

5.6 HOME SCIENCE (441)

5.6.1 Home Science Paper 1 (441/1)

SECTION A

1. Functions of vitamin A in the body:
 - regulates growth especially that of children
 - maintains healthy skin
 - protects the body from infections
 - necessary for good vision.
 - prevents night blindness
 - promotes healthy mucus membrane

any 2 x 1 = 2 marks

2. Symptoms of Goitre:
 - irritability
 - tiredness/fatigue
 - weight loss/wasted
 - change of eating habits.
 - swelling of the neck/thyroid gland
 - hoarse voice
 - difficult in swallowing

2 x 1 = 2 marks

3. Precautions to take when handling calabashes:
 - avoid banging or hitting with heavy objects
 - do not expose to naked flame
 - always store in a cool, dry place.
 - avoid scrubbing the inside
 - avoid soaking/steeping

any 2 x 1 = 2 marks

4. Reasons for using dried fruits in cake making:
To;
 - enrich
 - preserve
 - add flavour
 - improve texture
 - Improve appearance

2 x 1 = 2 marks

5. Difference between shallow and deep fat frying
 - shallow frying is cooking food in a small amount of hot fat while
 - Deep fat frying is cooking food by complete immersion in hot fat/oil.

Well differentiated = 2 marks

6. Methods of removing dust from surface in a home:
 - sweeping
 - dusting

- brushing
- suction
- dispersal

2x1=2marks

7. Advantages in using loose covers in the home.

They:

- ease maintenance of the article
- enhance beauty/decoration
- protect the article.

any 2 x 1=2 marks

8. Ways of disposing refuse economically:

- using as animal feed
- converting to manure
- recycling.

any 2x 1 = 2 marks

9. Definition of Good Grooming

- taking care of oneself so that one looks neat, clean and generally attractive in appearance.

well defined - 1 mark

10. Ways in which medicine can be abused:

- taking someone else's medicine in belief that your illnesses are similar
- taking medicine without a doctors prescription
- using medicine for reasons other than treatment.
- using expired or poorly stored medicine
- not completing the recommended dose

any 2 x 1 = 2 marks

11. Benefits of manipulative play. It:

- enables children to exercise their limbs/their muscles/strength
- enables children to enjoy play
- teaches size, colours, volume and shapes
- improves co-ordination.

any 2x1 = 2 marks

12. Problems that may occur on the feet as a result of wearing tight fitting shoes include:

- corns
- blisters
- in grown toe nails
- bent toes/incorrectly arranged toes
- bunions
- poor blood circulation

any 2x 1 =2 marks

13. Difference between goods and services

- Goods are tangible items such as food, tools and clothes which can be bought or sold while
- services are work rendered at a fee such as cleaning, medical, catering and teaching.

Well differentiated = 2 marks

14. Vegetable stains commonly occurring in homes, are:
- banana sap
 - grass stain
 - fruit juice stain.
 - coffee
 - tea
- any 2 ~~x~~ = 1 mark
15. Reasons for starching articles.
- To:
- restore body and feel of the article
 - improve appearance
 - give article glossy surface (crease resistant)
 - make them dirt resistant
 - making them crease resistant
- any 2 x 1 = 2 marks
16. Precautions to take when laundering viscose rayon:
- do not rub or twist
 - dry under the shade/away from sunlight
 - dry evenly
 - use a warm iron
 - iron when damp.
 - use kneading and squeezing method
- any 2 x 1 = 2 marks
17. Examples of inconspicuous seams are:
- plain
 - French seam.
 - Open seam
- 2 x 1 = 2 marks
18. Functions of openings on a garment.
- They:
- allow putting on and taking off the garment
 - decorate the garment
 - introduce a style feature.
- any 2 x 1 = 2 marks
19. Advantages of using tacking stitches. They:
- give direction/guidance for permanent stitching
 - hold two or more pieces of fabric in place before permanent stitching
 - allow for fitting and adjusting a garment before permanent stitching.
- any 2 x 1 = 2 marks
20. Difference between trimmings and trimming in clothing construction.
- Trimmings are sewing notions used for decorating garments such as laces and bias binding while
 - Trimming is the action of cutting off excessive fabric on seams or edges of fabric.
- Award 2 marks for correct differentiation.**

21. Completing the table on classification of fibres

Fibre	Class
Viscose rayon	Regenerated fibres (½ mark)
Elastofiber	Synthetic (½ mark)
Polyester	Synthetic (½ mark)
Asbestos	Mineral(½ mark)

4 x ½ mark = 2 marks

SECTION B (20 marks)

