

AGRICULTURE PAPER TWO, QUESTIONS WITH ANSWERS

Practical 3 question 2

1. You are provided with an animal products labeled M (Milk)

(a) Identify the product

It is milk

(b) Mention any three by-products which can be produced from M

- **Cheese**
- **Butter**
- **Water**

(c) Name any three farm animals which supply product M

- **Cow**
- **Goat**
- **Horse**

(d) Explain any two nutritional values of specimen M in the human body

- Provide protein for body building and growth**
- Provide carbohydrates for generation of energy in the body**

(e) Explain any three ways in which the quality of the products M may be improved.

- Feeding the animal a lot of protein concentrates**
- Stall feed the animal to restrict movements and reduce energy loss.**
- Include pasture legumes in the animal feed so as to increase the supply of**

proteins

(f) Mention any three ways in which a farmer may stimulate the products M.

- i. **Using conditioned reflex by taking the animal for milking under some environment each milking time**
- ii. **Rubbing teats on animal's udder with a clean piece of cloth dipped in warm**

2012

2. You are provided with two animal feeds labeled Z (Elephant grass) and Y(bean flour)

a. Classify Z and Y into two groups of animal feeds

Z Roughage

Y concentrates

b. (i) Which of the two animal feeds is suitable for a cow in the last size weeks of pregnancy?

➤ **Y**

(ii) Give a reason for your answer

➤ **to build up their bodies**

➤ **To sustain growth**

➤ **High milk production**

➤ **Prepare for parturition**

c. Describe how feed z could be processed and stored as hay.

➤ **Cutting grass before flowering**

➤ **Drying to reduce moisture content**

- **Gathering to reduce storage space**
- **Stacking/storing in a shed to avoid exposure to rain or sun**

3. You are provided with sample labeled B (**groundnut stem**)

a. identify the samples B

- **groundnut haulm**

b. Draw the cross section sample B and label any four parts

4. Practical 5

(a) (i) Identify the samples B (maize weevil)

- **Maize weevil**

(ii) To which group of insects' pest do belong.

- **Boring insect pest**

(b) Mention any two effects caused by insects pests

i. Boring insects

- **Bored plants die quickly**
- **Lower the quality of stored produce and thus lowers the farmer's income**

(c) Mention any four factors that a farmers need to consider when making a decision to control pests

- **Nature of damage caused by the pests**
- **The pest population**
- **Crop s yields**

- Price of products
- Available of pests control inputs
- Cost/potential benefits ratio
- Quality of product
- Influence to the ecosystem by control method

(d) What are four advantages of the chemical pests' control?

- It can be repeated as quick as possible
- It is relatively easy method of control
- It produces quick and easy results
- It is cheap and individual farmers can take independent action on their farm

(e) What are five disadvantages of chemical pest control

- Pesticides rarely kill pests and the residual population which survives soon helps to cause economics damage
- Pesticides can be toxic to beneficial insects e.g. pollinators, predator
- Chemical control must be repetitive and must be applied whenever there is pest outbreak, that is wasteful
- Pests may develop resistance to pesticides which reduces the effectiveness of that pesticides on that pest
- Pesticides are expensive to manufacture and buy

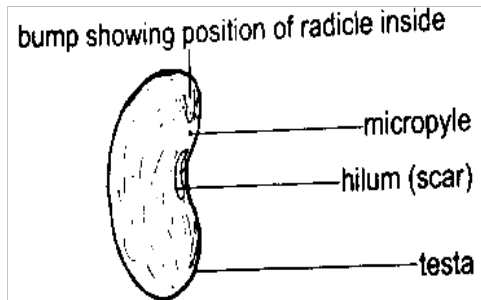
Practical 9

5. You are provided with specimen S (bean seed)

(a) Identify the specimen S

Bean seeds

(b) Draw the specimen as you see it



(c) On your diagram label four important parts for growth

(d) State any two functions of any one part you have labeled.

Micropyle : a small hole near hilum

- i. It is the place where most of the water is absorbed before germination
- ii. A tiny whole which allows air to pass through for respiration of the embryo

(e) What is germination?

The process by which seeds begin to develop into new plants

(f) Mention four conditions necessary for germination to take place describe any two types of germination that you know.

- i. Viable seeds
- ii. Water/moisture
- iii. Oxygen/air
- iv. Suitable temperature

(g) Describe the two main types of germination that you know.

- i. **Hypogeal germination:** where cotyledon remain below ground throughout the stages of the germination. e.g. in maize
- ii. **Epigeal germination:** in which cotyledons are lifted above the first leaves of the newly emerged plants e.g. groundnuts

iii. **Practical 15**

6. You are provided with soil samples labeled A (Top soil) B (Sub-soil) which were taken from the same soil profile of a certain farm at Bunda college of agriculture.

a. Identify the samples A and B

i. **A top soil**

B sub soil

b. State one physical and chemical property that makes the soil samples A and B

- **chemically top soil has got a lot of nutrients as compared to sub-soil**
- **physically sample A is dark to yellowish in colour while B is reddish to orange**

c. Discuss any two ways through which A would lose its mineral elements easily.

- i. **Though minerals being used by crop and never replaced the crop is taken away.**
- ii. **Through leaching of nutrients to other layers due to too much rainfall or due structure of the soil**

d. Explain briefly three reasons why it is important in agriculture to have a developed soil profile.

