**AGRICULTURE PAPER 1**

**MARKING SCHEME 2012**

**1** Name the part harvested for each of the following crops:

 (a) onions - bulb/ leaves

 (b) carrots - roots

 (c) coffee - berry/ chimes/ fruits (3x1/2 = 11/2marks)

**2.** Biotic factors that influence crop production.

 - Pests

* Decomposers
* Pathogens
* Nitrogens
* Pollinators
* Weeds
* Predators (4 x 1/2 = 2 marks)

**3.**  Methods of controlling crop pests.

 - Chemical

 - Biological

 - Cultural

 - Physical/ mechanical

 - Legislation (4 x 1/2 = 2 marks)

**4.** ways of harvesting water on the farm.

 i) Roof catchment

 ii) Rock catchment.

 iii) Weir/ dam

 iv) Retention ditches/ level terraces.

 v) Micro – catchment.

 vi) Water parts/ ponds (4 x 1/2 = 2 marks)

**5.**  Farm records that should be kept by a poultry farmer.

 i) Egg production

 ii) Labour records

 iii) Feeding records

 iv) Health records

 v) Marketing records

 vi) Inventory records (4 x 1/2 = 2 marks)

**6.** Disadvantages of using organic manure in crop production

 i) Low nutritive value per unit volume/ weight.

 ii) Livelihood of spread of disease/pest/weeds.

 iii) Bulky are difficult to store/transport/apply.

 iv) Looses nutrients if poorly stored

 v) Variable in nutrient content.

 vi) Difficult to qualify amount of nutrients per unit volume. (4 x 1/2 = 2 marks)

**7.**  Ways in which pastures are classified.

 i) Pasture stand; Pure/mixed.

 ii) Pasture establishment/ natural artificial

 iii) Ecological zone/altitude. (2 x 1/2 = 1mark)

**8.**  Disadvantages of organic mulches.

 i) Expensive to transport and apply/bulky

 ii) Could be a fire risk.

 iii) Provides breeding ground/hiding place for pests

 iv) Intercepts light showers of rainfall.

 v) Can spread pests/weeds/diseases (4 x 1/2 = 2 marks)

**9**. Advantages of practicing crop rotation.

 i) Ensures maximum utilization of nutrients.

 ii) Controls build –up of pests/diseases/controls pests/diseases

 iii) Controls weeds that are specific to particular crops/ controls weeds.

 iv) Improves soil fertility when leguminous crops are included.

 v) Controls soil erosion when cover crops are included

 vi) Improves soil structure if grass lay included (5 x ½ = 21/2marks)

**10.** Advantages of earthing up in crop production.

 i) improves tuber formation/ tuber expansion/ root formation

 ii) Improves drainage around the crop

 iii) Conserves water/soil

 iv) Facilitates harvesting of tuber crops

 v) Root protection (2x 1/2 = 1 mark)

**11** Harmful effects of weeds on crop production.

* Lower crop yields
* Lower quality of crop products
* Some harbor crop pests/diseases
* Increase the cost of production
* Suppress growth of crops through competition for light, space.
* Some are parasitic to crops
* Some block irrigation channels (4 x 1/2 = 2 marks)

**12** Advantages of shifting cultivation.

* No pest and disease build-up
* Low capital requirement
* No land disputes as land ownership is not individualized.
* Soil structure is maintained
* Give time for land fore gain fertility. (3 x 1/2 = 1 1/2marks)

**13** Advantages of zero grazing in dairy farming.

* Quick accumulation of manure
* Animal produce high yield due to less wastage of energy.
* Its easy to control diseases/parasites.
* Requires little land
* Allows higher stocking rate.
* Animal use feeds without wastage. (5 x 1/2 = 21/2 marks)

**14**. Factors that determine the stage at which a crop is harvested.

* Market price
* Weather conditions
* Market demand
* Purpose /intended use.
* Concentration of required chemicals (4 x 1/2 = 2 marks)

**15**. Ways in which land reform can be implemented in Kenya.

* Land consolidation
* Land adjudication and registration
* Land settlement and resettlement
* Tenancy reform
* Redistribution of land.
* Improved land legisltation
* Sub – division (4 x 1/2 = 2 marks)

**16**. Factors that influence the number of secondary cultivation in seedbed

 preparation.

