|  |  |  |
| --- | --- | --- |
| No. |  | Marks |
| **SECTION A (30 MARKS)** | | |
| 1. | ✓To determine labour allocation  ✓To determine labour requirements  ✓To settle labour disputes  ✓To determine peak labour demand periods  ✓To determine labour cost | 2 |
| 2. | ✓Low nutritive value per unit volume/weight.  ✓Likelihood of spread of disease,pests and weeds.  ✓Bulky;difﬁcult to store,transport and apply.  ✓Looses nutrients if poorly stored.  ✓May burn crops if not fully decomposed | 2 |
| 3. | ✓It's expensive to install  ✓Encourages fungal diseases eg blight, CBD  ✓Causes soil erosion  ✓Requires establishment of wind breaks | 2 |
| 4. | ✓Buying and assembling milk/collection of milk  ✓Processing milk  ✓Market research  ✓Advertisement/promotion of milk/milk products  ✓Strategic storage of milk/milk products  ✓Distribution of milk/transportation  ✓Selling milk  ✓Packaging and packing  ✓Risk bearing  ✓Financing  ✓Grading/standardization | 2 |
| 5. | ✓Receipts  ✓Delivery note  ✓Purchase order  ✓Statements | 2 |
| 6. | ✓Small land size  ✓Lack of adequate capital  ✓Lack of skilled labour to handle machinery  ✓Steep slope  ✓Low soil moisture | 2 |
| 7. | ✓Aeration  ✓Drainage  ✓Capillarity  ✓Fertility | 2 |
| 8. | ✓To conserve soil moisture  ✓To prevent soil erosion  ✓To improve soil drainage  ✓For expansion of tubers  ✓For easy harvesting | 2 |
| 9. | (a) Mixed cropping ; is the growing of two or more crops on the same ﬁeld but on different sections.  (b) Mono cropping ; is the growing of one type of crop on a piece of land | 2 |
| 10. | (a) poisoning  ✓Sodom apple  ✓Thorn apple  (b) tainting milk when eaten before milking.  ✓Mexican marigold  ✓Onions | 2 |
| 11. | ✓Reduce/remove shade.  ✓Pricking out to reduce overcrowding.  ✓Reducing amount and frequency of watering.  ✓Spraying with copper fungicides/appropriate fungicide. | 2 |
| 12. | ✓Jet schemes  ✓Haraka schemes  ✓Shirika schemes  ✓Lari settlement scheme  ✓The squatter’s settlement scheme  ✓Harambee schemes  ✓Ol-kalaou salient schemes | 2 |
| 13. | ✓Amount of rainfall and rainfall intensity  ✓Topography/slope  ✓Type of soil  ✓Size of watershed/catchment  ✓Length of the slope  ✓Vegetation cover  ✓Wind velocity/strength of wind  ✓Soil depth. | 2 |
| 14. | ✓Nandi setaria  ✓Star grass  ✓Giant setaria  ✓Rhodes grass  ✓Guatemala grass  ✓Malava guinea  ✓Congo signal  ✓Makueni guinea |  |
| 15. | ✓Controlling soil erosion [accept any method of controlling soil erosion]  ✓Fencing water sources [avoid animals drinking directly from the water source]  ✓Controlled use of agricultural chemicals /use of intergrated methods  ✓Establishment of vegetation along river banks  ✓Use of non-chemical methods/ organic farming |  |
| **SECTION B (20 MARKS)** | | |
| 16. | (a) Classify the fertiliser. (1 mark)  ✓Nitrogenous / straight fertiliser/Neutral  (b) **Explain the effect of applying the above fertiliser on soil pH**.(1 mark)  ✓It neutralises soil acidity; Acidity produced by ammonium ions is counteracted by calcium carbonate which is a liming material.  ✓It raises / increases soil pH/ It has a liming effect.  (c) A farmer is advised to apply 50 kg of nitrogen per hectare.How many bags of the above fertiliser will this farmer require for one hectare? Show your working.  (3 marks)  If 20kg N is contained in 100kg CAN  ∴ 50kg N is contained in✓  100kg of CAN x 50kg N = 250kg of CAN  20kg N✓  250kg = 5 bags  50kg✓ |  |
| 17. | (a). **Name the system of pruning illustrated in diagram D above.**  ✓Single stem pruning  (b). **Outline how the pruning system illustrated in diagram E is carried out.**  ✓ The main stem is capped at 38cm above the ground to encourage more suckers to grow. Select two strong and healthy suckers and remove the others. The selected suckers should form a U-shape to avoid splitting  (c). State **three** other maintenance practices in coffee production.  ✓Capping; cutting the main stem at a height of 53cm when the young coffee plant is 69cm tall  ✓De-suckering; removal of suckers from the coffee bushes  ✓Changing the cycle; replacement of old bearing stems by suckers | 1  21/2  11/2 |