- **Has deep and rich topsoil with a lot of nutrients for crops growth**

- Sub-soil is loosely packed for easy penetration of roots, drainage, aeration
 - The sub-soil is loosely packed to ensure that erosion does not take place and reduces degrees of run-off
- e. Explain any three methods of maintaining soil fertility in our Malawian soils.
- **Good drainage to avoid water logging**
 - **Good aeration to promote healthy root development of crops**
 - **Make sure the soils have enough depths to afford plants roots greater volume to exploits**
- f. Mention two type of soil structure.
- | | |
|---|---|
| <ul style="list-style-type: none"> • Platy • Blocky • Crumbly • Prismatic | <ul style="list-style-type: none"> • Cuboidal • Columnar • Single-grain |
|---|---|

Practical 19 question 2

7. You are provided with samples X (madeya) and Y (elephants grass)
- a. Identify the two samples
- X: deya or maize bran or madeya
 - Y: elephants
- b. Between the two samples which one has high energy value
- **Madeya (maize bran)**
- c. Name the sample that can be additive feed to chickens that lay eggs

- **Lime**
- d. List other additives feed that can be supplied to chickens apart from the one mentioned in “C” above.
- **Oxy-vit**
 - **Mineral licks**
- e. Mrs. mazengo plans to graze her twelve cattle on 1.5 hectares of star grass. However during the wet season there is usually more grass than the number of animals that can feed on them.
- i. If you were a farmer, what would you do in this situation
- **Conserve some of the star grass to be used during times of scarcity like in form of hay or silage**
- ii. State any five reasons for your answer in (i) above.
- **To conserve some of the star grass to be used during times of scarcity like form of hay and silage**
 - **To minimize wastage of pastures**
 - **Preserve nutritive value of pasture or star**
 - **Lead to high pasture or star production because it will-regrow**
- iii. Explain any two ways in which seasonal production of tar grass affects its quality and quantity
- **In wet season there is plenty of pasture of good quality in terms of palatability and digestibility**
 - **In dry season star or pasture scarce and the quality may be low because of high fibre contents that makes it less palatable**

f. What four factors should be considered before formulating an animal feed?

- Nutrients requirements of the animal being fed
- Age or size of the animal
- Palatability of the feedstuff
- Nutrients contents of the feeds

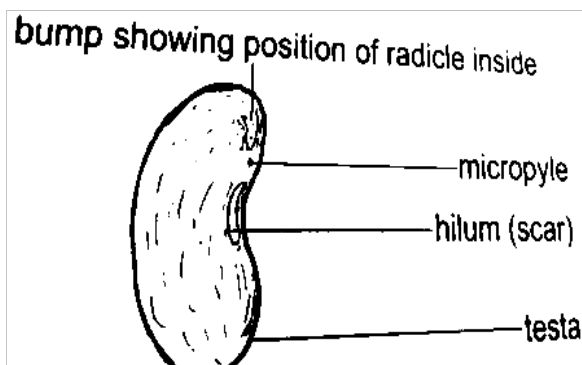
Practical 23 question 1

8. You are provided with specimen X (soaked bean seed)

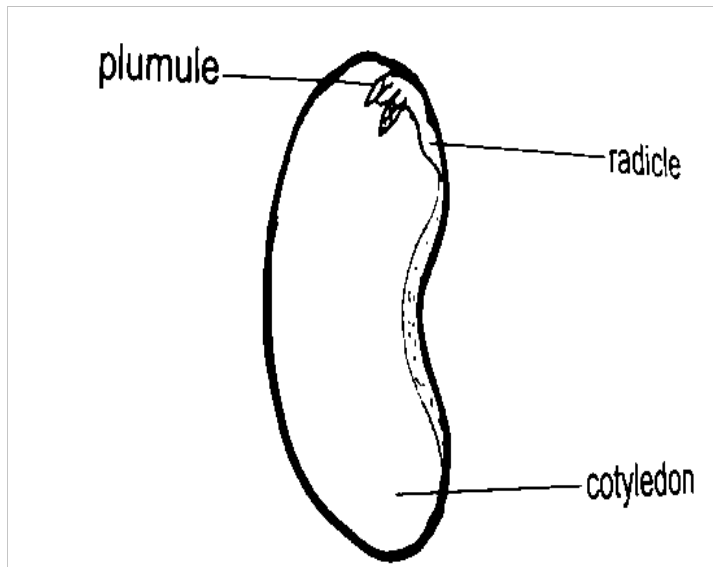
a. (i) identify the sample X

=Bean seeds

(ii) Draw and label any three external part of the specimen X



b. Remove the testa and divide the specimen X into two parts. Draw clearly the divided X and label any three parts.



- c. Explain one function of the three internal parts labeled in (b) above
- Testa**=protects the embryo against mechanical injury and entry germs
 - Micropyle** : allows air to enter the seed for respiration
 - Hilum**: black scar where the funicle was attached
- d. Name one function of the three internal parts labeled in " b"
- Radicle**: forms primary roots
 - Plumule**: grows into young shoot
 - Cotyledon**: contains food for developing embryo
- e. Describe one importance of legumes to the growing population to human health.
- =Source of proteins for body growth and development**
- f. **Mention four natural**

Practical 4

9. you are provided with A (**sand soil**) and C(**loam soil**)

a. identify the two soil samples

A=Sandy soil

B=loam soil

b. Which of the three soil samples is good for maize growth and development?

B

c. mention one method of improving the productivity of A

➤ **by adding organic matter to improve soil structure**

d. What are the five characteristic of sample C.?