22. (a) The procedure to make muddy contaminated water safe for drinking:
- leave the water to stand (½) for sometime (✓) for mud to settle at the bottom of the container and then decant (1)
 - filter(½) using a filter paper/home filter/clean cloth(½)
 - boil (1) the water. Put the boiled water in a clean(½) container
 - cover (✓) with clean(½) lid/cover(½)

Total marks = 6 marks

- (b) The procedure of thorough cleaning plastic chairs:
- Collect equipment and materials ○
 - dust the chairs with a dry cloth(½) remove mud with a blunt stick or wet cloth(½)
 - clean with warm soapy water(½) using a soft cloth/sisal fibres/sponge(½) from top to bottom/underneath/back(½)
 - rinse ○ using warm ○ water
 - final (%) rinse with cold ○ water
 - remove excessive water ○ using a clean cloth/tum/tilt chair upside down so that water can drain off (%)
 - buff with a clean(½) dry(½) non fluffy(½) cloth
 - clean equipment,dry and store(½)

Maximum marks = 8 marks

- (c) The procedure to follow when laundering a coloured cotton handkerchief:
- wash ○ in warm soapy(½) water using friction method(½)
 - rinse (h) in clean warm water(½)
 - finally rinse in cold(½) water, add vinegar(½)
 - dry in the shade ○
 - iron while slightly damp ○ using a hot iron (✓) Air (%) and fold appropriately (%)

maximum marks = 6 marks

SECTION C

23. (a) Rules to observe when making short crust pastry:
- all ingredients must be weighed accurately to come up with a quality product
 - the mixture should be aerated as much as possible to allow proper raising of the product
 - pastry should be kept as cool as possible to avoid the fat melting
 - the pastry should be handled as little as possible to avoid hardening the product

- the pastry should be rolled on a light floured surface to avoid sticking
- pastry should be rolled with light to and fro movement to avoid extracting the trapped air
- the pastry should be baked in a fairly hot oven so that the water is quickly turned to steam to puff up the pastry
- all measured liquids should be added at once to give an even texture.

any 4x2 = 8 marks

(b) Hygiene practices to observe during food storage:

- storage equipment such as refrigerators, kitchen stores, must be kept clean at all times to avoid attracting pests and micro-organisms
- the principal of first in, first out should be practiced when storing foods to prevent food spoilage
- containers used to hold cooked food should be free from cracks and chips to avoid harbouring micro-organisms
- dry foods should be stored in well ventilated storage places which are free from pests to avoid spoilage.
- Food should be covered or wrapped during storage to avoid contamination

any 3x2 = 6 marks

(c) Points to take into account when buying baking tins to ensure they are of good quality:

- buy reliable and tested products as these are more likely to be of reasonable standards and good value for money
- insist on a warranty as this is a good indicator of the quality of the item
- buy from reliable and established dealers as they are dependable
- buy renowned brands as they are a symbol of quality.
- buy rust-free tins to avoid poisoning, discolouration or altering the taste of food
- buy one that is smoothly finished to avoid injuries and ease of cleaning

any 3 x 2 = 6 marks

24. (a) Steps followed in making pin tucks:

- mark the position of the tucks
- fold the fabric appropriately/on straight grain on the RS
- hold the tucks with temporary stitches close to the fold
- stitch close to the fold
- work as above, until all tucks are made
- remove the temporary stitches and press.

correct sequence 6x 1 = 6 marks

(b) Qualities of a well-made in-seam pocket. the:

- pocket is inconspicuous on the RS for neat appearance
- pocket should lie flat to avoid bulkiness
- pocket should face the RS of the garment for ease of use
- pocket is reinforced at the mouth to avoid tearing
- grain of the pocket and that of the garment should be matching to give good drape
- pocket mouth should be large enough for the hand of the wearer to enter with ease
- pocket bag should be deep enough to prevent items placed inside from dropping out.

any 4 x 2 = 8 marks

- (c) Procedure of laundering a polyester pair of trousers:
- wash in warm detergent water by kneading and squeezing
 - rinse thoroughly in warm water
 - give a final rinse in cold water
 - use fabric conditioner
 - drip dry in the shade
 - press with a warm iron
 - air dry completely
 - store appropriately.

correct sequence 6 x 1 = 6 marks

25. (a) Procedure in daily cleaning of baby's bedroom:
- strip the bed, air the beddings and wash bedsheets and pillow cases
 - collect the equipment and materials required for cleaning
 - make the bed
 - dust all the surfaces and ornaments
 - sweep/mop the floor
 - tidy, arrange the room and clean the equipment used, dry and store.

correct sequence 6x 1 = 6 marks

(b) Methods of lighting

(i) Study Room:

Direct

- the light source is of the correct intensity as it avoids glare which may strain the eyes
- the light is distributed downwards hence does not cast shadow.

