LIVESTOCK FARMING

1. PREAMBLE

This syllabus has been designed to portray animal husbandry as a trade for livelihood with emphasis on the acquisition of knowledge and entrepreneurial skills in animal husbandry.

Candidates will be expected to answer questions on all the topics set out in the column headed **S*yllabus***. The ***notes*** therein are intended to indicate the scope of the questions which will be set, but they are not to be considered as an exhaustive list of limitations and illustrations.

2. AIMS AND OBJECTIVES

The syllabus will therefore seek to assess candidates' knowledge and skills in:

(1) basic animal production practices such as feeding, housing, pest and disease control;
(2) efficient and effective management of animal enterprises;
(3) efficient processing, preservation, packaging, storage and marketing of animal products;
(4) basic entrepreneurial skills in animal husbandry related vocations;
(5) basic knowledge and skills in animal improvement and health.

3. REQUIREMENTS

(1) Schools offering Livestock Farming are expected to raise at least one species of farm animals from each of the following groups:
   (a) monogastrics e.g. poultry, pigs, snails, camel, donkey, horse, rabbit, bee.
   (b) ruminants e.g. cattle, sheep and goat.
(2) It is recommended that the schools should have agricultural laboratories.
(3) It is also recommended that candidates keep practical notebooks and specimen albums which should contain records of activities undertaken and observations made on the school farm and field trips and of specimens collected.
(4) It is also expected that the study would be supplemented by visits to well established livestock and poultry farms, abattoirs, feed mills, animal product-based companies and other institutions related to animal

SCHEME OF EXAMINATION

For candidates in Nigeria only

There will be three papers, Papers 1, 2 and 3 all of which must be taken. Papers 1 and 2 will be a composite paper to be taken at one sitting.

PAPER 1: Will consist of forty multiple choice questions all of which should be answered within 40 minutes for 40 marks.

PAPER 2: Will consist of six essay questions drawn from the entire syllabus. Each question carries 20 marks. Candidates will be required to answer four questions within 2 hours for a total of 80 marks.

PAPER 3: Will be a practical paper for school candidates and a test of practical work paper for private candidates. Each version will consist of four questions all of which should be answered within 1½ hours for 60 marks.

DETAILED SYLLABUS

CONTENTS	NOTES
A. LIVESTOCK PRODUCTION	
(1) Importance of farm animals.	Discussion should include: - source of food(meat, milk, eggs, honey etc); - raw materials e.g. hide and skin, bones, hooves, hair/fur, egg shells; - source of manure (fertilizer, bio-gas, bio fuel), growing of maggots and earthworms; - source of feed ingredients- blood meal, bone meal, meat and bone meal, snail shell, egg shell, feathers etc; - animal power (animal traction, transportation); - research (laboratory, field), drugs, vaccines, hormones etc; - source of employment; - sales of products and by-products; - social functions e.g. payment of bride price, cultural displays (weddings); - for security e.g. ducks, bees,

	turkeys; - as pets e.g. rabbits, sheep, chickens; - sports and games e.g. horse racing, chicken fighting; - religious festivals e.g. turkeys, rams etc; - source of foreign exchange through export of animal products and by-products.
2. Classification of farm animals. (a) Classification of farm animals.	Discussion should be based on stomach type: (a) Simple stomach (non- ruminant or monogastric). e.g. poultry (avian), pig (swine), rabbits, horses, donkeys, snails, bees, grasscutters; (b) Complex stomach (polygastric or ruminants) i.e. cattle, sheep and goat.
(b) Identification of ruminants and non-ruminants.	Identification should include: (i) external features of common ruminants and non-ruminants; (ii) differences should be based on type of stomach and type of feed consumed.
3. Internal organs and their functions in farm animals.	Identification of internal organs of farm animals e.g. (liver, lungs, heart, kidney, spleen, pancreas, stomach, crop, caecum, gizzard, small intestine, large intestine, tongue etc, and their functions.
4. Body systems and their functions in farm animals	Discussions should include digestive, respiratory, nervous, circulatory, skeletal, reproductive systems. Students are expected to understand the functions of each system.
5. Reproduction in farm animals	
(a) Definition of terms used in livestock reproduction.	Discussion should include ovulation, oestrus cycle, heat period, signs of heat, mating, gestation, parturition, lactation, colostrum, flushing, steaming up, dystocia, vaginal prolapse etc.
(b) Reproduction in livestock(mammals).	Discussion should include detection of heat, mating systems, pregnancy detection and signs of parturition.