➤ **Moderately fine-texture**

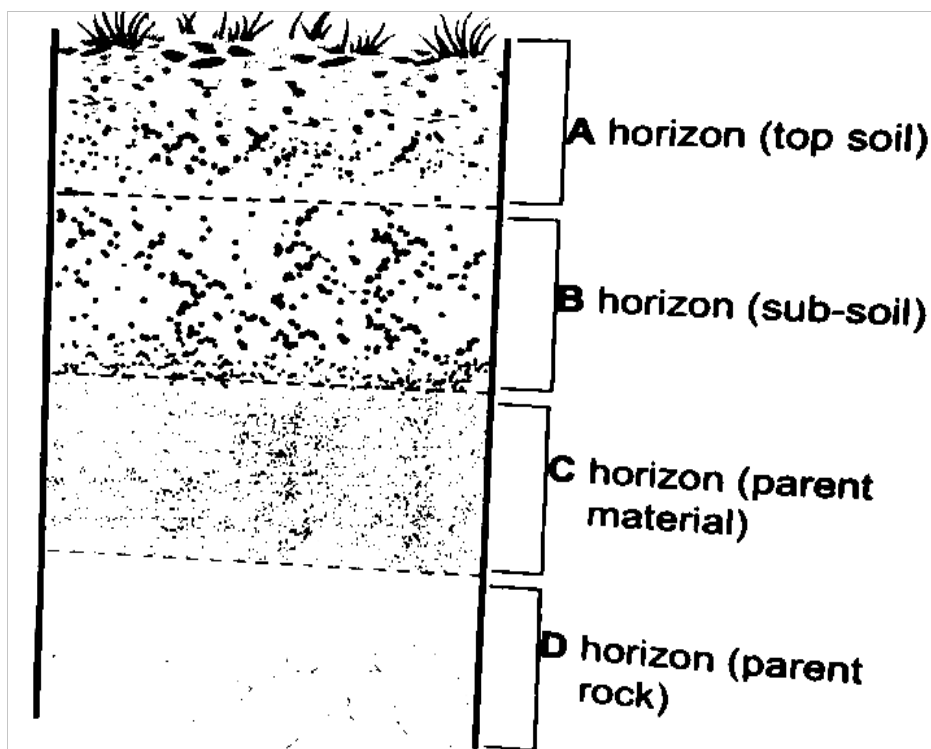
➤ **Moderately well-drained**

➤ **Moderately fertile**

➤ **Moderately to slightly acidic**

➤ **Contain almost equal proportions of clay and sand**

e. Draw and label any four parts of a soil profile.



Practical 5

10. You re provided with the following materials.

- One teas spoon full of sample **X** (loam soil) and soil sample **Y**(sand soil)
- 2 funnels
- Two 50ml measuring cylinders
- Filter papers
- 20ml of water in a separate container
- Two different types of seeds labeled A and B

PROCEDURE

- Put filter paper inside a funnel and place it on top of each 50ml measuring

cylinder

- Put a table spoon full of soil into each funnel
- Add 20ml of water to each funnel
- Observe the water movement through the soil sample into the cylinder

i. Which soil sample has high water holding capacity?

➤ **X-loam**

ii. Give a reason your answers in 10 (i) above

➤ **Less water is collected from soil sample in cylinder**

➤ **More water is retained in soil sample**

➤ **Slow rate of water movement from soil**

iii. Which soil sample is prone to high acidity

➤ **Y-Sand soil**

iv. Explain one reason for your answer in 10 (iii) above

➤ **nutrients leach and they are replaced by hydrogen ions which increases acidity**

11. you are provided with specimens of livestock feeds labeled M (bean flour/bean meal) and N (elephant grass). use them to answer questions that follow.

a. Identify the classes of the livestock feed

➤ **M-concentrate**

➤ **N-roughage**

b. (i) Which specimen is suitable for ruminants?

➤ **N-roughage/elephant grass**

(ii) Give a reason for your answer

➤ **Able to digest cellulose**

c. (i) Which group of specimen can be fed to beef cattle three weeks before slaughtering?

➤ **M- bean flour**

(ii) Give a reason for your answer

➤ **Because it is rich in proteins and used for body building muscles/fresh/meat**

d. State three reasons for feeding livestock with specimens

➤ **Fro maintenance of their bodies**

➤ **For production**

➤ **For production of products such as ,eggs and milk**

➤ **For health of the animals**

12. You are provided with specimens labeled L (nsenjere or star grass).

a. identify the specimen labeled L

Elephant grass

b. To which group of livestock feed does this specimen belong?

➤ **Roughage**

c. State any two characteristic of feeds which belong to the group to the group mentioned above.

i. **High fibre contents**

ii. **It supplies fewer nutrients per unit mass**

d. Explain two advantages of growing specimen L together with leucaena.

i. **It increases total biomass in the feed which satisfy hunger in the animal**

ii. **It provides the much needed fibre which helps in peristalsis**

e. give two examples of pastures which can be used in tobacco rotation to control worms

i. **katombora grass**

ii. **emalo love grass**

13.a. what is seed rate?

➤ **Is the amount of seeds required per hectare, usually expressed in kg/ha**

b. calculate the seed rate for a pasture species using the following information;

i. seed size=200 000 seed/kg

ii. Purity =70%

iii. Germination=50%

iv. Expected plant population=900 000 plants per hectare.

$$\text{seed rate} = \frac{\text{expected plant population per ha}}{\text{seed size} \times \text{purity} \times \text{germination\%}}$$

$$\frac{900000 \times \text{kg} \times 100 \times 1000}{1 \text{ ha} \times 200000 \times 70 \times 50}$$

$$12.857 \text{ kg/ha}$$

$$=12.9 \text{ kg/ha}$$

a. Mention any five qualities of good seed for planting.

- i. **Should be viable**
 - ii. **Be whole, large and plump**
 - iii. **Should be diseases and wood-free**
 - iv. **Should be pure to type**
 - v. **Should be of high yielding variety**
- b. State any five factors that affect the seed rate of pastures
- i. **Growth habit of particular species of pasture**
 - ii. **Methods of sowing the pasture species**
 - iii. **See size of the pasture species**
 - iv. **Purity if the pasture seeds**
 - v. **Germination percentage o f the pasture species**
1. You are provided with soil samples L (loam) and S (sand) in funnels placed on conical flasks. Pour the water to each of the soils at the same time and low the sample to sand for 20 minutes before observing the results.
- a. Which of the two soils samples has the highest water retention?
- **L**
- b. Which of the two samples has the lowest water retention?
- **S**
- c. Give any two reasons for the differences in water retention between the three samples.
- **L has medium size particles**
 - **S has large poles**

d. What conclusion can be drawn on the permeability of the three soil samples?

