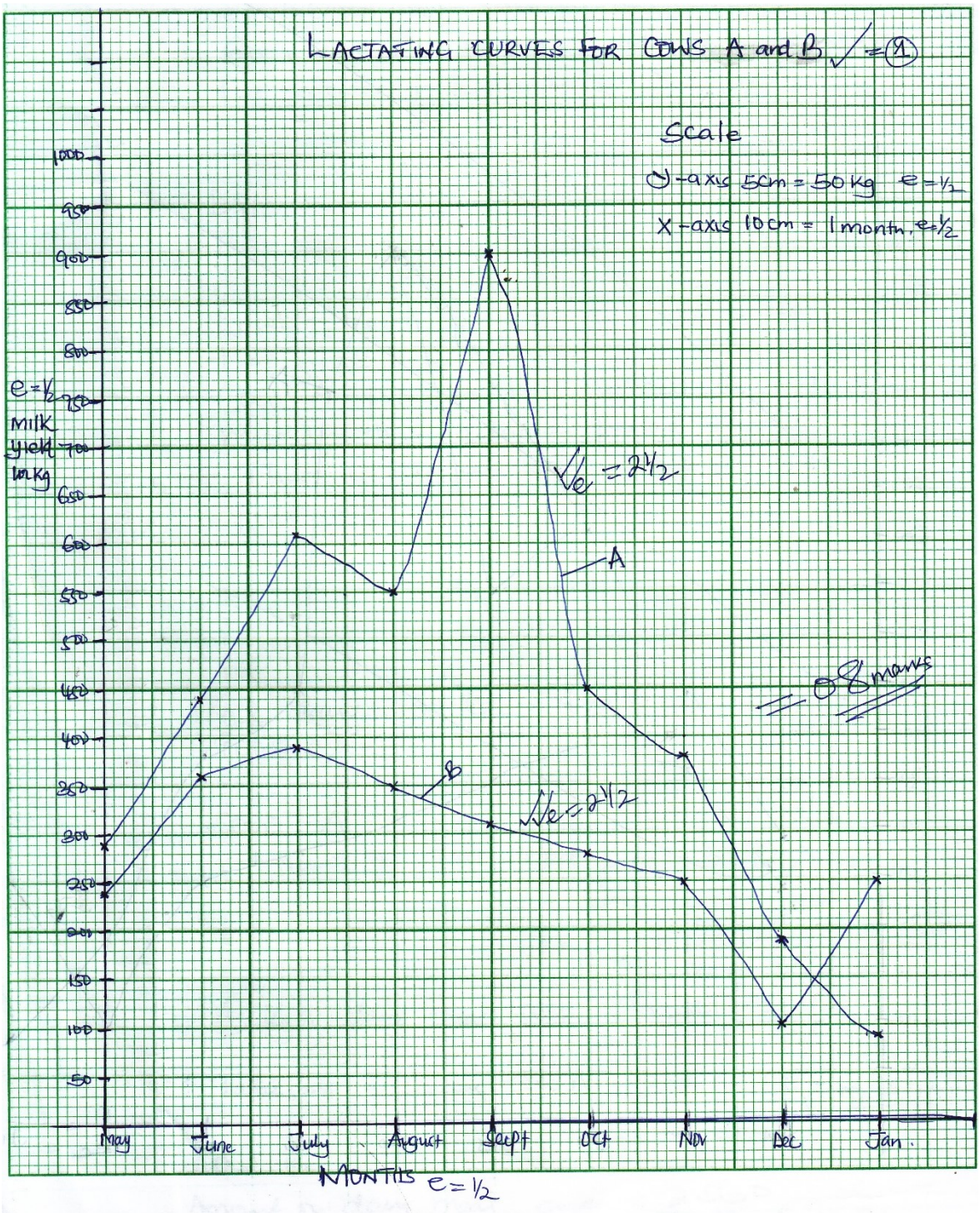
‘A’ LEVEL GUIDE
AGRICULTURE
Paper 2

1.

