**NAME………………………………………… INDEX NO……………………...........**

**443/2 CANDIDATE’S SIGN………….……**

**AGRICULTURE**

**PAPER 2 DATE……….………………………...**

**JULY/AUGUST, 2024**

**TIME: 2 HOURS**

**CaSPA ELDORET JOINT EXAMINATION - 2024**

**Kenya Certificate of Secondary Education**

**AGRICULTURE 443/2 MARKING SCHEME**

**PAPER 2**

**TIME: 2 HOURS**

**INSTRUCTIONS TO CANDIDATES:**

1. Write your **name** and **index number** in the spaces provided above.
2. Sign and write the date of examination in the spaces provided above.
3. This paper consists of **THREE** Sections **A**, **B** and **C**.
4. Answer all questions in Section **A** and **B**
5. Answer any **Two questions** in Section **C**.
6. All answers must be written in English and in the spaces provided.
7. This paper consists of **12** printed pages.
8. Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

 **FOR EXAMINER’S USE ONLY**

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| --- | --- | --- | --- |
| **Section** | **Question** | **Maximum****Score** | **Candidate’s****Score** |
| **A** | **1 – 15** | **30** |  |
| **B** | **16 – 19** | **20** |  |
| **C** | **20 – 22** | **40** |  |
| **Total Score** | **90** |  |

**SECTIONA (30 MARKS)**

**Answer all the questions in this section in the spaces provided**

1. State **four** precautions that should be observed when shearing sheep to ensure production of high quality wool. (2 marks)

1. *Complete cuts should be made*
2. *Shearing should be done on clean floor (without grease/ vegetable oil).*
3. *Shearing should be done using a clean equipment.*
4. *Care should be taken to avoid cutting body parts e.g. skin, testicles, udder, vulva or penis*

2. State **four** characteristics of the Duroc Jersey pig. (2 marks)

1. *It is pure black.*
2. *It has long body with drooping ears over the face.*
3. *It is hardy.*
4. *It is kept for both pork and bacon*

3. Give **four** ways in which infectious diseases can spread from one livestock to another within a farm. (2 marks)

1. *Ingestion of contaminated feed and water.*
2. *Through vectors.*
3. *Through contact with affected animals.*
4. *Through open wounds.*
5. *Through inhalation of pathogens*

4. State **four** disadvantages of natural mating as a method of breeding in dairy cattle management. (2 marks)

1. *High chances of inbreeding.*
2. *It is possible to transmit sexual diseases.*
3. *Males need extra costs of feeding and rearing.*
4. *Large males can injure small females.*
5. *A lot of semen is wasted.*
6. *It is difficult and expensive to transport a bull over long distances to serve a cow.*
7. *Bulls are expensive to acquire.*
8. *Most bulls are aggressive hence difficult to handle*

5. Give **four** qualities of creep feeds that make it suitable for piglets. (2 marks)

1. *Highly digestible.*
2. *High in energy content.*
3. *Highly palatable.*
4. *Contain high digestible crude protein.*
5. *Rich in minerals e.g. iron and calcium and vitamins e.g. Vit A, B complex and D.*

6. Give **four** features of housing that help to control livestock diseases. (2 marks)

1. *Should be well ventilated but free from cold winds/ draughts.*
2. *Should provide adequate space.*
3. *Should allow for proper drainage.*
4. *Should be leak-proof.*
5. *Should be well lit.*
6. *Should be easy to clean*

7. State **four** reasons for dehorning. (2 marks)

1. *To avoid injuring the each other*
2. *To make the animal docile and easy to handle.*
3. *For easy transportation and feeding because they occupy less space.*
4. *Prevent destruction of farm structures*

8. State **four** disadvantages of free range system of poultry rearing. (2 marks)

1. *Requires a lot of land which may not be available if many birds have to be kept.*
2. *Birds can be stolen or eaten by predators.*
3. *Eggs can get lost in the runs.*
4. *Eggs can get dirty.*
5. *It is difficult to keep proper records/ close supervision for individual birds.*
6. *Breeding programme is not easy to follow.*
7. *The range can be easily infested with diseases and parasites/ may lead to parasite and disease spread.*
8. *Birds can cause damage to crops if the perimeter fence is not properly constructed.*