➤ **Loam soil has moderated water holding capacity**

e. Name the sample that would be very unsuitable for rice growing?

➤ **S**

f. Give two reasons why the soil you have mentioned in (e) is very unsuitable for growing rice.

➤ **It has low water retention**

➤ **It has low nutrients retain**

(b) Table 2 shows percentages of nutrients available in soil at different pH values. Use it answers the questions that follow.

pH values	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Potassium %	77	76	75	70	60	50	45	35	30	25	20	15	10	5
Phosphorous %	10	20	25	30	35	40	45	50	60	70	75	76	77	78

i. Describe the relationship between the availability of nutrients and the pH values.

➤ **When PH is low phosphorus availability become low while potassium become high**

➤ **At PH 7 the availability of phosphorous and potassium becomes equal**

ii. What could happen to the availability of the phosphorous if a farmer applies lime to the soil?

➤ **Phosphorus availability would be high**

iii. Give a reason for the answer.

- Lime reduces acidity, hence making phosphorous more available/soluble
- Making soil more alkaline/increases/rises soil PH

4(a) below is a figure showing two breeds of cattle labeled B and C



i. which of the two breeds is beef

Beef breed

- B

Dairy breed

- C

ii. Mention any two characteristics that have made you identify the breed above.

Dairy breeds

- Large udder
- Triangular in shape
- Thin body with little flesh
- Short legs

Beef breeds

- **Small udder**
- **Deep body**
- **Rectangular in shape/blocky**
- **Short legs**

iii. What name is given to a disease that attacks the udder of the cattle?

- **Mastitis**

iv. State any two ways of controlling the disease that you have mentioned above.

- **Follow hygiene when milking**
- **Use antibiotics**

b. table 2 shows an example of a marketing record for maize of farm during 2011/12 farming season. Use it to answer the questions that follow.

date	Amount sold (kg)	Price/unit(mk)	Income(mk)	Market
20/04/2011	50	20	1000	A
A	50	25	1250	B
02/12/2012	100	75	7500	A
07/12/12/2012	100	100	10 000	B

(ii) If a farmer spent k5 000 during the 2011/12 farming season, show by calculation whether the farmer should continue with the maize enterprise in 2012/2013 farming season.

$$\text{MK}(1000+1250+7500+10000)-\text{k}5000$$

$$\text{Mk}(19750-5000)$$

=K14,750

Conclusion

Farmer should continue because he made profit

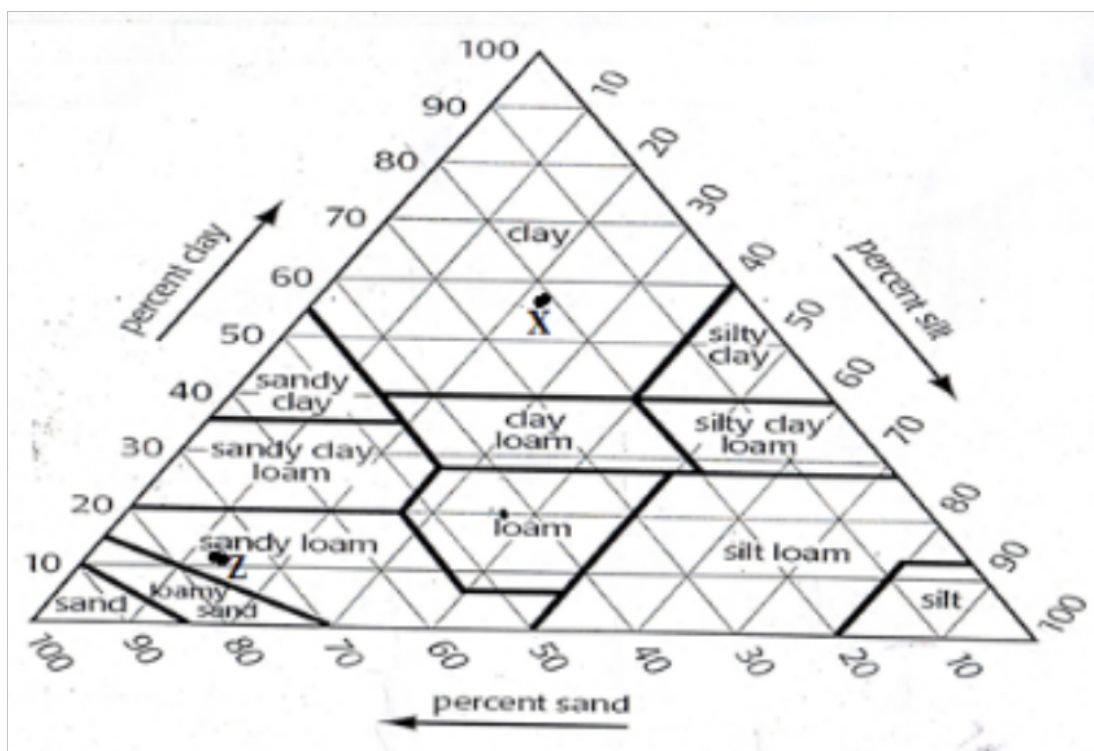
(iii) calculate price elasticity of supply for the maize enterprise at market A

$$PES = \frac{\Delta Q}{\Delta P} \times \frac{P_1}{Q_1}, \quad \frac{(100-50)}{(75-20)} \times \frac{20}{50}, \quad \frac{50 \times 20}{50 \times 50}, \quad \frac{1000}{2500} = 0.4$$

(iv) Name the degree of price elasticity of supply in b(ii)

➤ In elastic

1. a. **Figure 1** is a diagram showing soil triangle. Use it to answer questions that follow



a. Identify the type of soil which has the following proportions of soil particles:

i. 30% clay, 8% sand and 62% silt.

➤ **Silt clay loam**

ii. 8% clay, 80% sand and 12% silt.