(a) Using the same axis on a graph paper provided, draw the lactation curves for cow A and B. *(08 marks)*



(b) Compare and contrast the lactation curve for A and B cows. (03 marks)

Similarities

- *Both curves (A and b) show a gradual increase in milk yield between the months of May to July*
- *Both curves (A and B) show decline in yield between the months of September to December*
- *Both curves A and B show gradual decreased between July and August*
- *Both curves increase and decrease from May to August*

1 x 1 = 1 mark

Differences

- *The peak of milk yield for A is in September while that fro B is in July*
- *Lowest yield for cow A is in January while that for B is in December*
- *Cow A procures the highest amount of milk in the lactation period than B*
- *There is unexpected increase in milk yield for cow B between December and January*
- *There is a rapid increase in lactation curve of cow A and gradual decrease in lactation curve of cow B between August and September*

Rej. Quickly / fast
Rej. Slowly
Gradual / stead slight
2 x 1 = 2 marks

(c)

1kg of dairy for each 4kg of milk
(3000 shs @) e = ½ mark
Cow A
Amount of dairy meal given $= \frac{3900}{4e} = 975e$
= 975kg of dairy meal neede
@ kg of dairy meal costs 3000sh. = ½
Total cost of feeding cowa A = 3000 x 975 = 2,925,000/=

Cow B
Amount of dairy meal given $= \frac{2530e}{4}$
= 6325 kge
Total cost of feeding cow A = 3000 x 632.5 e= ***1,897,500***
Returns from each cow

Cost of feeding cow A is 2,925,000 /=
Cost of feeding cow B is 1,897,5000/=
Value of milk produced by cow A = 2000 x 39080 e = ½
= 7,800,000e = ½

Returns from cow A = 7,800,000 - 2,925,000 e = ½
= 4,875,000 e = ½

Returns from cow B = 2000 x 2530 e = ½ = 5,060,000/=e
= 5,060,000 - 1,897,500/= e = ½
= 3,162,500 e = ½

SECTION B
CROP PRODUCTION (20 MARKS)

2. *(a) Describe the various structures found in soils. (08 marks)*

- *Crumby / crumb structure - its made up of small, soft and porous aggregates of irregular shape*
- *Granular structure – soil aggregates are circular in shape and loosely arranged*
- *Blocky structure – aggregates in this structure are arranged rectangular blocks that fit together*
- *Prismatic structure – soil particles are arranged vertically to form pillar shaped aggregates*
- *Platy structure - aggregates in this structure are arranged on top of one another in relatively twin sheets*
- *Columnar structure – pillar shaped aggregates with round tops*

Any 4 points ½ mention
1 ½ explanation
4 x 2 = 8 marks

(b) How does soil structure influence crop growth and yield? (08 marks)

- *A good soil structure ensures retention of plant nutrients for crop growth hence high yield*
- *A good soil structure proper retention of soil moisture necessary for good crop yields*
- *Proper soil structure ensures good soil aeration hence proper crop root growth*

- *Good structure ensures proper water percolation hence good soil drainage*
- *Good soil structure ensures proper heat distribution and enhancing activities of soil living organisms*
- *Good structure resists soil erosion hence conserving soil fertility*
- *Enhances availability of micro – organisms in the soil which carry out organic matte decomposition.*
- *Root penetration and development especially in the growth of tuber*

Any 4 points well explained 2 marks @

4 x 2 = 8 marks

(c) State the ways of maintaining a good soil structure. (04 marks)

- *Minimum cultivation - mulching*
- *Application of manures*
- *Planting vegetation / bush fallowing*
- *Improving soil drainage*
- *Controlling soil erosioin*

Any 4 points 1 mark @ 4 x 1 = 4 marks

3. *(a) What is the main difference between hay and silage? (02 marks)*

*Silage is **dried** forage fed to animals while silage is **fermented** forage that can be fed to animals. 2 marks*

(b) Describe the procedure of making hay on the farm. (14 marks)