9. State **four** methods of maintaining a wheel barrow. (2 marks)

1. *Tighten loose nuts and bolts.*
2. *Grease the wheel.*
3. *Oil the metallic part for long storage.*
4. *Proper storage.*
5. *Repair any worn out or broken parts*

10. Explain how each of the following is measured in cattle.

(a). Blood temperature. (1 mark)

* *Inserting the thermometer in the rectum of an animal*

(b). Respiratory rate. (1 mark)

* *Use of a respirator/ observing and counting the rate of inspiration and expiration per minute*

11. Outline **four** benefits of using biogas as a source of power on the farm. (2 marks)

1. *It is economical for farmers with zero grazing cows and resources to construct a biogas plant.*
2. *It is put to many uses e.g. lighting, cooking etc.*
3. *The by-product is a better source of fertilizer.*
4. *Requires low maintenance costs.*
5. *Potentially harmful wastes of cows and pigs are removed hence does not pollute the environment.*
6. *It is a renewable /sustainable source of energy*

12. The following is a list of poultry breeds

White leghorn

Light Sussex

Rhode Island

Red Ancona

Categorize them into:

(a). Light breeds. (1 mark)

1. *White leghorns.*
2. *Red Ancona*.

 (b). Heavy breeds. (1 mark)

1. *Light Sussex*
2. *Rhode Island*

13. Give **four** limitations of using solar power on the farm. (2 marks)

1. *Solar panels are expensive.*
2. *Power supply/trapping changes/fluctuates depending on weather conditions.*
3. *Solar trapping is limited to day light.*
4. *It requires skill to install and maintain/handle the devices.*

14. State the function of each of the following:

(a). Mallet. (½ mark)

* *Used to drive stakes or hammer wooden pieces without damaging the surface*

(b). Tocar and canula. (½ mark)

* *Used to relieve bloat in ruminants*

(c). Garden line. (½ mark)

* *Used to mark straight lines for planting or landscaping*

(d). Stock and die. (½ mark)

* *Used for cutting threads on pipes and rods*

15. Apart from the roof, name **four** other parts of a building that can be constructed using wood. (2 marks)

* *Walls.*
* *Floors.*
* *Doors.*
* *Window frames*

**SECTION B (20 MARKS)**

**Answer all questions in this section in the spaces provided**

16. Below is a diagram of a sheep with some parts labeled A,B and C. Study the diagram and answer the questions that follow.



(i). What operation is usually carried out on the part labeled A during a sheep’s early stages of life? (1 mark)

* *Docking*

(ii). Why is it necessary to carry out the operation in (i) above? (1 mark)

* *To facilitate tupping / mating*
* *Prevent blowfly infestation*
* *To give good fat distribution throughout the year.*

(iii). Which operation is usually carried out on part labeled B. (1 mark)

* *Hoof trimming*

(iv). What problem would occur if the operation in (V) above is not carried out? (1 mark)

* *Difficulty in movement*

(v). How should the sheep be held when shearing wool around part labeled C? (1 mark)

* *The sheep to be held in a sitting position.*

17. The diagram below shows a farm implement. Study it and answer the questions that follow*.*



a). Identify the farm implement illustrated above. (1 mark)

* *Ox-plough*

b). Name the parts labelled G,H,J and K (2 marks)

* G- *Mould board*
* H*- Land slide*
* J- *Share*
* K- *Land wheel*.