➤ **Loamy sand**

b. State the percentage of **sand** at the following point:

➤ **75%**

c. Explain which of the soils (**Soil X** or **Soil Z**) is:

d. (i) Likely to be more acidic?

➤ **Z**

(ii) Explain the reason for your answer,

➤ **Because it has high proportion of sand which promotes leaching hence more acidic**

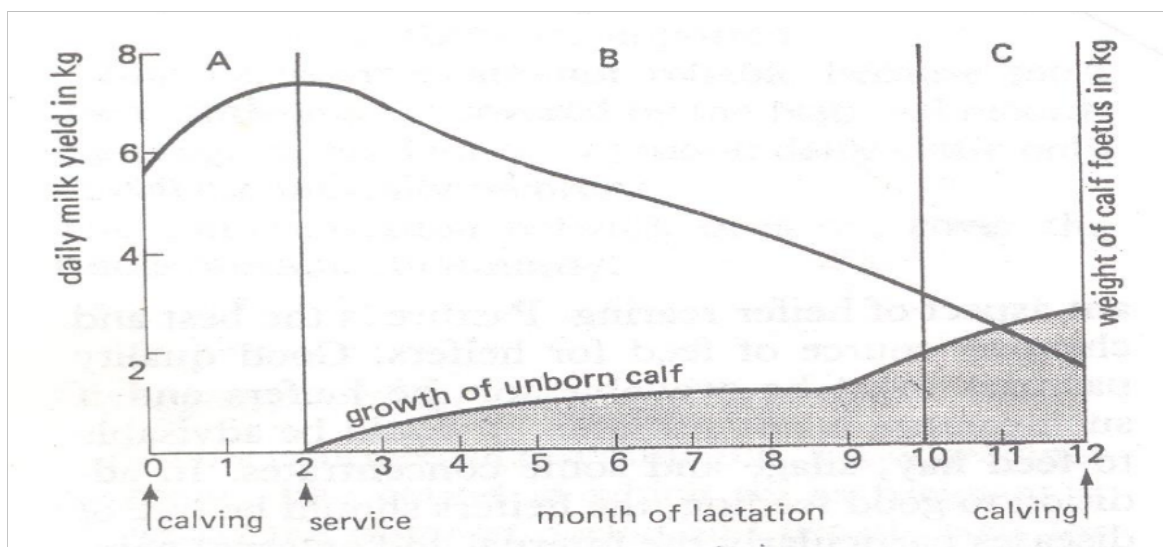
e. (i) Likely to have high proportion of nutrients?

➤ **X**

(ii) Explain the reason for your answer.

➤ **Because it has proportion of clay particles hence more nutrients retention**

2. a. **Figure 2** shows the lactation curve of a dairy cow. Use it to answer questions that follow:



- i. Give **one** reason for the decline of milk in stage B.
 - The animal is pregnant hence most nutrients are used by the growing fetus
- ii. Which stage represents the dry period.
 - C
- iii. Explain any **two** importance of the dry period.
 - Enables the cow to receive dry cow therapy to avoid bacteria infections/mastitis
 - Allows the udder to properly develop in readiness for the next lactation
 - It allows the cow's body to prepare for parturition
- iv. Explain how the lactation period affects milk yield.
 - The yield of the cow increases up to 6th to 7th weeks after partition and declines until animal dries off

Table below shows reproductive cycles of the four types of farm animals belonging to Mrs. Banda. Use it to answer questions that follow.

Type of animal	Length of	Duration of	Length of	Time of
----------------	-----------	-------------	-----------	---------

	estrous cycles (days)	estrous cycles(hours)	gestation (days)	ovulation(hours)
Cow	21	18	283	10 after end oestrous
Ewe	17	36	150	36 after beginning of estrous
Sow	21	48	115	36 after beginning of estrous
nanny	20	36	150	Not known

a. Which animal has the longest period?

➤ **sow**

b. Explain one advantage of having a longer heat period?

➤ **It increases the chances of conception**

c. a nanny was on heat 27th June 2010 but was not served.

i. State any three ways Mrs. Banda would have known the nanny was on heat.

➤ **Nanny frequently wag tail**

➤ **She sometimes mount other nannies**

➤ **The vulva becomes red**

ii. What was the next appropriate date serving the nanny? Show your working.

