x½=2mks

2 Opportunity cost is zero 2x½=1mk
i)When there are no alternative/choices in enterprises
ii)When production resources are not limited/are abundant free

3. **4 reasons for keeping livestock health records**.

i) Help in calculation of treatment and health costs
ii) Help in culling/selecting livestock
iii) Help in future diagnosis treatment and control measures
iv) Help determine the common diseases and parasites/prevent diseases and parasites
v) Help to support livestock insurance claims (4 x $^1/_2$ = 2 marks)

4 -To kill the weeds
-Bury crop residues/organic matter into the soil
-Loosen up the soil/facilitate rainfall infiltration/improve aeration/easy penetration of roots.
-Control soil borne pests/diseases by destroying their life cycles.
-Make subsequent operations easier. 4x½=2mks

5.soil structure is the physical arrangement of soil particles and how they adhere to each other to form an aggregate where as ***soil texture*** is the relative proportion of various sizes of mineral particles in the soil. ***(1 mark)***

6. a)shovel
- Mixing mortar/manure
- Lifting soil/manure (1 x $^1/_2$ = $^1/_2$ mark)

b) Strip cup
- To detect mastitis infection in milk. (1 x $^1/_2$ = $^1/_2$ mark)

7. Olericulture-the growing of vegetables such as French beans, cabbages, tomatoes onions under both small scale and large scale.

Pomoculture- growing of fruits such as citrus,mangoes,passion fruits and pineapples
2x1=2mks

8-.conditions under which shifting cultivation is practiced
- Where land is abundant
- Where population is sparse
- Where the number of livestock per unit area is low
- Where land is communally owned 4x½=2mks

9.It is a source of food for the population.
-Earns foreign exchange for the country
-Provides market industrial goods.
-Farmers earn a lot of income
-Provides employment both directly and indirectly.3x1=3mks

10.i)Jersey 1x1=1mk
ii) Friesian 1x1=1mk

11 Characteristics of goats that adopt them rid areas
- Good foragers hence survive on poor pastures.
- Ability to eat dry feeds
- Heat tolerant tissues.2x½=1mk

12-Leaching/ soil erosion
-Change of soil pH
-Burning of land/ volatilization/ denitrification/ accumulation of salts
-Fixation of nutrients/ nitrogen lock up
-Uptake by plants/ weeds
Continuous cropping
-Soil capping/ formation of hard pan
-Presence of soil – borne pests
Monocropping
4x½=2mks

13.Rapid growth rate
-Production of abundant foliage
-Rich in plant nutrients/ leguminous/ rich in nitrogen
-Ability to decay quickly
-Adaptable to wide range of conditions/ hardy. 4x½=2mks

14. - Destroy organic matter
-Destroy soil structure
-Kill useful soil micro organism
-Exposes soil to agent of erosion
-Causes nutrient imbalance/loss of volatile nutrients/accumulation of ;;;;;
-Destroy soil water 4x½=2mks

15 Functions of ingredients

(a) Wood ash

(i) Improves level of phosphorus and potassium in the manure

(ii) Modifies soil PH to enhance microbial activities/reduce acidy
1x1=1mk

(b) Top soil

(i) Introduces micro- organism necessary for decomposition of organic material 1x1=1mk

16 Reasons for water treatment

- To remove bad smell and taste
- To kill harmful micro-organisms which thrive in dirty water e.g. bacteria.
- To remove solid particles e.g. soil, sand sticks
- To remove excess chemical impurities e.g. fluorides to soften water

4x½=2mks

SECTION B

17 (a) Ridging 1x1=1mk

(b) Advantages of ridges

(i) Promote tuber/root expansion/development

(ii) Facilitate harvesting of root crop

iv) Conserve soil and water

v) Facilitates drainage in water logged soils

vi Encourage root penetration/distribution 2x1=2mks

18 a)Light intensity.

-Light wavelength
-Light duration / photosynthesis 2x1=2mks

b)i) Capillarity in the three different soil samples. 1x1=1mk

ii) G – Sandy soil
J – Clay soil 2x½=1mk

iii) G – Rough and coarse texture
J – Fine textured 2x1=2mks

iv) Addition of organic manure – Addition of lime 1x1=1mk

19. ((i) E - adjustable spanner
F - Ring spanner 2 x ½ = 1 mks)

(ii) Tool E can be used for tightening or loosening more than two sizes of nuts and bolts (Rejects one is adjustable (1 mk)