(ii) Living room:

Decorative

- the light enhances beauty of interesting art objects/pictures, designs
- create/reflects different moods in the home

Semi-direct

- light is distributed evenly in all directions
- less intense, therefore suitable for general activities
- intensity of light can be controlled such as by use of adjustable pendent (which can be lowered or raised).

identification 1 x 2 = 2 marks

reason 2 x 2 = 4 marks


Total = 6 marks

(c) Practices necessary for maintaining healthy teeth:

- visit the dentist for dental check up to ensure any problem is taken care of promptly
- discourage the use of sharp objects to remove food from in-between the teeth to avoid damaging the gums
- brush the teeth regularly - preferably at night before going to bed and in the morning to avoid build up of plaque
- eat a balanced diet with plenty of calcium and phosphorous to promote growth of well formed strong teeth
- avoid eating sweet things after cleaning teeth and especially before going to bed to prevent decay/weakening of the teeth
- eat hard foods occasionally to exercise your jaws and to strengthen your teeth.
- floss the teeth regularly to keep away food particles.

any 4 x 2 = 8 marks

	ACTIVITY	Score	Maximum score
1.	PRESENTATION		
(a)	Work well pressed (1) and folded (%)	1½	6%
(b)	Label(½) firmly stitched (1) without concealing details (½) and on a single fabric(½)	2½	
(c)	Pins/needles ○ and unnecessary tacking threads (½) and loose threads (✓) removed	1½	
(d)	Made up for the LEFT side	1	
2.	CUTTING OUT		
(a)	All eight pieces (½ x 8) cut out	4	15
(b)	Smooth cutting of the C.F of bodice (1) and cut on straight grain to within 3 mm (1)	2	
(c)	Smooth cutting of the C.B of bodice (1) and cut on straight grain to within 3 mm (1)	2	
(d)	Smooth cutting of C.F of skirt	1	
(e)	Smooth cutting of C.B of skirt	1	
(f)	Smooth cutting of the dress lower edge front (1) and back(1)	2	
(g)	Smooth cutting of the sleeve edge	1	
(h)	Crossway strip cut on true bias	1	
(i)	Dress skirt cut on true bias front (✓) and back (✓)	1	
3.	DART		
(a)	Straight stitchery (1) of dart and tapering to nothing(½)	1½	6
(b)	Stitchery fastened at the point	½	
(c)	Correct length of the dart 7.5 cm to within 2 mm (7.3 cm -7.7 cm)	1	
(d)	Correct width of dart 1.5 cm to within 2 mm (1.3 cm-1.7 cm)	1	
(e)	Pressed towards C.B	1	
(f)	Flatness of dart on W.S (½) and R.S (½)	1	
4.	SHOULDER SEAM - DOUBLE STITCHED (If not double stitched award zero (0))		
(a)	First row of stitchery made with straight stitches	1	8
(b)	Raw edges well tucked under	1	
(c)	Second line of stitchery made with straight stitches	1	
(d)	Evenness of seam (1) and correct size 0.6 cm to within 2 mm (1) (0.4 cm -0.8 cm)	2	
(e)	Flatness of seam on R.S (1) and on W. S (1)	2	
(f)	Fell facing back of dress	1	

		Score	Maximum score
5.	SIDE SEAMS - OPEN SEAM (if not open seam award zero(0))		
	BODICE		
(a)	Joined with straight stitchery	1	13
(b)	Raw edges well neatened (1 x 2)	2	
(e)	Evenness of seam allowance	1	
(d)	Correct size of seam allowance 1cm to within 2 mm (0.8-1.2cm)	1	
(e)	Seam pressed open and flat at the arm hole (1) and waist (1)	2	
	SKIRT		
(a)	Joined with straight stitchery	1	
(b)	Raw edges well neatened (1x2)	2	
(c)	Evenness of seam allowance	1	
(d)	Correct size of seam allowance (1 cm to within 2 mm (0.8 - 1.2 cm))	1	
(e)	Seam pressed open and flat at the waist	1	
6.	WAIST SEAM - PLAIN SEAM		
(a)	Joined with straight stitchery	2	10
(b)	Seam evenly trimmed (1) and correct size (1) 1 cm to within 2 mm (0,8-1.2 cm)	2	
(c)	Loop stitches (1) made on half back (1)	2 ^s	
(d)	Quality of loop stitches i.e. evenly distributed  correct tension (h) even length(½) and worked using single thread (%)	2	
(e)	Side seams meeting to within 2 mm	1	
(f)	C.B of bodice and C.B of skirt flash (%) C.F of bodice and C.F of skirt flash(½)	1	
7.	COLLAR		
(a)	Smooth stitchery of outer edge of collar (mark by impression)	1	17
(b)	Collar seam trimmed (1) and snipped (1)	2	
(c)	Well knife-edged collar	1	
(d)	Collar attached by sandwiching in the dress and crossway strip	1	
(e)	Quality of attaching stitchery (mark by impression on R.S)	1	
(f)	Attaching seam trimmed (1) and snipped (1)	2	
(g)	Crossway strip held down with straight stitchery (1) and well tucked under (1)	2	
(h)	Evenness of the crossway strip	1	
(i)	Correct positioning of collar i.e. C.F of collar flash with C.F of bodice (1) and C. B of collar 1.5 cm from cutting edge (1)	2	
(j)	Correct size (1) to within 5mm and correct shape (1) (superimpose pattern)	2	