- *Selection of a good crop for making hay*
- *Cut the crop at ground level using a panga / sickle*
- *Spread the crop evenly on the ground under a shade to dry*
- *Keep on turning the crop as it dries to make sure that it is drying evenly*
- *Allow the crop to dry for 3 days making sure that it retains original colour and leaves*
- *Test whether the crop is completely dry by twisting the stems*
- *Chop the crop into small pieces to make it easy for compacting in a box*
- *Prepare a bailing box with the dimensions of the hay bales required*
- *Place two strigs at each end of the bailing box to make bailing easy*
- *Compress hay to make compact cube in the box*
- *Tie the bales tightly with the string and then the box upside down to remove the bale.*
- *Store the hay in a shed to protect it from dust, rain and direct sunlight*
- *Sprinkle molasses or salty water on hay during feeding to increase palatability*

First 12 points in order 1 mark @ 12 x 1 = 2 marks

(c) State the advantages of conserving pastures. (04 marks)

- *Reduces wastage of pasture during periods of plenty*
- *Allows for proper feeding of animals even during perods of scarcity*
- *Ensures continuous good animal production in terms of product throughout the year*
- *Increases number of animal kept per unit area of land*
- *Ensures proper utilization of pastures by livestock*
- *Pastures can be easily sold to get extra income*
- *It enables planned feeding practices in livestock*
- *Makes keeping of feeding records for livestock easy.*

Any 6 points 1 mark @ 6 x 1 = 6 mark

SECTION C
ANIMAL PRODUCTION (20 MARKS)

4. *(a) What is the difference between a hive and an apiary? (02 marks)*
A hive is a house for bees / where bees live while an apiary is a collection of bee hives in a particular place / a place where bee hives are laid

(b) Give the characteristics of a good Apiary and Hive. (08 marks)

Characteristics of a good apiary

- *Should be free from noise / away from noisy area*
- *Should be well protected from strong winds*
- *Should have enough shade for hives*
- *Should be near a good water source*
- *Should be free from predators*
- *Should be free from flooding*
- *Should be near nectar sources / flowering plants*

Any 5 points 1 mark@ 5 x 1 = 5marks

Characteristics of a good hive

- *Should have enough entries to allow access by bees*
- *Should be well ventilated*
- *Should be big enough*

- *Should have a queen excluder for queen protection*
- *Should a removable lid for easy hive inspection*
- *Should be leak proof*
- *Should have handles for easy carrying / loop for hive suspension*

Any 3 points 1 mark @ 3 x 1 3 marks

(c) (i) Describe the procedure of harvesting honey from a hive. (08 marks)

- *Put on protective clothes and carry a lighted smoker, honey container with a lid, bee brush and hive tool*
- *Approach the hive quietly from behind to avoid disturbing the bees*
- *Blow smoke around the hive 3 times to make the bees inactive*
- *Lower the hive to a comfortable position so as to be able to inspect the combs befreo harvesting them.*
- *Lift the top bars and brush off the bees with a bee brush*
- *Cut the mature and ripe combs which are fully capped with honey to leave about 3cm of wax on the top bars*
- *Drop the cut combs into the harvesting container and cover*
- *Place back the bars and do not disturb the brood*
- *Cover the hive and place it back into position*

Any 8 in order 1 mark @ 8 x 1 = 8 marks

(ii) State the products that can be got from the hive. (02 marks)

- *Bee venom*
- *Wax*
- *Brood*
- *Honey*
- *Propolis*
- *Pollen*

5. *(a) What is brooding as used in poultry management? (01 mark)*

This is the care and management of young chicks up to the stage of six weeks

(b) How should a farmer manage chicks in a brooder? (09 marks)

- *Clean and disinfect the poultry house thoroughly to kill pathogens for pests*
- *Install all necessary equipment to be used in a brooder*

- *Prepare and install a water bath at the entrance of the house to ensure good hygiene for people entering the house*
- *Seal of all crevices and small entrances into the house to keep out rodents that can eat the chicks*
- *Place curtains in the window to air flow into the house so as to be able to maintain temperature*
- *Light up the heat source to provide warmth in the brooder*
- *Install brooder guards around the heat source that act as an enclosure for chicks*
- *Provide a thin layer of mouldfreee lither in the brooder and cover it with clean paper to stop chicks from eating litter*
- *Hung a thermometer in the brooder guards to monitor the brooder temperatures at optimum*
- *Put clean feeders around the heat source like spokes of a when where the chicks are to feed from.*
- *Provide enough drinkers at a ratio of 3 to every 100 chicks to control crowding at the drinking place.*
- *Isolate sick chicks to avoid disease spread*

