



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF  
SCIENCE AND TECHNOLOGY**

**MAIN CAMPUS  
MAIN EXAMINATIONS**

**UNIVERSITY EXAMINATIONS (REGULAR)  
2021/2022 ACADEMIC YEAR**

**FIRST YEAR SECOND SEMESTER EXAMINATIONS FOR THE DEGREE OF  
B.Sc. IN: FISHERIES AND AQUACULTURE, AND ANIMAL PRODUCTION**

**COURSE CODE: AAF 222**

**COURSE TITLE: PRINCIPLES OF AQUACULTURE**

**DATE: 25<sup>TH</sup> APRIL, 2022**

**TIME: 8-10PM**

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**INSTRUCTIONS TO CANDIDATES**

**Answer ALL questions in section A and ANY TWO questions in section B**

**TIME: 2 Hours**

**Total marks=70**

*MMUST observes ZERO tolerance to examination cheating*

*This Paper Consists of 2 Printed Pages. Please Turn Over.*

**SECTION A: Answer ALL Questions in this Section: (30 Marks)**

Q1.a) Define the following terms:

(i) Mariculture

(2 marks)

(ii) Poyculture

(2 marks)

b) Describe six characteristics of Nile tilapia that makes it suitable for fresh water aquaculture species

(6marks)

Q2. (a) Define the term feed conversion ratio as used in fish farming

(2 marks)

(b) Discuss four factors that affect feed conversion ratio during culture management. (4 marks)

(c) In Mrs. Waititu's Farm, a total of 500 kg of fish feed was used to produce 416 kgs of tilapia in a cycle of seven months. The stocking biomass was 10 kgs.

i. Calculate the Feed conversion ratio of the feed

(3 marks)

ii. If a kg of feed costs KES.120.00, calculate the total cost of the feed

(1 mark)

Q3 (a) Discuss five reasons why we feed fish

(5 marks)

(b) Discuss five challenges/constrains in fish farming

(5 marks)

**SECTION B: Answer any TWO Questions from this Section: (40 Marks)**

Q4. Describe the aquaculture intensities that are used to farm fish in Kenya

(20 marks)

Q5. Describe the best management practices in fish farming

(20 marks)

Q6. Discuss the factors that need to be considered before establishing a fish farming facility (20 marks)



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UNIVERSITY EXAMINATIONS  
2021/2022 ACADEMIC YEAR

SECOND YEAR FIRST SEMESTER EXAMINATIONS  
MAIN EXAMINATION

FOR THE DEGREE OF B.Sc. IN:  
AGRICULTURE EDUCATION AND EXTENSION

COURSE CODE: AAP 201

COURSE TITLE: PRINCIPLES OF ANIMAL PRODUCTION

DATE: 28/04/2022

TIME: 3-5 PM

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Instruction to candidates

ANSWER ALL QUESTIONS IN SECTION A AND ANY TWO QUESTIONS IN SECTION B

## SECTION A (30 MKS)

1. Write short answers to the following

- a) Describe the difference between *Bos taurus* and *Bos indicus* cattle (2 Marks)
- b) Describe the difference between free/ pasture mating and hand mating (2 Marks)
- c) Name 4 exotic sheep breeds, 2 dual cattle breeds and 2 local goat breeds (4 Marks)
- d) Describe why pigs wallow in mud and the preventive measure one would recommend during management (3 Marks)
- e) Describe four major causes of piglet mortalities (4 Marks)
- f) Describe five attributes of rabbit meat that make it a high quality meat (5 Marks)
- g) What would you advise a farmer to do in order to prevent mastitis in cattle (4 Marks)
- h) Describe five characteristics of a good layer hen (5 Marks)
- i) Describe the mating ratio of buck: doe in goats (1 Mark)

## SECTION B (40MKS)

2. Describe the ecological factors influencing animal growth and development (20 Marks).
3. Describe each general routine management practices of cattle, highlighting the importance of the practice (20 marks).
4. Describe the challenges facing Livestock production in Kenya (20 Marks)



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2021/2022 ACADEMIC YEAR**

**SECOND YEAR SECOND SEMESTER EXAMINATIONS FOR THE  
DEGREE OF B.Sc. IN: FISHERIES AND AQUACULTURE, AND ANIMAL  
PRODUCTION**

**COURSE CODE: AAH 103**

**COURSE TITLE: ANIMAL PHYSIOLOGY**

**DATE: 22<sup>ND</sup> APRIL, 2022**

**TIME: 8-10AM**

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**INSTRUCTIONS TO CANDIDATES**

**Answer ALL questions in section A and ANY TWO questions in section B**

**TIME: 2 Hours**

**Total marks=70**

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**SECTION A (answer ALL questions in this section)40marks**