		Score	Maximum score
(k)	Collar lying flat on dress front($\frac{1}{2}$) and dress back ($\frac{1}{2}$)	1	
(l)	C.F of crossway strip and C.F of bodice flash($\frac{1}{2}$) and C. B of crossway strip and C.B of bodice flash($\frac{1}{2}$)	1	
8.	UNDERARM SEAM-OPEN SEAM		
(a)	Joined with straight stitchery	1	6
(b)	Raw edges well neatened (1 x 2)	2	
(c)	Evenness of seam allowance	1	
(d)	Correct size of seam allowance 1cm to within 2 mm (0.8 em-1.2 cm)	1	
(e)	Seam pressed open and flat at the armhole	1	
9.	SLEEVE		
(a)	Good hang	1	8 $\frac{1}{2}$
(b)	Gathers (1) evenly distributed (1) at the crown($\frac{1}{2}$)	2 $\frac{1}{2}$	
(c)	Armhole made with straight stitchery	2	
(d)	Armhole seam neither trimmed($\frac{1}{2}$) nor neatened($\frac{1}{2}$)	1	
(e)	Correct position i.e front notches (\surd) and back notches($\frac{1}{2}$) matching	1	
(f)	Underarm seam and side seam matching to within 2mm	1	
	TOTAL	90 = 2	45

5.6.3 Home Science Paper 3 (441/3)

	AREAS OF ASSESSMENT	MAXIMUM SCORE	ACTUAL SCORE	REMARKS
1.	PLAN Recipes - Availability. - Correct quantities - Appropriate choice Order of work - Availability - Proper sequencing List of foodstuffs and equipment - Availability - Adequacy - Appropriateness	1 3 1% 1 2 2 3 2		
		16		
2.	PREPARATION AND COOKING Correct procedure - Item 1 (main dish) - Item 2 (vegetable) - Drink Methods of cooking (at least two) - Quality of results - Item 1 (main dish) - Item 2 (vegetable) - Drink	4 2 2 2 2 1 1		
		14		
3.	PRESENTATION Utensils - Appropriate - Clean - Table lay out Centre piece - General impression - Hygiene - Food(l) Kitchen(!) Personal (1)	2 2 2 2 1 3		
		12		
4.	ECONOMY OF RESOURCES - Water - Food - Fuel - Materials Clearing up - During work - After work	1 1 1 1 2 2		
		8		
		50 +2		

5.7 AGRICULTURE (443)

5.7.1 Agriculture Paper 1 (443/1)

SECTION A (30 marks)

1. (a) - bulbs/leaves
(b) - roots
(c) - berry/berries/cherries/fruits
(3 × 3 = 11 marks)
2. Biotic factors.
• Pests
• Decomposers.
• Pathogens
• Nitrogen fixing bacteria.
• Pollinators
• Weeds
• Predators
(4 × 1/2 = 2 marks)
3. Methods for controlling Crop Pests.
• Chemical
• Biological
• Cultural
• Physical/mechanical
• Legislation
(4 × 1/2 = 2 marks)
4. Methods of harvesting water.
(a) roof catchment.
(b) rock catchment
(c) Weir/Dam
(d) Retention ditches/level terraces
(e) micro-catchment.
(f) water pans/ponds
(4 × 1/2 = 2 marks)
5. Records kept by poultry farmer.
• Egg production/ weight gain
• Labour records
• Feeding records
• Health records
• Marketing records
• Inventory records
(4 × 1/2 = 2marks)
6. Disadvantages of using organic manures.
- Low nutritive value per unit volume/weight.
- Likelihood of spread of disease/pests/weeds.
- Bulky/difficult to store/transport/apply.
- Looses nutrients if poorly stored.
- Difficult to quantify the amount of nutrient per unit volume/weight.
(4 × 1/2 = 2marks)