* Type of crop to be established/size of seed
* Moisture content of soil
* Type of soil
* Conditions of land after primary cultivation/ implements used for primary cultivation
* Amount of organic matter on the surface.
* Vulnerability of soil erosion/ slope of land/topography. (4 x 1/2 = 2 marks)

**SECTION B**

17.a) Identify the structure

* Gabion/porous dam (1mark)

b) Ways in which the structure helps to control soil erosion.

* Slows down the spread of water thus reducing its erosive power.
* It traps the detached soil particles. (2 x 1 = 2 marks)

18.a) Give a reason for the shape of the curve labelled A.

 As the price of the commodity increases the quantity demanded decreases and vice versa.

 (1x1=1mark)

b) If the price of the commodity remains constant, explain three factors that can cause the curve to shift from A to B.

* If there is an increase in the income of consumers.
* Effective advertisement/sales promotion
* Increase in the price of a related/substitute
* If there is an increase in population
* Taste and preference
* If the quality of the commodity goes up (3 x 1 = 3marks)

19. a) Identify the weed labelled D.

 - *Oxalis spp./ oxalis latifolia*/oxalis (1mark)

b) Classify the weed labelled C according to plant morphology.

 - Broad – leaved weed. (1mark)

c) Reason why it is difficult to control the weed labelled D. (1mark)

 Presence of underground bulbs.

20. a) Identify the agroforestry practice illustrated above. (1mark)

 - Alley cropping/hedge row/ hedger row intercropping.

b) Benefits of the practice illustrated above. (3 x 1= 3marks)

 - source of folder when tree foliage is cut and fed to livestock.

 - Improves soil fertility through nitrogen fixation/nutrients re-cycling

 - Facilitates soil and water conservation when roots bind soil particles/ improves soil structure

 - Source of mulch/ material/ compost material.

21.a) Identify the crop pest illustrated above. (1mark)

 - Cutworm/ *agrotis spp.*

b) Ways of controlling the pest

 - Early planting for crop to establish early and outgrow the pest.

 - Application of appropriate pesticide/ insecticide/ chemical to kill it

 - Field hygiene to prevent transmission from previous crop residues.

 - Physical killing and destruction (2marks)

22. a) Name the property of soil being investigated. (1mark)

 - Soil capillarity

b) What is the relationship between the soil property named in (a) above and the size of soil particles? (1mark)

 - The smaller the size of the particles the greater the force of capillary.

c) Which soil sample would be suitable for growing paddy rice? (1mark)

 - soil labelled L.

**SECTION C (40 marks)**

***Answer any TWO questions from this section in the spaces provided after question 25.***

**23** (a) factors that should be considered in farm planning.

* Environmental factors/climate/soil types because these will determine the specific enterprises that are possible in an area.
* Size of the farm as this will determine the size/number of enterprises that are possible.
* Farmer’s objectives and preferences; so that the farmer will have a sense of ownership of the farm for motivation.
* Government regulations or policy to ensure that laws are not flouted.
* Availability and cost of farm input to select on an enterprise that is affordable
* Security of enterprises so as to ensure safety.
* Trends in the labour market/skills and the cost of labour to ensure availability throughout.
* Existing market conditions and price trend so that whatever is produced is sold and at appropriate prices.
* Communication and transport to ensure that produce reach markets and inputs are easily accessed.
* Possible production enterprises so as to choose the most profitable and convenient.

 (5x1=10 marks)

 (b) Transplanting of tomato seedlings.