27th june + 20 days = 17th july,2010

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PHILLIP CHIRWA

2019



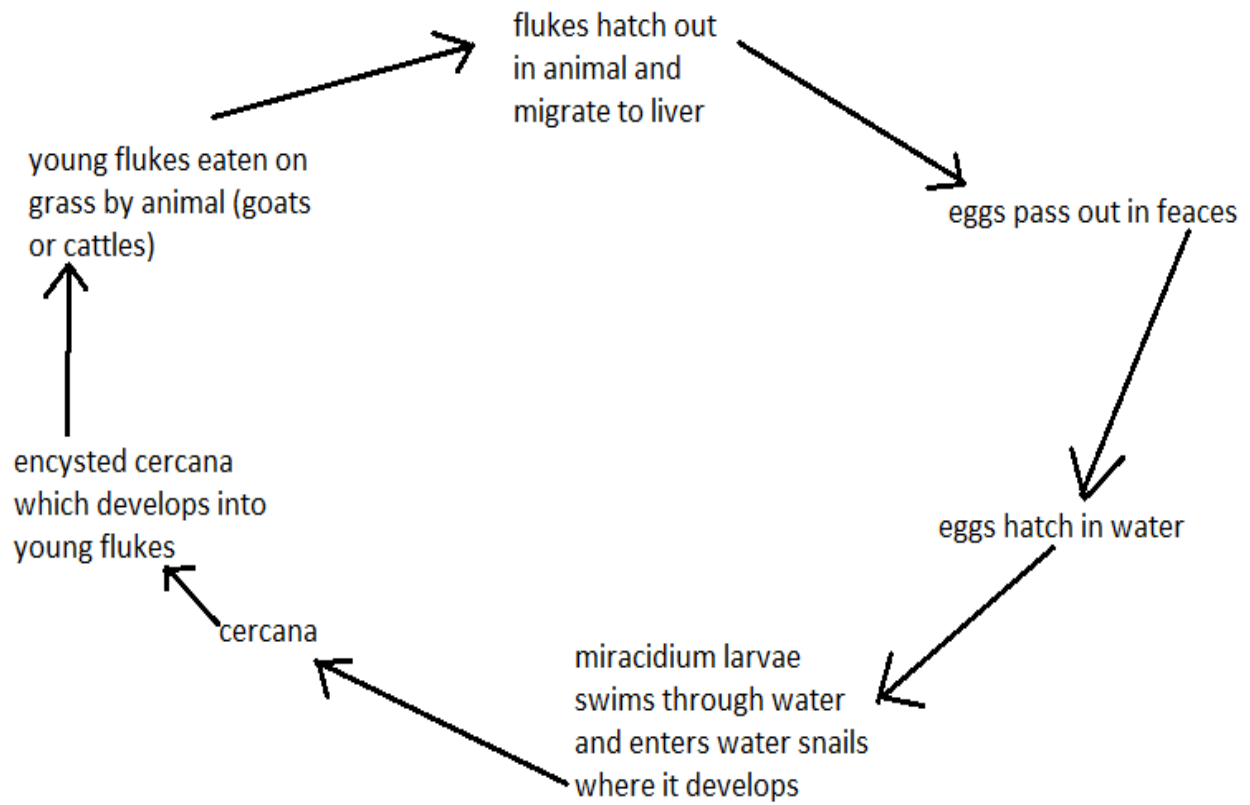
b. Mrs. Banda plans to have her ewe give birth on 31st December, 2010.

i. When should she allow the ewe to mate? Show your working.

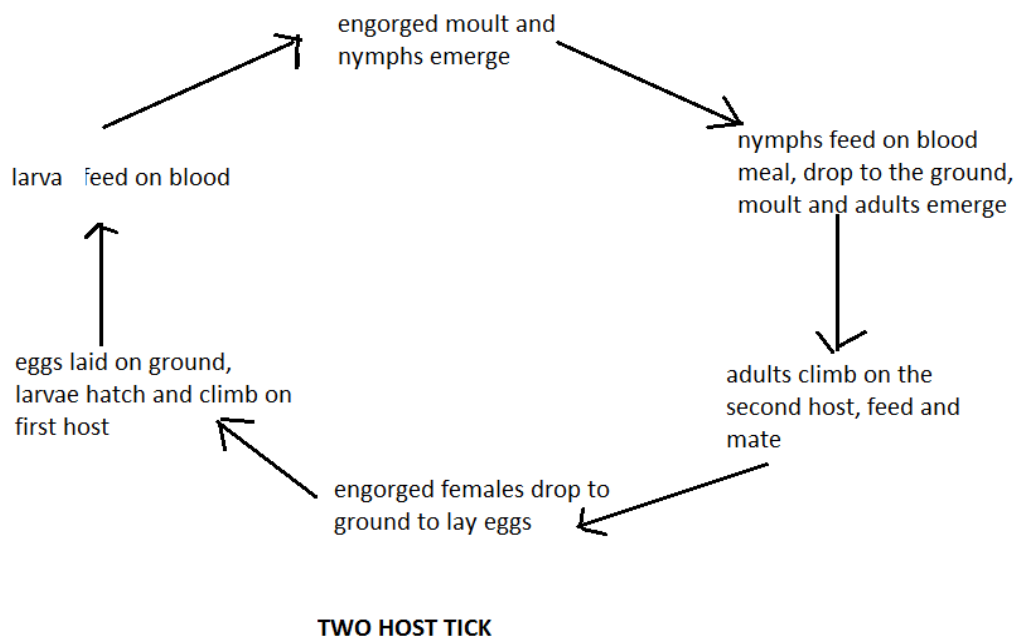
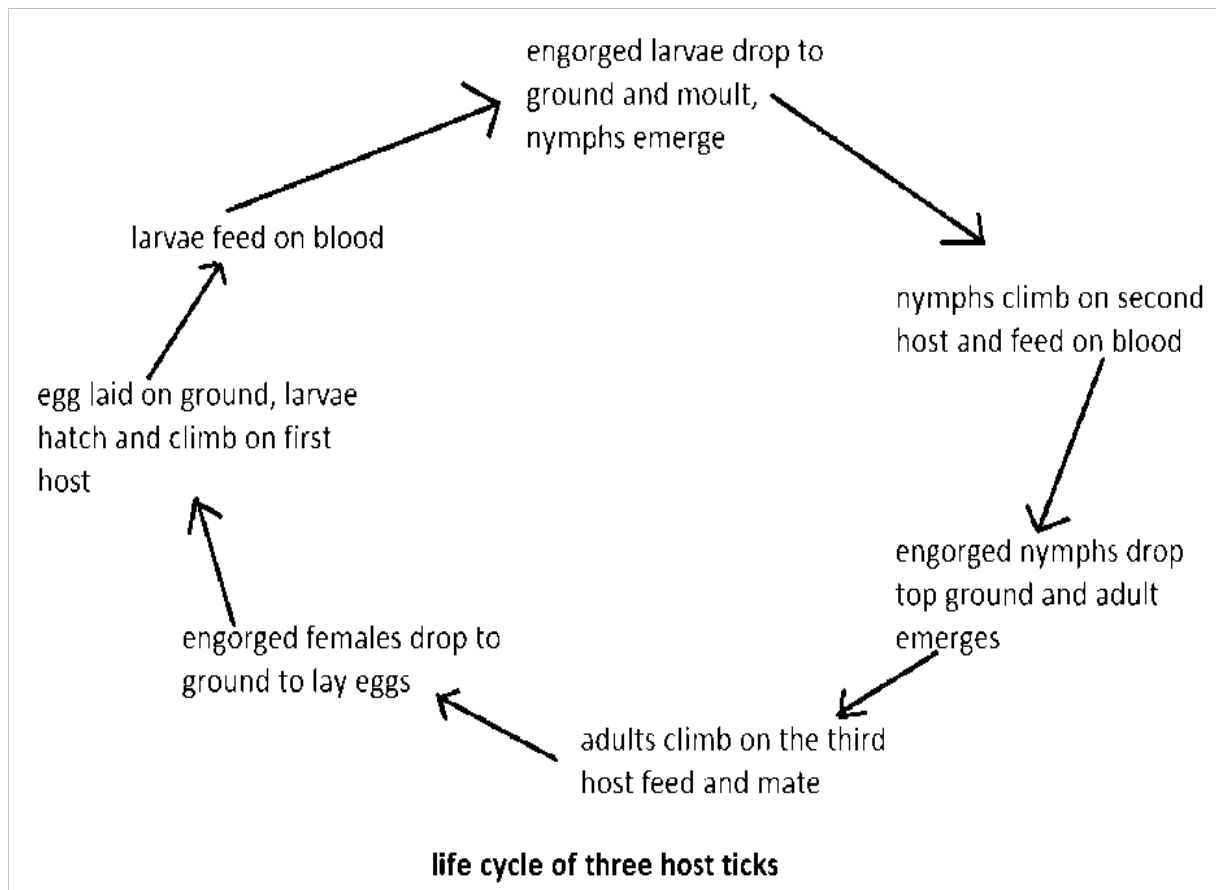
gestation period = $31 + 30 + 31 + 30 + 31 = 153$ days, length of gestation period
= 150days, $153 - 150$
= 3 day after start of august, then animal must be served on 4th
august, 2010