7. Classification of pastures.
- Pasture stand: Pure/mixed.
 - Pasture establishment/natural/artificial.
 - Ecological zone/altitude.
- (2x } =1 mark)
8. Disadvantages of organic mulch.
- Expensive to transport and apply/bulky.
 - Could be a fire risk.
 - Provides breeding ground/hiding place for pests.
 - Intercepts light showers of rainfall.
 - Can spread pests, weeds/diseases.
- (4x } =2marks)
9. Advantages of crop rotation
- Ensures maximum utilization of nutrients.
 - Controls build-up of pests/diseases/weeds
 - Controls weeds that are specific to particular crops.
 - Improves soil fertility when leguminous crops are included.
 - Controls soil erosion when cover crops are included.
 - Improves soil structure if grass lay included.
- (5x } =2} mark)
10. Earthing up
- improves tuber formation/expansion/roots/pods formation
 - Improves drainage around the crop
 - Conserves water/soil
 - Facilitates harvesting of tuber crops
 - Root protection
- (2 x 1/2 = 1 marks)
11. Harmful effects
- Lower crop yields.
 - Lower quality of crop products
 - Some harbour crop pests/diseases
 - Some reduce labour efficiency
 - Increase the cost of production.
 - Suppress growth of crops through competition for light, space, etc.
 - Some have allopathic effects on crops
 - Some are parasitic to crops
 - Some weeds block irrigation canals/channels
- (4x } =2marks)
12. Advantages of shifting cultivation.
- No pest and disease build-up.
 - Low capital requirement.
 - No land disputes as land ownership is not individualised.
 - Soil structure is maintained
 - Gives time of land to regain fertility
- (3x } =11k marks)
13. Advantages of Zero-grazing
- 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 } marks)

14. Harvest time.

- Market price.
- Weather conditions.
- Market demand.
- Purpose/intended use.
- Concentration of required chemicals.
- Taste and preference/form required

(4 x 1 = 2 marks)

15. Land Reforms.

- Land consolidation.
- Land adjudication and registration/issue of title deeds.
- Land settlement and resettlement.
- Tenancy reform.
- Redistribution of land.
- Improved land legislation.
- Sub-division of land

(4 x 1 = 2 marks)

16. Number of Secondary cultivations

- Type of crop to be established/ size of seed.
- Moisture content of soil
- Type of soil
- Conditions of land after primary cultivation.
- Amount of organic matter on the surface.
- Vulnerability to soil erosion

(4 x 1 = 2 marks)

SECTION B (20 marks)

17. (a) Gabion/porous dam

(1 mark)

- (b)
- Slows down the speed of water thus reducing its erosive power.
 - It traps the detached soil particles.

(2 x 1 = 2 marks)

18. (a) As the price of the commodity increases the quantity demanded decreases and vice versa.

(1 x 1 = 1 mark)

- (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.
 - Change in taste and preference.
 - If the quality of the commodity goes up.

(3 x 1 = 3 marks)

19. (a) Oxalis/oxalis latifolia. (1 mark)
 (b) Broad-leaved weed. (1 mark)
 (c) Presence of underground bulbs. (1 mark)
20. (a) Alley cropping/hedge row. (1 mark)
 (b) • Source of fodder when tree foliage is cut and fed to livestock.
 • Improves soil fertility through nitrogen fixation/nutrients cycling.
 • Facilitates soil and water conservation when roots bind soil particles.
 • Smothers weeds
 • Source of mulching material/wood fuel/compost manure
 (3 x 1=3 marks)
21. (a) Cutworm. (1 mark)
 (b) • Early planting for crop to establish early and outgrow the pest.
 • Application of appropriate pesticide to kill it.
 • Field hygiene to prevent transmission from previous crop residues.
 • Physical killing and destruction (2 marks)
22. (a) Soil capillarity (1 mark)
 (b) The smaller the size of the particles the greater the force of capillary. (1 x 1 = 1 mark)
 (e) Soil labelled L. (1 x 1 = 1 mark)

SECTION C (40 marks)

23. (a) Five factors to consider in farm planning.
- Environmental factors/climate/soil type; 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 plan for motivation.
 - Government regulations or policy; to ensure that laws are not flouted.
 - Availability and cost of farm input/cost of labour/cost of production/capital availability; to select an enterprise that is affordable.
 - Security of enterprise so as to ensure safety.
 - Trends in the labour market; to ensure labour availability throughout.
 - Existing market conditions and price trends; so that whatever is produced is sold 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.
- (5 x 2=10 marks)
 (Factor 1 mark, Explanation 1 mark)

(b) Transplanting of tomato seedlings.