| 18. | (a) **Identify the pests in the diagram labeled A and B**  A✓ Weevil  B✓Squirrel  (b).  **At what stage of maize production does each damage the crop?**  A.  ✓Storage  B.  ✓Field/seedling/seed/germination/growth  (c) **Give one way of controlling each of the pests in the field**  A.  ✓Proper drying  ✓Dusting  B.  ✓Trapping and killing  ✓Using scare crows | 1  1  1  1  1 |
| 19. | | Date | Description | Amnt | Cash | Lvstck | Crops | Date | Description | Amont | Livestock | Crops | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 1/1/09 | Cash | 30,000 | 30,000 |  |  | 15/1/09 | Seeds | 7,500 |  | 7,500 | | 5/1/09 | L.sales | 80,000 |  | 80,000 |  | 20/1/09 | KFA | 16,400 |  | 16,400 | | 8/1/09 | C.sales | 50,000 |  |  | 50,000 | 25/1/09 | L.feeds | 50,000 | 50,000 |  | | 31/1/09 | KCC | 120,000 |  | 120,000 |  | 30/1/09 | Wages | 56,000 |  | 56,000 | |  |  |  |  |  |  | 31/1/09 | Transport | 9,000 | 9,000 |  | |  |
| **SECTION C (40 MARKS)** | | |
| 20. | (a). **Explain seven roles of a farm manager in agricultural production.**  ✓Short-term planning;quick decision to avoid losses when there is an urgent activity.  ✓ Long-term planning;studies and makes decisions on future plans and operations on the farm.  ✓ Information gathering; collecting information relevant to the farm enterprises e.g. making activities product technique.  ✓Budgeting;estimates future income and expenses as proposed in the farm plan.  ✓Comparing standards of the farm/enterprises with the set standards and making appropriate adjustments.  ✓ Detects weakness and constraints and finds ways of overcoming them.  ✓ Keeps up to date farm records and uses them in daily running of the farm.  ✓Implements farm decisions  ✓Guides and supervises the implementation of the farm plan.  ✓ Compares performance of the farm with that of other similar farms.  ✓ Makes predictions of the farm business.  ✓ Is the accounting officer on all financial transactions of the farm.  ✓Takes responsibilities for decisions made bearing risk | 7 |
| (b). **Explain the different ways in which each of the following environmental factors influence crop production**  (i)Temperature. (4 marks)  ✓Affects the quality of certain crops e.g. pineapples, pyrethrum.  ✓Inﬂuences rate of the physiological processes in crops.  ✓Cause increase in incidences of diseases.  ✓Low temperatures cause frost injury.  ✓High temperatures increase rate of evapotranspiration hence wilting.  ✓Inﬂuences distribution of crops.  (ii) Wind. (4 marks)  ✓Increase the rate of evaporation/evapotranspiration/wilting.  ✓Inﬂuences amount of rainfall in a given area.  ✓Help in pollination of crops.  ✓A cooling effect which inﬂuences rate of physiological processes.  ✓May cause soil erosion.  ✓ lodging of certain crops/destruction of crops/crop structures.  ✓Spreading diseases/pests/weeds.  ✓Wind helps in seed dispersal.  ✓Wind is used in cleaning/winnowing grains. | 8 |
| (c). **Explain five environmental factors that influence effectiveness of herbicides.(5 marks)**  ✓Wind which deflects herbicides to unwanted areas  ✓Rain which may wash away the herbicide from the weeds  ✓Soil should be moist to soak the herbicides to have prolonged effects on weeds  ✓Light should of high intensity to optimize the uptake of the herbicides  ✓Temperature should be optimum to ensure that the weeds are physiologically active | 5 |