- Q1. Explain how glucose is produced in the body of a ruminant (4mks)
- Q2. Describe the three processes involved in formation of urine in animals (4mks)
- Q3. Briefly explain the role vertebrate skeleton in locomotion (4mks)
- Q4. Outline the role of each of the following hormones in the animal's body
- i) Testosterone (1mk)
  - ii) Progesterone (1mk)
  - iii) Estrogen (1mk)
  - iv) Prolactin (1mk)
- Q5. Explain how a sheep cools its brain (4mks)
- Q6. Write a note on the type and functions of muscles (4mks)
- Q7. Highlight the functions of minerals in the animal's body (4mks)
- Q8. Describe the process of gaseous exchange between alveoli and blood (4mks)
- Q9. List the formed elements of blood (4mks)
- Q10. State the functions of ANY four parts of the brain (4mks)

**SECTION B (answer any TWO questions in this sections)30marks.**

- Q11. Summaries the basic organization of the bovine gastrointestinal tract and give the function of each compartment? (15mks)
- Q12. a) Describe the roles of T-tubules and sarcoplasmic reticuli in muscle contraction in animals (8mks)
- b) The interaction between myosin, ATP, actin and calcium is responsible for muscle contraction. Describe in details the processes involved in muscle contraction. (7mks)
- Q13. Describe the various components of mammalian circulatory system. State the function of each component. (15mks)
- Q14. a) Describe the formation, composition and flow of lymph (7mks)
- b) Outline the main functions of lymphatic system (8mks)



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**2021/2022 ACADEMIC YEAR**

**SECOND YEAR SECOND SEMESTER EXAMINATIONS**

**MAIN EXAMINATION**

**FOR THE DEGREE OF BACHELOR OF SCIENCE IN:**

**ANIMAL PRODUCTION AND PROCESSING TECHNOLOGY**

**COURSE CODE: AAH 223**

**COURSE TITLE: ANIMAL REPRODUCTION**

**DATE: 27<sup>TH</sup> APRIL, 2022**

**TIME: 8-10 AM**

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**INSTRUCTIONS TO CANDIDATES**

**Answer ALL questions in section A and ANY TWO questions in section B**

**Total Marks= 70 Marks**

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**SECTION A: ANSWER ALL QUESTIONS (30 MARKS)**

- Q1. Define the following terms as used in reproduction (5marks)
- i. Theriogeniology
  - ii. Andrology
  - iii. Gynaecology
  - iv. Obstetrics
  - v. Dystocia
- Q2. Describe the different kinds of reproduction using examples (5marks)
- Q3. Outline the components of the female reproductive system (5 marks)
- Q4. Explain the functions of the hormone oxytocin in reproduction (5 marks)
- Q5. List any five diseases of reproduction giving their causative agents. (5 marks)
- Q6. Highlight the stages involved in embryogenesis (5 marks)

**SECTION B: ANSWER ANY 2 QUESTIONS (40 MARKS)**

- Q6. Discuss the different ways in which hormones exert their effects on tissues or organs (20 marks)
- Q7. After attaining sexual maturity, females experience the estrus cycle. Describe the follicular and luteal phases of the estrus cycle giving the various stages (20 marks)
- Q8. Embryogenesis begins at the fertilization and normally ends in parturition. Write short notes on the various stages of embryo development after fertilization. (20 marks)





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**2021/2022 ACADEMIC YEAR**

**THIRD YEAR SECOND SEMESTER EXAMINATIONS**  
**MAIN EXAMINATION**

**FOR THE DEGREE OF B.Sc. IN:**  
**AGRICULTURE AND BIOTECHNOLOGY AND**  
**AGRICULTURAL EDUCATION AND EXTENSION**

**COURSE CODE: AAP 302**

**COURSE TITLE: RUMINANT AND NON RUMINANT PRODUCTION**

**DATE: 27<sup>TH</sup> APRIL, 2022**

**TIME: 8-10 AM**

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**INSTRUCTION TO CANDIDATES**

**ANSWER ALL QUESTIONS IN SECTION A AND ANY TWO QUESTIONS IN SECTION B**

**TOTAL MARKS=70**

**TIME: 2 HOURS**

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**SECTION A (30 MKS)**

1.

- a) Describe the digestive functions of the rumen chamber of the ruminant animal(4 Marks)
- b) Describe any three types of integrated fish farming system (4Marks)
- c) Describe the possible causes of supercedure in a bees colony (3 Marks)
- d) Describe two dances associated with food in bees and describe the significance of each of the dances(4Marks)
- e) Describe potential ingredients for making artificial colostrum for the piglets(5 Marks)
- f) Describe traits with high heritability in goats (5 Marks)
- g) Describe the probable causes of iron deficiency in piglets (2Marks)
- h) Describe the effect of accumulation of manure on the pond bottom in fish rearing (3Marks)

**SECTION B (40MKS)**

- 2. Describe the factors including environmental requirements to consider in pond culture and earth fish culture(20 marks)
- 3. a.) Describe how grafting is carried out in bees (5 Marks)  
b.) Describe the factors to consider during siting of an apiary(15marks)
- 4. Describe the factors that affect litter size in gilts and sows (20 marks)