(c). State **four** functions of the farm implement illustrated above. (2 marks)

1. *Ploughing,*
2. *Weeding,*
3. *Opening a furrow for planting seeds*
4. *Harvesting crops e.g. Groundnuts*

18. The picture below illustrates a livestock organ infested by a parasite labelled E.



(a). Name the disease the livestock is suffering from. (1 mark)

* *Fascioliasis.*

(b). Identify the parasite labelled E. (1 mark)

* *Liver fluke*

(c). State **two** control measures for the parasite. (2 marks)

1. *Physically killing the intermediate host/ fresh water snail.*
2. *Adding chemicals (e.g. copper sulphatesolution, sodium pentachlorophenate, calcium cyanamide) to kill the snails.*
3. *Draining swampy areas or leveling any depressions that may hold water in the pastures.*
4. *Burning of infested pasture during the dry seasons.*
5. *Avoiding grazing animals near marshy/ water logged areas.*
6. *Routine drenching of animals with antihelmintics(e.g. sodium sulphate*)

(d). State **two** signs of infestation shown in the picture above. (1 mark)

1. *Damages the liver tissues.*
2. *Presence of parasite in the liver.*
3. *Tunnels of parasite movement in the liver*

19. The diagram below represents a calf pen. Study the diagram and answer the questions that follow.

(a) (i). Identify the type of floor. (1 mark)

* Slated floor.

(ii). How high should the floor be raised above the ground level? (1 mark)

* 50 cm.

(b) (i). Give **one** reason for having the floor of the calf pen raised. (1 mark)

* To allow water, urine and dung to drain easily in order to keep the pen dry.

(ii). State **two** factors that should be considered in sitting the calf pen. (2 marks)

1. Location of the homestead/ panoramic view of the farm- should be sited where it possible to have a good view from the homestead.
2. Accessibility- should be sited where it is easy to reach from most parts of the farm.
3. Security- The structure should be safe from thieves, trespassers and predators.
4. Drainage/Topography of the area- The area/site should be well drained (gently sloppy) to avoid destruction by water and infections due to dampness.
5. Direction of the prevailing wind- to give good ventilation but free from draught.
6. Farmer’s tastes and preferences- Sitting should be based on the liking/ preference of the farmer.
7. Relationship between structures- Structures with related uses e.g. milking shed and calf pen should be sited close to each other to save time and labour.
8. Future expansion- There should be an area for future expansion in case a need arises

**SECTIONC (40 Marks)**

**Answer any two questions from this section in the spaces provided.**

20. (a). Describe the life cycle of a named tape worm (Taenia spp). (10 marks)

* Man/ final host passes out tapeworm segments/ proglottides containing eggs with faeces.
* The segments release eggs which are picked by intermediate host when feeding.
* Eggs hatch into embryos in the intestines of intermediate host (pig/cattle).
* The embryos penetrate the intestinal walls and enter into blood stream.
* The embryos move to the liver and then to the muscles of the animal where they form cysts/ bladder worms.
* The undercooked beef/ pork with the cysts is eaten by human beings
* In the small intestines the cysts walls dissolve and parasites attach to the wall of intestines and grow/ develop into adult tapeworms.

 (b). Describe the management of one day old chicks in a brooder until they are eight weeks old. (10 marks)

* On arrival supply water mixed with glucose.
* Feed chicks on fresh chick marsh.
* Provide clean water and adequate feed.
* Vaccinate the chicks if they were not vaccinated in the hatchery.
* Clean and disinfect the brooder occasionally to control parasites and diseases.
* Remove any dead chicks and properly dispose them off.
* Check and maintain the appropriate range of temperature in the brooder
* Dust against ectoparasites.
* Deworm against endoparasites.
* Provide coccidiostats in water/feed to control coccidiosis.
* Provide dim light to avoid toe pecking.
* Introduce roosts from 6 week.
* Gradually introduce growers marsh from 7th week.
* Isolate and treat sick chicks
* Properly dispose off dead chicks.
* Provide grit to chicks.
* Keep proper records.
* Debeak at 8-10 weeks of age.
* Change the feeds gradually

21. (a) (i). Describe the milking procedure under the following sub-headings

(i). Pre-milking practices. (5 marks)

1. Assemble all the equipment.
2. Put the cow in a crush/ milking parlour
3. Restrain it and give it food.
4. Wash and dry the udder.
5. Check for the presence of mastitis