9 points 1 mark @ = 9 x 1 = 9marks

(c) (i) Why should a farmer invest in a poultry enterprise rather than a dairy enterprise? (05 marks)

- *The initial cost of start poultry is lower than that of a dairy enterprise*
- *Poultry take a short period to bring in returns as compared to dairy*
- *Poultry provides many areas of specialization than the dairy enterprise*
- *Poultry products richer in terms of nutrients than dairy*
- *Eggs from poultry are less perishable as compared to milk from dairy*
- *Dairy products are easy to adulterate as compared to poultry products*
- *Poultry are highly prolific than the dairy animals*
- *Poultry products are much more marketable than dairy products*
- *Poultry requires a smaller piece than dairy ie. land for growing pastures.*

Any 4 points 1 ½ mark @ 4 x 1 ½ = 6 mark

(ii) State the causes of mortality among chicks kept in a brooder. (05 marks)

- *Disease like gumboro*
- *Pest attack*
- *Harsh temperatures*

- *Physical injuries*
- *Drowning in big drinkers*
- *Suffocation due to over crowding in corners*
- *Poor feeding*
- *Poor ventilation leading to respiration infection*
- *Being burnt by the source of heat*

Any 4 points 1 mark @ 4 x 1 = 4 marks

SECTION D
FARM MECHANIZATION AND FARM STRUCTURES

6. *(a) Give the various ways of maintaining farm tools and equipment in a good working condition. (06 marks)*

- *Washing some after use to reduce corrosion between agro – chemicals and equipment*
- *Regular sharpening cutting edges / blades / teeth to ensure efficiency*
- *Oiling / greasing moving parts to control friction*
- *Painting of metallic parts to control rusting*
- *Tightening lose bolts and nuts to ensure efficiency*
- *Store the tools equipment in a cool dry place to control rusting of metallic parts and breaking or cracking of wooden parts*
- *Replace broken handles or parts to ensure efficiency of machines.*
- *Use the tool or equipment always for the designed purpose to reduce damage*
- *Unblock the nozzles of sprayers to reduce damages due to pressure*
- *Oil / grease tools when not in use to reduce rusting*

Any 6 x 1 = 6 marks

(b) Explain the factors considered while selecting farm tools and equipment for use in the farm. (14 marks)

- *Cost of the tool or equipment*
- *Most farmers prefere cheap tools*
- *The machine should do the work it is meant to do*
- *Buy machines that require less skills to use*
- *Buy machines that are highly durable*
- *Buy machines that are effective*
- *Cheap to maintain.*

- *Buy efficient machines*
- *Should be available*
- *Work to be done*
- *Skills of using it*
- *Durability of the tool or equipment*
- *Effectiveness of the tool or equipment*
- *Maintenance cost of the tool or equipment*
- *Work out put of the tool or machine or efficiency of tool or machine*
- *Availability of tool or equipment*
- *Availability of spare parts*
- *Versatile tools having many uses.*

  Any 7 points 1 mark mention, 1 mark explanation

7. *(a) Describe the procedure of constructing a fish pond. (12 marks)*

- *Select a suitable site pond construction*
- *Survey the land by marking out the slope and find out the natural drainage pattern of the area*
- *Clear the site of stones, tree stumps and roots that can interfere with harvests of fish*
- *Clear the trees around the site to allow the ponds to get enough light*
- *Mark out the area where the pond and walls to be constructed with pegs*
- *Dig out the soil from the marked area while separating top soil from subsoil*
- *Make the depth of the pond between 1 . 0 – 1.5 meters for easy harvesting of fish*
- *Create inlet and outlet for the pond to allow exchange of pond water*
- *Use the sub soil to build pond walls by compacting soil as you pile it around the banks to make a farm, stable and leak proof walls*
- *Fix inlet and outlet pipes within walls to allow water to move in and out of the pond respectively*
- *Place another pipe above the wall to drain away excess water and to prevent flooding and spillage of water from the walls*
- *Spread the top soil that was earlier put aside over the pond walls and plant the walls with grass to prevent wall erosion*
- *Spread a layer of lime on the pond floor about 15 days before filling the pond with water to encourage growth of plytoplankton*
- *Fill the pond with clean water slowly to reduce scouring of the walls / destruction*