(c) Reproduction in poultry.	Knowledge of the process of egg formation in poultry is required.
(d) Reproductive hormones and their functions.	Sources and roles of female hormones (oestrogen, progesterone, relaxin, oxytocin etc) and male hormones (testosterone/androgen) should be emphasised.
(e) Management of pregnant farm animals.	Discussion should include regular and adequate feeding, body exercise, steaming up, separation from male animals, provision of clean and adequate water and administration of drugs where necessary, dipping to eliminate ecto-parasites, parturition etc
6. Livestock management systems.	Knowledge of livestock management systems: intensive, semi-intensive and extensive system is required. Discussion should include advantages and disadvantages of each of the systems.
7. Management practices of livestock.	Discussion should include housing requirements for each of the farm animals and students are expected to have the knowledge of the use of local materials for construction of the animal houses. Understanding of other management practices: feeding, sanitation, hygiene, castration, dehorning, deworming, vaccination, inoculation, culling, debeaking, smoking (in bees), docking, means of identification of farm animals (tattooing, branding, ear-notching, rings etc), isolation, weaning, care of the young animal until they are weaned etc, is essential. Simple record keeping including income and expenditure accounts is necessary. Importance of each of these practices should be discussed. Discussion should also include the management practices from birth to maturity of a named large ruminant, small ruminant, poultry, pigs, grasscutter, bees and snails.
B. ANIMAL NUTRITION	
1. Meaning and classes of animal	Discussion should include the meaning of

feeds.	animal nutrition, feed nutrients (carbohydrates, proteins, fats and oil, vitamins, minerals and water), their functions and sources and their deficiencies in farm animals. Students should also be exposed to classification of animal feeds into concentrates, roughages, supplements, feed additives etc.
2. Animal feeds and feeding (a) Livestock rations	Study should include meaning of livestock rations and types (balanced, maintenance, production rations. Malnutrition: meaning, causes, symptoms and practical ways to check malnutrition such as feeding balanced rations to animals, feeding weaker animals separately, deworming animals, giving supplementary feeds, addition of feed additives to stimulate appetite, protecting animals from toxic plants and harmful substances, adjusting stocking rates appropriately, provision of good quality and adequate water etc, should be studied
3. Formulation of livestock rations.	Students should be exposed to practical diet formulations for the different classes of farm animals (starter, grower and finisher diets). Students should be able to identify different feed ingredients used for diet formulations e.g. blood meal, fish meal, cotton seed cake, oyster shell, groundnut cake, maize grains, salt, premix, glycine etc. Factors to consider in feed formulation for farm animals e.g. physiological status of animal, species, age, body weight, production target, acceptability of feed, nutrient composition of the feed, ingredient availability, cost of feed ingredients etc, should be studied.
4. Processing and marketing of animal products.	
(a). Processing techniques for different farm animal products.	The processing techniques to include; pre-slaughtering, slaughtering and post-slaughtering activities. Hygienic conditions in processing are also important. Students should understand slaughtering techniques

	for different farm animals. Students should also be exposed to processing of animal products e.g. egg, milk, meat, skin, wool, honey, snail shell and feathers, fur, hooves, horns, blood, faeces/droppings into other forms (value addition).
(b). Marketing of animal products.	Understanding of common marketing channels and agents such as producers, wholesalers, retailers, consumers etc is required. Advantages and disadvantages of each marketing channel and agent should be discussed.
C. PASTURE AND RANGE MANAGEMENT	
1. Pasture management.	
(a). Meaning and importance of pasture and forage crops.	Discussion should include definition, examples and importance of pasture and forage crops.
(b). Types of pasture and forage crops.	Understanding of the types and features of pasture and forage crops is required.
(c). Terminologies in pasture management.	Knowledge of basic terminologies in pasture management is required.
2. Rangeland improvement.	
(a). Meaning and characteristics of rangelands.	Understanding of the meaning and features of rangeland is required.
(b). Methods of rangeland improvement.	Knowledge of methods of rangeland improvement (reseeding, rotational grazing, controlled stocking, deferred grazing, controlled burning, fertilizer application, pest control, disease control etc is required.
(c). Importance of rangeland.	Knowledge of the role of rangeland in livestock production e.g. provision of vegetable and grasses for animals, exercise, provision of hay and silage etc is required.
D. ANIMAL IMPROVEMENT	
1. Animal improvement.	
(a). Meaning of animal	Understanding of the meaning and