(ii). Procedure of proper milking. (5 marks)

1. In hand milking, grasp the base of the teat tightly at the base between the thumb and the fore finger to prevent back flow of milk.
2. Sequentially close other three fingers tightly applying pressure from the top to the bottom forcing milk to drain into the bucket.
3. Relax the fingers simultaneously to allow the teat to be refilled and begin a new sequence
4. In machine milking, the machine is used to suck out milk from the teat cistern.
5. When the teat cups are placed on the teat, the vacuum pump sucks and removes air from the sealed space creating a space.
6. The vacuum created holds the teats, opens the teat canals and draws milk from the teat cistern into the milk tube

(b). State the functions of any **five** parts of a piggery unit. (5 marks)

1. **Feed store**- used to store the pig feeds.
2. **Records room**- used to keep feed and weight records.
3. **Running yard**- they are extensions of the pigsty used for dunging, basking and exercise.
4. **Water troughs/drinking nipples**- are used as watering points for the pig.
5. **Feed troughs**- feeding the pigs.
6. **Pig pens**- they keep pigs of different ages and sex

(c). Outline the daily maintenance practices that should be carried out on a farm tractor.

(5 marks)

1. The engine oil should be checked daily by use of a dip stick. If the oil level is low it should be added.
2. The fuel level should be checked at the start of every day’s work and added if necessary.
3. Water level in the radiator should be inspected and if possible topped up.
4. The level of electrolyte in the battery should be checked daily. If the electrolyte level drops below the recommended, top up with distilled water
5. The nuts and bolts should be tightened every day. The lost nuts and bolts should be replaced before the day’s work.
6. Grease should be applied by use of grease gun through the nipples.
7. Large sediments from the sediment bowl should be removed.
8. The tyre pressure should be checked every morning before the day’s work using pressure gauge. It should be inflated/ deflated as required by the manufacturer
9. The fan belt tension should be checked to ensure that it is correct.
10. The brake shaft bearing should be greased. Ensure that the brake fluid level is maintained at the recommended level.

22. (a). State **five** signs of heat in cattle. (5 marks)

1. Restlessness.
2. Vulva swells and becomes reddish.
3. Clear or slimy mucus discharge from the vulva.
4. Bellowing or mooing frequently.
5. Mounting others and when mounted it stands still.
6. Slight drop in milk production in lactating cows.
7. Slight rise in body temperature.

 (b). Describe Newcastle disease under the following sub-headings

(i). Casual organism. (1mark)

* Newcastle disease virus

ii). Signs of attack. (5 marks)

1. Birds have difficulties in breathing. They produce a harsh, grating rasping sound when breathing.
2. The beaks remain wide open and necks are strained.
3. Birds become dull.
4. Birds stand with eyes closed all the time.
5. The birds loose appetite.
6. Often the birds have their beaks and wings down.
7. There are nasal discharges which force the birds to shake their heads to clear it.
8. Birds walk in staggering motion.
9. Drooping wings and bending of the neck.
10. Birds produce watery greenish diarrhea.
11. Eggs laid have soft shells.

iii). Control Measures. (4 marks)

1. Vaccination during first six weeks and two months later.
2. Quarantine.
3. Mass slaughter and burning affected birds.
4. Cleaning and disinfecting poultry houses.

 (c). Explain **five** factors that determine the amount of water taken by animals in the farm.

(5 marks)

1. **Level of production/ amount of work**- animals producing milk or eggs require more water draught/ pulling animals require a lot of water because they lose a lot of water through sweating.
2. **Species of animals**- cattle need more water than camels under similar environmental conditions because camels resist drought better than cattle.
3. **Weight of the animal/ body weight**- a fat or heavy animal requires more water than a lean and light animal because they have higher metabolic rate.
4. **Ambient/ environmental temperature**- animals need more water when it is hot due to high rate of sweating.
5. **Type of feed eaten by the animal**- animals drink a lot of water when they feed on dry feeds than succulent feeds