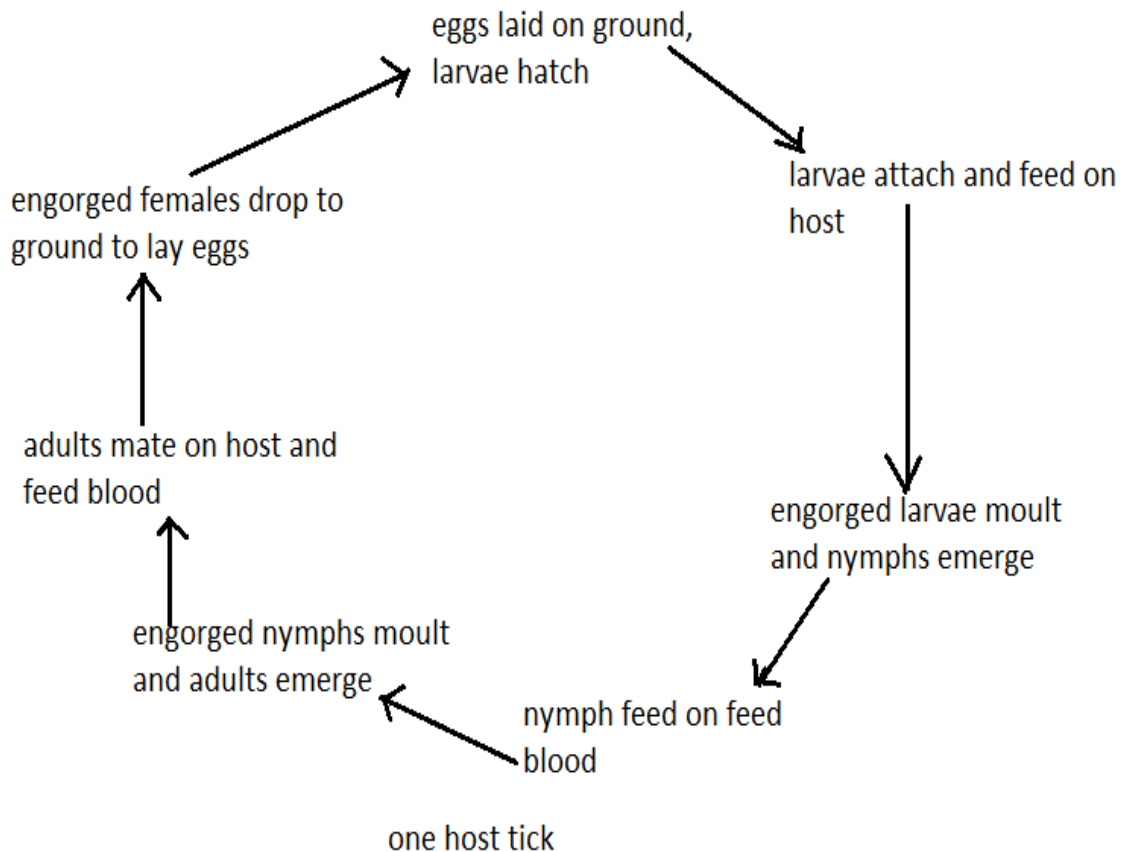
ii. Explain one advantage of planning to have the ewes lamb on 31st December, 2010.