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2021/2022 ACADEMIC YEAR**

**THIRD YEAR SECOND SEMESTER EXAMINATIONS FOR THE  
DEGREE OF B.Sc. IN: AGRICULTURE AND BIOTECHNOLOGY**

**COURSE CODE: AAP 303**

**COURSE TITLE: ANIMAL NUTRITION AND FEEDING**

**DATE: 27<sup>TH</sup> APRIL, 2022**

**TIME: 12-2 PM**

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**INSTRUCTIONS TO CANDIDATES**

**Answer ALL questions in section A and ANY TWO questions in section B**

**TIME: 2 Hours**

**Total marks=70**

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**SECTION A (30 MARKS)**

1.
  - a) Describe the importance of feed evaluation in animal nutrition (5 Marks)
  - b) Explain the effects pelleting and crumbling on the nutritive value of feedstuff (5Marks)
  - c) Describe the physiological effects of gossypol in poultry (2 Marks)
  - d) Explain what is meant by a maintenance ration in animals (2 Marks)
  - e) Describe the importance of feeding a ruminant a consistent diet (2 Marks)
  - f) Explain the differences between as fed and dry matter (2 Marks)
  - g) Describe a balanced diet as applied in animal nutrition (3 Marks)
  - h) Describe the information to consider on feedstuffs during ration formulation for animals (6 Marks)
  - i) Use persons square to mix groundnut meal (41% CP ) and maize meal (9%CP) to make a 14 % CP mixture (3 Marks)

**SECTION B (40MARKS)**

2. Describe factors that impact on feed intake and utilization in farm animals (20Marks)
- 3a) Describe the digestion of carbohydrates in non- ruminants (10 Marks)
- b). Describe the digestion of carbohydrates in ruminants (10 Marks)
- 4 a.) Explain the term “alternative feed” as used in animal feeding (2 Marks)
- b.) Describe factors to consider while using alternative ingredients in feeding (18 Marks)



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UNIVERSITY EXAMINATIONS  
2021/2022 ACADEMIC YEAR**

**SECOND YEAR FIRST SEMESTER EXAMINATIONS FOR  
THE DEGREE OF BACHELOR OF SCIENCE IN ANIMAL PRODUCTION  
AND PROCESSING AND RELATED OPTIONS**

**UNIT TITLE: ANIMAL GENETICS AND BREEDING**

**UNIT CODE: AAP 213**

**DATE: 20<sup>TH</sup> JANUARY, 2022**

**TIME 8-10AM**

**INSTRUCTIONS TO CANDIDATES**

- i) Answer ALL questions in Section A and any TWO Questions in Section B
- ii) Write answers to questions clearly and logically

**TIME: TWO Hours.**

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**SECTION A: ANSWER ALL QUESTIONS(40 Marks)**

**QUESTION ONE**

State the Hardy Weinberg-Equilibrium Law and explain its applications in animal genetics (12 Marks)

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**QUESTION TWO**

The purpose of animal breeding is not to genetically improve individual animals but to improve animal populations in order to improve future generations.

- a) Discuss briefly FOUR factors affecting response to selection (8 Marks)
- b) List five sources of information that an animal breeder uses to make decision on choosing the breeding stock. (10 Marks)

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**QUESTION THREE**

Outline the advantages and disadvantages of inbreeding (10 Marks)

**SECTION B ANSWER ANY TWO QUESTIONS(30 Marks)**

**QUESTION FOUR**

List the components of phenotypic variance and explain how they are related to the estimates of heritability and repeatability. (15 Marks)

**QUESTION FIVE**

Using breeder's key equation, explain how biotechnology could help animal breeders increase rate of genetic change. (10 Marks)

**QUESTION SIX**

Briefly discuss FOUR (4) pathways of selection in a genetic improvement of animal populations (15 Marks)



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DEGREE OF B.Sc. IN: FISHERIES AND AQUACULTURE, AND  
ANIMAL PRODUCTION**

**UNIT CODE: AAP 220**

**UNIT TITLE: ANIMAL BEHAVIOUR (ETHOLOGY)**

**DATE: 27<sup>TH</sup> APRIL, 2022**

**TIME: 3-5 PM**

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**INSTRUCTIONS TO CANDIDATES**

Answer ALL questions in section A and ANY TWO questions in section B

TIME: 2 Hours

Total marks=70

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**SECTION A: ANSWER ALL QUESTIONS (40 Marks)**

**QUESTION ONE**

- a) State the ethological theory. (5 Marks)
- b) Highlight any five types of animal behavior (5 Marks)

**QUESTION TWO**

Outline the advantages of a livestock farmer who has good knowledge of animal behavior (15 Marks)

**QUESTION THREE**

Biological rhythms and photoperiodism determine the behavior of animals in intensive livestock production systems. Examine the above statement (15 Marks)

**SECTION B ANSWER ANY TWO QUESTIONS (30 Marks)**

**QUESTION FOUR**

Pigs are rated by livestock farmers as excellent clean animals under intensive production systems, Discuss the above statement. (15 Marks)

**QUESTION FIVE**

Describe the behavior of a local chicken during the period of care of its chicks after hatching. Use examples. (15 Marks)

**QUESTION SIX**

Outline the behavior of a cow during its oestrus period (15 Marks)