  1 mark @ 12 points 1 mark @ 12 x 1 = 12 marks

(b) State the various management practices carried out on a fish pond to maintain it in a good condition. (08 marks)

- *Plant grass along the walls for stability and controlling wall erosion*
- *Fence off the pond to keep away animals that may danger the pond walls*
- *Construct diversion channels around the pond to direct rain water away from the pond to avoid flooding*
- *Trim tree roots to prevent it from breaking pond walls*
- *Plant weeds in the pond to provide oxygen and shelter to fish during dry period*
- *Re – d silt the pond regularly to maintain depth*
- *Drain out exhausted water regularly and refill pond with fresh water*
- *Lime the pond regularly tomaintain the pH of water between 6.5 – 9.0*
- *Fertilize the pond to ensure fish feed is enough.*
- *Control algal bloom by minimizing water pollution by fertilizers or manures*
- *Control fish predators like birds regularly by putting a net over the pond.*

Any 8 points 1 mark @ 8 x 1 = 8 marks

SECTION E
ECONOMICS AND FARM MANAGEMENT

8. *(a) Distinguish between price elasticity of demand and shift of demand curve.*

(02 marks)

Price elasticity of demand is the degree of responsiveness of change in quantity demanded due to a change in price while a shift in demand is the movement of the demand curve either right or left from original at a constant price.

(b) Explain the factors that can cause a shift in demand curve at a constant price.

(08 marks)

- *Change in income of consumers at constant price will cause a shift in demand*
- *Change of tastes and preferences of consumers causes a shift in demand curve*
- *Change in culture of saving by consumers cause a shift of demand curve*
- *Change in the number of consumers of an item causes a shift at constant price*
- *Speculation about future prices can cause a shift in demand either positively or negatively*
- *Advertisement levels will affect demand either positively or negatively by causing a shift in demand*

- *Inflation can cause a shift of demand curve either away depending on level of prices*
- *Quality of products sold can cause a change in demand hence shift as it changes*
- *State of the economy where by a booming economy causes demand curve to shift right as demand increases.*

  Any 4 points 1 mentioned 1 expln.

  4 x 2 = 8 marks

(c) State the various steps that farmers should take to ensure high profitability of farm business. (10 marks)

- *Choose highly profitable business*
- *Advertising the produce to attract potential buyers*
- *Sell produce when prices are high*
- *Timely planting of crops to ensure high yields*
- *Use improved breeds of livestock for varieties of crops*
- *Process agriculture products to add value*
- *Grade products for easy pricing*
- *Pack products to reduce transport costs*
- *Control of pests and diseases to ensure high quality*
- *Proper resource allocation to reduce prices*
- *Proper branding of products for high prices*
- *Using high technology in production / using skilled labour*
- *Input rationing to ensure less costs of production.*

  Any 10 points 1 mark @ 10 x 1 = 10 marks

9. *(a) Explain the importance of carrying out land reforms in Uganda. (12 marks)*

- *To achieve high levels of land output by increasing investment*
- *Increase land productivity through intensive farming*
- *To encourage production for the market which is highly profitable*
- *Encourage land conservation by gazeting conservation areas*
- *Reduce land conflicts through registration of land*
- *To resettle land less people in land*
- *To make supervision of agriculture activities through land consolidation*
- *Reducing idle land and increases land productivity through redistribution of land*
- *To encourage large scale farming through land consolidation*
- *To increase access to land as a factor of production through land redistribution and registration*

- *To increase investment in agricultural by providing enough land and for farming.*
  Any 7 points 2 marks 7 x 2 = 14 marks

(b) How can a farmer get land for agriculture in Uganda? (08 marks)

- *Buying land from owners*
- *Renting land for use*
- *Leasing land from owners*
- *Being given land as a gift*
- *Being resettled on land by authorities*
- *Compulsory land acquisition by government*
- *Being given land as inheritance*
- *Contract agreement in usage of land*
  Any 6 points 1 mark @ 6 x 1 = 6 marks

END