20 a) Dairy breed (1 x 1/2 = 1/2 mark)
b) Friesian/Jersey/Guernsey/Ayrshire (1 x 1 = 1 mark)
c) Physical characteristics of dairy cattle
- Wedge/triangular shaped
- Straight topline
- Large and well developed udders teats
- Prominent milk veins
- Lean bodies/thinly fleshed waters
- Large stomach
- Small head and long neck
- Well set wide hind quarters
- Prominent/visible pin bones
- Long thin legs

21. a) A_1- root stock A_2- scion 2x1=2mks
b) A_3 Grafting B- Trench layering 2x1=2mks

22. (a) Single stem pruning 1mk

(b) Disadvantages of multiple stem pruning
- Breaking of stems and branches
- Difficulties in gathering berries from top points
- Difficulties in spraying
- Rotting of stumps with age 2x1=2mks

23 a) i) Correct pruning
- B
NB: Wrong identity
Wrong reason (1 x $^1/_2$ = $^1/_2$ mark)

ii) Reason
- Slant cut is a few centimetres above the bud/leaf (1 x 1 = 1 mark)

b) 2 ways in which pruning controls diseases
i) Removes diseased parts
ii) Creates unfavourable conditions/environment for disease agents

iii) Facilitates penetration of chemical sprays. (2 x $^1/_2$ = 1 marks)

24. a) K-tapeworm M-liver fluke 2x½=1mk

b) K Small intestine

M The liver 2X1=2mks

c) Water snail (1x1=1mk)

SECTION C

25a) ***Growth habit of the crop/nature of plant growth***: crops that tiller, spread, creep, tall may require a wider spacing than those that do not.

- ***Intended use/purpose of the crops***: maize for silage is planted at a closer spacing than that for grain production.
- ***Type of machinery to use for field maintenance operation***: spacing adopted should allow passage for various operations such as weed control, spraying and harvesting.
- ***Soil fertility***: a fertile soil allows for closer spacing compared to poor soils.
- ***Moisture content of the soil/amount of rainfall in the area***: high moisure content/rainfall may allow closer spacing but low rainfall may necessitate wider spacing.
- ***Interplanted crops***: crops planted with others in rows will require wider spacing.5x2=10mks

b) Improves soil fertility: When legumes are included in the rotation, nitrogen is fixed/added in the soil.

- ***Control of pests/diseases***: Rotation of crops disrupts the life cycles of certain pests and diseases.
- ***Control of weeds***: It helps to control weeds which are specific to certain crops for example:- striga in cereals/cover crops in a rotation will smother certain weeds.
- ***Better use of the soil nutrients***: Different crops (due to differing root systems) draw nutrients from varying soil horizons/different crops have different nutrient demands, therefore when alternated leads to better nutrient utilization.
- ***Control of soil erosion***. Crops planted in rows for example:- maize should be alternated with cover crops to ensure that soil erosion is reduced.
- ***Improves soil structure***: Grass leys established will improve soil structure through the roots by binding soil particles together/during the grass ley period organic matter will accumulate to enrich the soil and improve soil structure. ***(5x2=10 marks)***

26 a) Signs of ill –health

- Behaviour of the animal –aggressiveness. Over excitement or produces abnormal sounds
  - Isolating from others /photophobic
  - -Animal movement –limping /lameness/ strained gait
  - -Skin /coat –ruffled/starry coat/ loss of hair/dull skin/part peeling Off/cracking/wounds/lesion/swelling
  - -mucous membrane-Dull red/pale/dry/having copious discharge
  - -production/performance level: sudden decline in production/performance /loss of weight and condition
  - -pulse rate: radical departure from the normal range
  - -Respiratory rate: Abnormal temperature from the normal range
  - -Body Temperature: Abnormal temperature from the normal range/too high/too low
  - Appetite and feeding: Increased/lack of appetite /abnormal chewing/ swallowing/feeding on abnormal food substances
  - Urination: Abnormal urine colour matter in terms of consistency/smell/colour, difficult urination/less or high frequency
  - Profuse salivation
  - lachrimation
  - defecation process: abnormal fecal matter interns of consistency /smell/color presence of parasite/egg segment/blood stain/frequency

(10x1) = 10mks

b). General farm hygiene/ cleanliness of houses. Feed/ water trough –

- proper carcass Disposal; to destroy pathogens
- Isolation; prevents spread of the diseases
- Drenching; to control internal parasites
- Treat sick animals; prevent spread of the diseases
- Vaccination; develop resistance against diseases.
- Control vectors, prevent transmission of diseases
- Prophylaxis; avoids infection
- Slaughtering those infected by highly infectious and contagious diseases
- Proper breeding; control breeding diseases
- Quarantine; avoid spread of the diseases
- Hoof trimming; minimize occurrence of foot rot
- Proper housing; avoid predisposing causes of diseases 5x2=10mks