- Should be done when seedling are pencil size thick/ one month to one and half month old.
- Nursery should be watered before to ease lifting of seedlings.
- Use garden trowel/ensure that seedlings are lifted with lump of soil around roots.
- Apply appropriate pesticide in the planting holes to control pests and diseases.
- Apply phosphatic fertilizers/manures in the planting holes.
- Mix pesticides/manure/fertilizer with soil thoroughly
- 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.
- Mulch the transplanted seedlings if necessary.
- Provide temporary shade to the transplanted seedlings.
- Water the seedlings as necessary.
- Place soil around the seedlings and firm
- Holes are dug at a spacing of 60- 100 cm x 50- 60 cm.
- Transplant at the onset of the rains/when soil has enough moisture.
- Transport seedlings carefully/use a wheelbarrow.
- Planting holes are dug at a depth of 15 cm.

(10 x 1 = 10 marks)
(Maximum 10 marks)

24. (a) **Siting a vegetable nursery.**

- 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 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 minimise damage to seedlings during transplanting.
- Accessibility for easy movement.
- Away from shading effect to allow proper access to light.

(5 x 1 = 5 marks)

(b) **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/disease.
- Viability/germination percentage: - should have high viability/germination percentage.
- Parent plant - should be from high yielding/healthy parents/high quality/early maturing/disease resistant.
- 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 the seed, should be of correct size.

(6 x 1 = 6 marks)

(c) **Environmental factors.**

(i) **Temperature**

- Affect quality of certain crops e.g. pineapples, pyrethrum.
- Influence rate of the physiological processes in a crop.
- Cause increase in incidences of diseases.
- Low temperatures cause frost injury.
- High temperature increase rate of evapotranspiration hence wilting.
- Influences distribution of crops.

(4 x 1 = 4 marks)

(ii) **Wind**

- Strong winds increase the rate of evaporation/evapotranspiration/wilting.
- Influences amount of rainfall in a 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 of certain crops/destruction of crops/crop structures.
- Winds can spread diseases/pests/weeds.
- Wind helps in seed dispersal.
- Wind is used in cleaning/winning grains.

(5 x 1 = 5 marks)

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

- Quantities of the 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 amount involved/total cost involved/total cash.
- Name of supplier.
- Cost of goods per item.

(5 x 1 = 5 marks)

(b) **Harvesting of tea.**

- 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 10–14 days in dry periods.
- Put plucked tea in woven baskets to facilitate air circulation/ prevent fermentation.
- Do not compress the leaves in the baskets to prevent heating up/ browning.
- Put plucked tea in cool and shaded place.
- Deliver to the factory on the same day.

(6 x 1 = 6 marks)

(c) **Importance of Irrigation.**

- Irrigation increases crop yields and ensures a steady supply of food throughout the year.
- Maximises the utilization of resources e.g. 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 or no 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 in green houses.
- Facilitates fertigation in crop production.
- Controls pests.

(5x 1 = 5 marks)

(d) **Role of magnesium**

- Important in chlorophyll formation.
- Promotes the formation of fats and oils in crops e.g. 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.

(4x 1 = 4 marks)

SECTION A (30 marks)

1 **Raw materials:**

- (a) mohair.
- (b) wool.
- (c) fur.

(3 x ✓ = 1 / marks)

2. **Reasons for egg candling**

- Determine freshness.
- Detect any abnormalities. Determine
- fertilised eggs. Determination of
- chick development

(3 x ✓ = 1 / marks)

3. **Nutritional diseases**

- milk fever/parturient paresis.
- bloat/Ruminal tympany
- Grass tetany/grass staggers

(2 x ✓ = 1 marks)

4. **Advantages of housing calves singly**

- control diseases.
- controls parasites.
- prevents formation of hair balls in the rumen.

(2 x ✓ = 1 mark)

5. **Features of housing**

- well ventilated
- well lit.
- easy to clean.
- free from draughts
- spacious
- leakproof
- proper drainage

(4 x 1/2 = 2 marks)

6. **Fish harvesting methods.**

- use of seine nets
- use of scoop net
- draining the pond

(3 x ✓ = 1/4 marks)

7. **Dehorning methods**

- Caustic potash stick/potassium hydroxide.
- Dehorning spoon.
- Elastrator and rubber ring.
- Dehorning iron
- Dehorning wire/saw
- Dehorning chemical colloidion

(5x / = 2 / marks)

8. (a) capon.
(b) kindling.
(c) Buck/billy.