improvement.	terminologies used in animal improvement is required.
(b). Aims/importance of farm animal improvement.	Knowledge of aims: high reproductive efficiency, potency, mothering ability, cool temperament, high libido, resistance to pests, resistance to diseases, tolerance to harsh environment, etc is required.
1. Methods of farm animal improvement.	
(a). Methods used in farm animal improvement.	Discussion should include various methods used in farm animal improvement: introduction, selection and breeding.
(b). Merits and demerits of methods used in farm animal improvem ent.	Students are required to understand merits and demerits of each method used in farm animal improvement.
2. Artificial insemination.	
(a). Meaning of artificial inseminat-ion.	Explanation of the term artificial insemination is required
(b). Methods of artificial insemination.	Discussion to include identification of materials, methods, steps and precautions in carrying out artificial insemination.
(c). Advantages of artificial insemination.	Knowledge of advantages of artificial insemination is required.
E. ANIMAL HEALTH	
1. Farm animal diseases and pathogens.	
(a). Concept of farm animal disease.	Knowledge of meaning and causal agents (bacteria, viruses, fungi, protozoa) of diseases in farm animals is required.
(b) General symptoms of diseases in farm animals.	Discussion to include signs of a sick animal e.g. loss of appetite, loss of weight, diarrhoea, high body temperature, blood stained urine, gnashing of teeth, discharges from natural openings, blood stained faeces, ruffled feathers or fur, standing hair, undue noise, excessive salivation, anaemia, staggering gait, difficulty in

	breathing, coma, sudden death etc.
(c). Diseases of farm animals, prevention and control.	Ability to identify the main diseases of farm animals, their causal agents, mode of transmission and symptoms is required. Simple preventive and control measures including the use of antibiotics and ethno veterinary practices are required.
(d) Factors predisposing farm animals to diseases.	Knowledge of factors that predispose farm animals to diseases e.g. poor nutrition, poor health status, poor sanitation, inadequate biosecurity, overcrowding, unfavourable weather conditions, low immunity etc is required.
2. Livestock parasites and pests.	
(a). Livestock parasites.	Understanding of the meaning, classes, control/prevention and effects of parasites on farm animals is required. Discussion to include life cycles of the parasites. Ability to identify and understand economic importance of ecto-parasites (ticks, lice, mites, fleas etc.) and endo-parasites (tapeworm, roundworm, hookworm, pinworm, liver fluke, trypanosome etc) is required.
(b). Livestock pests.	Knowledge of livestock pests (rodents, snakes, soldier ants, birds, weevils, termites, flies etc), prevention/control using dewormers, acaricides, pesticides and ethno veterinary practices, and effects of pests on farm animals will be assessed. Ability to identify and knowledge of economic importance of storage pests (rodents, weevils, termites, cockroaches etc), field pests (soldier ants, birds, snakes flies etc) are required.

LIVESTOCK FARMING (PRACTICALS)

CONTENTS	NOTES
1. Products and by-products of farm animals.	Ability to identify and knowledge of the uses of animal products and by-products such as meat, eggs, milk, honey, hides, skin, blood, hair, wool, feathers, horn, hooves, bones, snail shell, animal dung etc. will be assessed.

2. Identification of farm animals.	Ability to describe, draw and label the external parts of farm animals will be assessed.
3. Internal organs and their functions in farm animals.	Ability to identify and draw the major internal structures in the various body systems of a named ruminant, poultry and pig is required. Differences in the structures and their functions will also be assessed.
4. Tools and equipment used in management of farm animals.	Ability to identify the following tools and the equipment used in animal management practices is required e.g: Housing (head pan, trowel, shovel/spade, hammer, pincers, pliers, spanner, screw driver etc), Brooding (coal pots, kerosene stoves, hurricane lantern, electric bulb, hoover, chick feeder, flat trays, chick drinker, brood guard/surround, thermometer, hygrometer etc), Feeding (feeders, drinkers, weighing scale etc), Identification (branding iron, ear clips, neck chains, marker, ear notcher, indelible ink etc), Debeaking (debeaking machine, sharp knife, heater etc), Castration (surgical blade/scalpel, burdizzo, elastrator, elastic ring, cotton wool, suture needle, suture thread etc), Handling (kraal, restraining ropes, wooden rod- sanda, pad, nose ring, etc), Dehorning (iron saw, knife/cutlass etc), Incubation (incubator, hatcher, chick box, egg tray, humidifier, candler,), Milking (cheese cloth, milking machine, milking chute, milk testing cup, drenching bottle, milking pails, buckets etc), Slaughtering (cutlass, knife, stunning gun, electric shocker, defeathering machine, eviscerator, conveyor, weighing scale, blast freezer, cold rooms); Pasture and forage crops (sickle, knife/cutlass, harvesters, silo etc). The maintenance of these tools and equipment should be discussed.
5. Feeds and feedstuffs	Ability to identify and knowledge of uses of feeds and feedstuffs such as common