* Should be done when seedlings are pencil size thick/ one month old
* Nursery should be watered before to ease lifting of seedlings
* Use garden trowel to ensure that seedlings are lifted with lump of soil around roots
* Apply appropriate pesticide or the planting holes and thoroughly mix these with the soil.
* Lift only healthy and vigorous seedlings from the nursery
* Plant one seedling per hole at the same depth as was in the nursery
* Transplanting is preferably done in the evening or on a cloudy day
* Provide temporary shade to the transplanted seedlings.
* Water the seedlings as necessary.
* Place the soil around the seedlings and firm
* Holes dug are spaced at 60 – 100cm by 50 – 60cm
* Transplant onset of the rains/ when the soil has enough moisture (water transplanting holes)
* Transport the seedlings carefully/use a wheelbarrow
* Planting holes should be dug at 15cm deep. (10x1=10 marks)

**24** (a) Factors that should be considered when siting a vegetable nursery. (5 marks)

* Near a water source for easy watering
* In a well sheltered place to prevent strong winds which can uproot seedlings and cause excessive evaporation
* Security so as to protect them from theft and destruction by animals/ birds
* On a gentle slope to prevent erosion through run-off and to prevent flooding
* Type of soil, should be well drained and fertile
* Previous cropping/avoid an area where same crop family had been planted to avoid pest and diseases attack/build up
* Near the seedbed/main field to minimize damage to seedlings during transplanting
* Accessibility for ease of movement
* Away from shading effect to allow sunshine (5x1=5marks)

 (b) Factors that should be considered when selecting seeds for planting.

* Adaptability – should be adapted to local ecological condition
* Physical deformities/damages – should be free from physical deformities/damages
* Health – should be free from pests/diseases
* Viability /germination percentage-should have high viability/germination percentage
* Parent plant – should be from high yielding/healthy parents/ high quality/early maturing
* Purity – should be clean/free from impurities
* Maturity – should be of correct maturity stage
* Age – storage period – seeds stored for long periods have low viability/germination percentage hence should not be selected
* Size of seeds – seeds should be of correct size

 (6x1=6marks)

 (c) Environmental factors influence crop production:

 (i) temperature; (4 marks)

* Affect quality of certain crops eg pineapples, pyrethrum.
* Influence the rate of physiological processes in a crop, hence faster growth rate
* Cause increase in incidences of diseases.
* Low temperatures cause frost injury
* High temperatures increase rate of evatranspiration hence wilting
* Influence distribution of crops

 (ii) wind. (5 marks)

* Strong winds increase the rate of evaporation/evapotranspiration/wilting
* Influences amount of rainfall in the given area
* Help in pollination of crops
* Strong winds have a cooling effect which influences rate of physiological processes.
* Strong winds may cause soil erosion
* Strong winds may cause lodging/destruction of certain crop structures
* Winds can spread diseases/pests/weeds.
* Winds help in seed dispersal
* Winds is fed in crop cleaning/winnowing of grains

**25** (a) Purchase Order. (5 marks)

* Quantities of goods
* Type of goods required
* Date of order
* Date within which the ordered goods should be delivered
* Person who orders the goods
* Person who authorized the order
* Purchase order serial number
* Total cost amount/cost involved
* Cost of the good cost of each good

 (b) Harvesting of tea. (6 marks)

* Leaves are picked selectively for the highest quality
* Pluck top two leaves and the bud
* Use a plucking stick to maintain the plucking table
* Pluck at 5 – 7 days intervals in rains and 10 – 14day in dry periods/ cold period.
* Put plucked tea in woven baskets to facilitate air circulation/prevent fermentation
* Do not compress the leaves in this baskets to prevent heating up/browning.
* Put plucked tea in cool and shaded place
* Deliver to the factory on the same day

 (c) Importance of irrigation in crop production. (5 marks)

* Irrigation increases crop yields and ensure a steady supply of food throughout the year
* Maximizes the utilization of resources eg in places where the soil is fertile but the water / rain is inadequate
* Important for the reclamation of arid and semi-arid land.
* Provides a regular reliable and adequate supply of water in areas with little rainfall.
* Source of employment in areas where it is used extensively.
* Promotes crop production for the export market and therefore contributes to a country’s revenue
* Allows production of paddy rice
* Allows growing of crops n green houses
* Facilitates irrigation in crop production
* Controls pests

 (d) Role of magnesium in crop production. (4 marks)

* Important in chlorophyll formation
* Promotes the formation of fats and oils in crops eg soya beans, sunflower, ground nuts.
* Aids in the absorption and translocation of phosphorous
* Enhances the nitrogen fixing power of the legumes
* Activates the synthesis and translocation of carbohydrates and proteins in plants.
* Activates enzymes in crops