(3x / , = 1 / 4 marks)

9. **Beef cattle marketing**

- Kenya Meat Commission.
- Livestock Marketing Division, Ministry of Livestock Development.
- Local slaughter houses/butcheries
- Licensed stock traders

(3x / = 1 / marks)

10. **Causes of egg eating**

- Presence of broken/soft shelled eggs.
- Inadequate laying nests forcing birds to lay on the floor.
- Bright light in the laying nests.
- Idleness of birds in the house
- Mineral deficiency in feeds
- Prolonged presence of eggs in laying nests.

(4x % = 2 marks)

11. **Preparation of ewe for mating**

- Flushing.
- Crutching.
- Treatment against parasites/diseases

(2x / = 1 marks)

12. **Reasons for identification**

- Selection for breeding.
- Facilitates treatment of sick animals.
- Culling of poor animals.
- Identification for special feeding.
- For record keeping on an animal.
- Identification of lost/stolen animal.

(4x / = 2 marks)

13. **Advantages of fold system in poultry**

- Uniformly spreads manure/dropping in the field.
- Requires less feeding.
- Reduces parasite/disease build up.
- Protects birds from predators.

(3x / = 1 / marks)

14. Practices after complete milking

- Teat dipping to control mastitis.
- Weigh and record milk yield.
- Sieve/strain/filter milk.
- Application of milking jelly on teats.
- Store milk in a cool place.
- Clean the milk shed
- Clean the milking equipment
- Release the animal

(4 x / = 2 marks)

15. (a) Both bacterial and zoonotic diseases

- Brucellosis.
- Anthrax.

(2x / = 1 marks)

(b) Viral diseases

- Newcastle
- African swine fever

(2x / = 1 marks)

16. Functions of lubrication system in a tractor

- Reduces friction between moving parts.
- Reduces heat produced by rubbing surfaces/cooling effect.
- Cleaning agent
- Prevents rusting.

(3x - = 1 / marks)

17. (a) Isolation and quarantine

Isolation is the separation of infected livestock from the rest of the herd to prevent spread of the disease.

Quarantine is preventing livestock from moving into or out of an area during an outbreak of a notifiable disease.

(mark as a whole 2 marks)

(b) Curative drug and prophylactic drug

- Curative drug is a drug administered when an animal is sick/already infected.
- Prophylactic drug is a routine drug administered to an animal to prevent infection.

(mark as a whole 2 marks)

SECTION B (20 marks)

18. (a) **A** • Hypodermic syringe and needle
(Rej. Hypodermic syringe alone)
- B**- Soil auger (2 x 1 = 2 marks)
- (b) Straightening bent metal surfaces/riveting/striking head of cold chisel. (1 mark)
- (c) Cleaning after use to remove dirt.
Greasing/oiling to reduce friction.
Apply oil/painting to prevent rusting (2 x 1 = 2 marks)
19. (a) Tsetse fly/*Glossina species* (1 mark)
- (b) Transmits *Trypanosomiasis/nagana* causing agents (1 mark)
- (c) - Bush clearing to destroy breeding sites
- Spraying with insecticides to kill them
- Trapping and killing
- Sterilization of male flies to impair breeding
- Creating a buffer zone between game reserves and livestock areas to isolate them.
- Use of impregnated nets to trap them. (4 x 1 = 4 marks)
20. (a) Branding (1 mark)
- (b) Reduces quality of hides/skins because the heat damages the skin/hide
Causes the animal a lot of pain because it uses heat
Causes wounds which can result in infections (3 x 1 = 3 marks)
21. (a) **E** - Footbath
- G**- Dip tank (2 x 1 = 2 marks)
- (b) **E**- Cleans hooves/controls footrot
- F**- Forces the animal to slide and plunge into the dip wash
- H** - Allows the dip wash to drip from the animal and flow back to the dip tank. (3 x 1 = 3 marks)

SECTION C (40 marks)

22. (a) - Farrowing pen for farrowing and rearing piglets.
- Boar's pen houses the boar and also used for mating.
- Weaners/Fatteners pen houses piglets from weaning to marketing stage
- Gilts pen houses young females upto service age/12 months.
- In-pig pen houses pregnant pigs before they are moved to the farrowing pen.
(4 x 1 = 4 marks)

(b) **Measures for Tapeworms (*Taenia spp*)**

- Use of prophylactic drugs /antihelmintics to deworm
- Rotational grazing/paddock to starve development stages.
- Burning of infested pastures to destroy developmental stages
- Ploughing infested pastures to destroy developmental stages
- Observe proper hygiene in livestock houses to prevent contamination
- Proper disposal of human excreta to control developmental stages/prevent contamination
- Proper meat inspection to isolate infected meat.
- Proper cooking of meat to kill the cysts.