| 21. | **(a). (i) Describe the procedure of harvesting pyrethrum**. (4 marks)  ✓Pick flowers selectively  ✓Pick flowers that have horizontal petals (ray florets) with 2-3 rows of disc florets open.  ✓Use fore fingers and the thumb  ✓Pick by twisting the heads so that no stem is left attached.  ✓Put the picked flowers in woven baskets.  (ii). **Explain the precautions that should be observed during the harvesting of pyrethrum.** (3 marks)  ✓Picking starts 3-4 months after planting to maintain quality.  ✓Picked ﬂowers are put in woven baskets to allow ventilation and avoid fermentation of ﬂowers.  ✓Wet ﬂowers should not be picked because they heat up and ferment  ✓Picked ﬂowers should not be compacted to avoid heating up and fermenting.  ✓A suitable picking interval 14 - 21 days is maintained to avoid harvesting over blown ﬂowers.  ✓Break the ﬂower stalks to maintain quality. | 7 |
| (b). **Explain seven factors that should be considered when selecting seeds for planting**. (7 marks)  ✓Adaptability ;should be adapted to local ecological conditions  ✓Physical deformities/damages ;should be free from physical deformities/damages Should be free from pests/diseases  ✓Viability/ germination percentage ; should have high viability/ high germination percentage  ✓Should be from high yielding mother plant  ✓Health; should be healthy/free from pests and diseases  ✓Purity; should be clean/free from impurities/high purity  ✓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 | 7 |
| (c). **Describe how the stem cuttings for propagating tea are prepared.** (7 marks)  ✓Select shoots from mother plants that are high yielding and healthy  ✓Select healthy and vigorously growing shoots;  ✓That have grown unchecked for 6 months.  ✓Obtain cuttings from the middle part of the shoots.  ✓Using a sharp knife make cuttings 2.5 - 4 cm long; with a single leaf and a bud  ✓Make the cut close to the axial bud/leaf.  ✓The slant cut should face away from the bud.  ✓Put the cuttings in water before planting to prevent dehydration.  ✓The cutting should have a single leaf and a bud.  ✓Make a slanting cut  ✓Cutting should be 2.5 - 4 cm long. | 7 |
| 22. | (a). **Describe how a farmer should handle a bean crop from the time it is harvested until the dry seed is ready for storage**.  ✓Threshing;removal of beans from pods by beating with sticks  ✓Drying;beans are dried bean plants spread on mats in the sun to dry  ✓Cleaning ;to remove foreign materials before storage. by winnowing  ✓Sorting bean seeds are also sorted to separate the good from the bad  ✓Dusting; applying chemical powders on seeds to prevent pest attack  ✓Packing; beans are placed into containers for storage  ✓Grading to fix prices/value to the different qualities to facilitate marketing | 6 |
| (b) **Describe land preparation and planting in carrot production**.  (i)Clearing the bush using appropriate tool.  (ii)Primary cultivation using appropriate tool/deep tillage.  (iii)Secondary cultivation  (iv)Harrowing to a fine tilth.  iv)Make drills 30cm apart and 1cm deep.  (vi)Apply appropriate rate of a phosphate/compound fertilizer/DAP, MAP, DSP.  (vii)Sow seeds along the drills.  (viii)Cover and firm the seeds with soil.  (ix)Apply DSP at 90kg/ha  (x)Remove all perennial weeds.  (xi)Plant at onset of rains/when soil has enough soil moisture. | 7 |
| (c). **Describe seven methods used in water harvesting.**  ✓use of dams;a barrier constructed across a river or a dry valley to collect and hold large volumes of water to form a reservoir or a lake for storing water  ✓Use of weirs;a barrier constructed across a river to raise the water level and still allow water to flow over it and to facilitate pumping  ✓Use of ponds; artificial pools of water which accumulate as a result of some embankment holding back run off.  ✓Roof catchment; catchment and storage of rain water harvested through roof tops and directed to various reservoirs  ✓Wells;holes artificially sunken into the ground below water table to enable water to seep in for use  ✓Rock catchment; harvesting rain water from big rocks. Concrete channels are constructed at the base of the rocks to direct water into a reservoir  ✓Micro catchments;micro-environments designed to conserve soil and water around growing crops like bananas  ✓Retention ditches;these are terraces constructed with blocked ends to retain water. | 7 |