➤ **It ensures that lambing takes place when there is plenty of feeds**



life cycle of liverfluke





a. Sedimentation method

Apparatus and materials

- Garden soil
- 250cm³ measuring cylinder
- sodium carbaonate

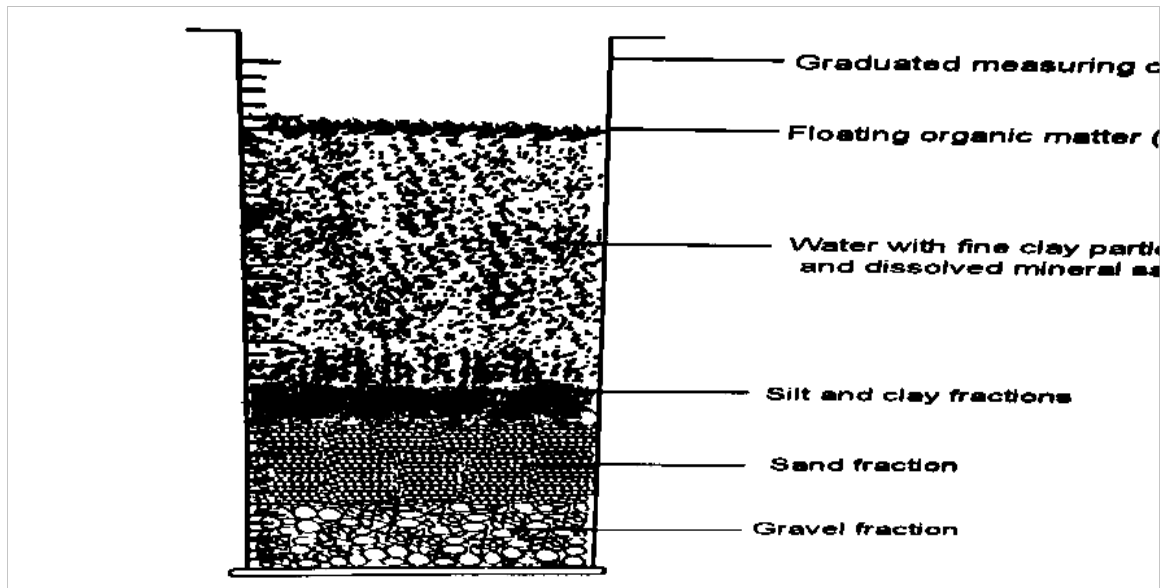
Procedure

- Put 50g garden soil in 250cm³ measuring cylinder
- Add 10g of sodium carbonate. This helps to disperse the particles
- Add 200cm³ of water
- Cover the mount of the cylinder with your palm and shake vigorously

- Leave the contents to stand for about an hour
- Observe the settled layers

Observation

- The soil particles settle according to their sizes.
- The largest and heaviest were at the bottom and the smallest and lightest settle at the top



a. Living organism

- These include the following rodents, worms, insects and micro-organisms. They play a vital role in soil formation. Bacteria helps in decomposing organic matter while other bacteria like rhizobium fix nitrogen in the soil.
- All living things respire and carbon dioxide is released as a by-product. Carbon dioxide is tested using lime water, carbon turns lime water milky.

Experiment 6: to show the presence of micro-organisms in the soil

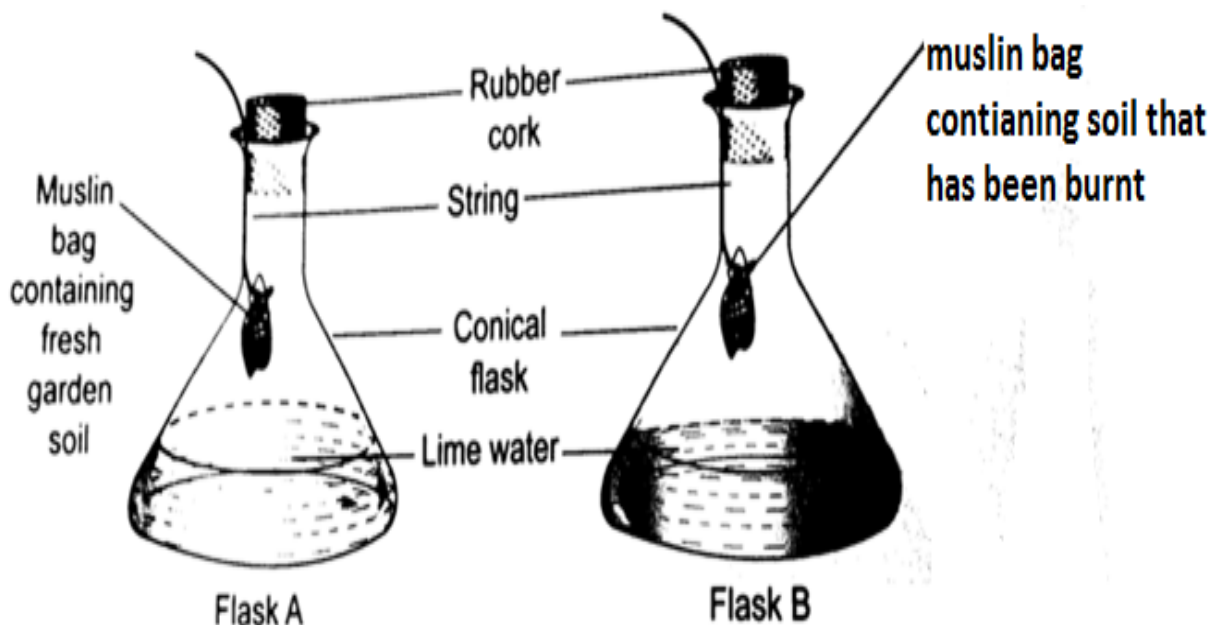
Apparatus and materials

- Two 250cm³ conical flasks
- Rubber stoppers
- Fresh garden soil
- Muslin bags
- Source of heat

- Lime water

Procedure

- Put a sample of the soil in muslin bag and tie it with a string
- Put an equal amount of burnt soil (**control treatment**) in another muslin bag and tie it with a string.
- Suspend each muslin bag in a conical flask containing lime water and label them A and B
- Cork the conical flasks tightly
- Leave the set up for 6-12 hours



Results

- Lime in conical flask **A** turns milky, while there is no change in the lime water in water contained in flask **B**. burning kills the living organisms so there is no production of carbon dioxide in the flask with burnt soil.

Conclusion

- Soil contains micro-organisms