(6 marks)

- (c) (i) Carbohydrates - main sources of energy. They are respired & release energy e.g. cereals root crops, tubers, molasses, grass pastures,
- (ii) Fat and oils - respired to produce energy e.g. oil seeds, animal by-products, pastures/foilage.
- (iii) Proteins - growth, repair, production of antibodies, enzymes, hormones and products e.g. seed cakes, leguminous foliage, animal by-products, young green grass.
- (iv) Vitamins - protection against infection, promote growth, bone formation, muscular activity, organic catalysts e.g green feeds, sunlight, milk, whole grains.
- (v) Minerals - strong bone formation, milk synthesis, formation of hard shelled eggs, prevent mineral deficiency diseases, promote growth e.g. Cereal grains, green vegetables, fish meal, liver meal, salt licks, meat meal.
- (vi) Water - transport of food substances. cooling body, easy digestion, excretion.
(Component+ role /example - 2 marks x 5=10 marks)

23. (a) **Rearing of chicks**

- On arrival supply water mixed with glucose.
- Feed chicks on fresh chick mash.
- Clean feeders before feeding-provide adequate clean water.
- Clean waterers before feeding.
- Provide adequate feeders and waterers as per the age.
- Vaccinate chicks against gumboro disease after two weeks.
- Dust the chicks and the brooder with appropriate chemicals to control external parasites.
- Check and adjust the brooder temperature accordingly.
- Provide coccidiostat in water/feed to control coccidiosis.
- Vaccinate chicks against new castle at 3-4 weeks - fowl typhoid at

seven weeks age.

- Dim lighting to prevent toe pecking.
- Introduce roosts, grit to chicks from 6th week.
- Gradually introduce grower's mash to the chicks from the 7th week.
- Isolate and treat sick chicks.
- Properly dispose dead chicks.
- Keep proper records.
- Deworm the chicks.
- Debeaking
- Provide adequate feeds.

(12 x 1 = 12 marks)

(b) **Reasons for embryo transfer**

- The calf is born in the local surrounding to minimize effects of climatic changes.
- It is possible to screen and market sexed embryos to minimise the number of male calves.
- It controls sexually transmitted diseases
- Embryos can be stored for a long time awaiting for a recipient female.
- It allows faster multiplication of a superior animal/breed i.e a cow can produce 12- 15 embryos per year.
- It stimulates production of milk in females that were not ready/able to produce milk.
- Can be used as a study/ research tool on a given sire/ dam because many offsprings can be produced within a short time for observation.
- It allows the embryo to obtain passive immunity from the surrogate mother.
- The use of embryo saves the cost of production on rearing bulls.
- Embryos are cheaper than animals of equal value.
- Embryo are easy and cheap to transport in test tubes compared to live animals.
- High yielding embryos can be implanted into less valuable females to improve production in the calves obtained.
- Easy to plan for breeding.
- Prevents injury of cows by heavy bulls.

(8x 1 = 8 marks)

24. (a) **Foot rot disease**

(i) Causal organism.

- *Bacteria/Fusiformis necrophorus!Fusiformis nodosus/Fusiformis* family bacteria.

(1 x 1 = 1 mark)

(ii) **Signs of infection**

- Swollen feet.
- Lameness/pain as the animal walks.
- Pus/rotten smell in the hooves.
- Animal kneels when grazing when fore feet are affected.
- Animal lies down most of the time when hind feet are affected.
- Emaciation because the animal does not eat.

(5 x 1 = 5 marks)

(iii) **Control measures**

- Regular hoof examination and trimming.
- Regular walk through a footbath containing copper sulphate or formalin solution.
- Proper hygiene.
- Isolation of infected animals.
- Treatment of wounds on the feet to prevent predisposal to infection.
- Treatment of infected animals.
- Moving the healthy sheep to dry areas.

(4 x 1 = 4 marks)

(b) **Functional differences between a disc plough and a mouldboard plough**

- (i) Disc plough rolls over obstacles hence good for areas with obstacles e.g. stones, roots, stumps, etc
- (ii) Disc plough works better in fields with trash on the surface due to rolling and cutting action of *discs*.
- (iii) Disc plough requires less draught power because of the rolling ability of the discs.
- (iv) Mould board plough is rigid hence ploughs at a uniform depth.
- (v) Mould board plough completely inverts the soil slices hence good for burying manure into the soil.
- (vi) Use of a mould board plough requires fewer secondary operations because it completely inverts soil slices.
- (vii) Disc plough can work on any soil condition this allows the farmer to work with it any time.

(5 x 2 = 10 marks)
(Maximum 10 marks)