	feed ingredients (maize, groundnut cake, soya bean meal, palm kernel cake, fish meal, bone meal, oyster shell, limestone, salt, salt lick, premix, wheat offal etc), crop residues, agricultural by-products and non-conventional (jack bean, rumen digesta, cassava peel etc) and the major nutrients they contain will be assessed.
6. Pasture and forage crops.	Ability to identify and the knowledge of uses of common pasture and forage crops are required. Hay and silage making should be discussed.
7. Artificial insemination.	Ability to identify the tools and equipment and their uses are required. Simple techniques of semen collection, preservation and insemination should be discussed.
8. Pests and parasites of farm animals. (a). Pests of farm animals.	Ability to identify and knowledge of the economic importance of storage pests (rodents, weevils, termites, cockroaches etc), field pests (soldier ants, birds, snakes, flies etc) are required.
(b) Parasites of farm animals.	Ability to identify and knowledge of economic importance of ectoparasites (ticks, lice, mites, fleas etc) and endoparasites (tapeworm, roundworms, hook worm, pin worm, liver fluke, trypanosomes etc) are required.Study should also include life cycles, prevention and control of these parasites.

LIST OF FACILITIES AND MAJOR EQUIPMENT

A. FARM BUILDING/STRUCTURE

ITEM NO	EQUIPMENT	QUANTITY REQUIRED
1.	Poultry/Pig House/Battery Cages	1

2.	Cattle/Goat/Sheep Pen	1
3.	Rabbit/Grasscutter Hutch	1
4.	Snailery/Bee Hive	1

B. LIVE ANIMALS

ITEM NO.	EQUIPMENT	QUANTITY REQUIRED
1.	Poultry/Pig	10
2.	Rabbits/Grasscutter	10
3.	Cattle/Sheep/Goat	10
4.	Snails/Bees	50/100

C. SPECIMEN

ITEM NO.	EQUIPMENT
1.	Tick
2.	Lice
3.	Liver fluke
4.	Tapeworm
5.	Roundworm
6.	Flea
7.	Tsetse fly
8.	Pests

D. CHARTS AND PICTURES

ITEM NO.	EQUIPMENT	QUANTITY REQUIRED
1.	Digestive system of ruminants	5
2.	Digestive system of non-ruminants	5
3.	Reproductive organs of male livestock	5
4.	Reproductive organs of female livestock	5
5.	Reproductive tract of poultry	5
6.	Skeletal system of farm animals	5
7.	Circulatory system	5
8.	Muscular system	5
9.	Endocrine system	5
10.	Calendar of ovulation	5
11.	Calendar of Oestrus cycle	5
12.	Classes of farm animals	5
13.	Calendar of heat period	5
14.	Calendar of animal diseases	5

E. MACHINES AND EQUIPMENT

ITEM NO.	EQUIPMENT	QUANTITY REQUIRED
1.	Burdizzo pliers/castrators	2
2.	Elastrators	2
3.	Debeakers	2
4.	Candlers	2
5.	Dehorning saw	4

6.	Ear notching knife	2
7.	Electro-ejaculator	2
8.	Artificial Inseminators	2
9.	Hand sprayer/Knapsack sprayer	2
10.	Refrigerators to store materials	2
11.	Clinical thermometer	2
12.	Films	Many
13.	Television	2
14.	CD Video Player	2
15.	16mm Film Projector	2

F. DRUGS/VACCINES/MATERIALS

ITEM NO.	EQUIPMENT	QUANTITY REQUIRED
1.	First aids kits/boxes containing surgical blades, cotton wool, iodine and razor.	2
2.	Sterilizers e.g. Dettol, Izal	4
3.	Syringes and Needles	10
4.	Vaccines (various forms)	5
5.	Formalin, etc.	2 bottles

G. FEED SAMPLES

ITEM NO.	EQUIPMENT	QUANTITY REQUIRED
1.	Bone meal	½ kg

2.	Blood meal	½ kg
3.	Fish meal	½ kg
4.	Groundnut cake	½ kg
5.	Maize grains	½ kg
6.	Groundnut meal	½ kg
7.	Coconut meal	½ kg
8.	Egg shell meal	½ kg
9.	Palm kernel meal	½ kg
10.	Periwinkle shell	½ kg
11.	Mineral salt lick, etc.	½ kg

H. OTHER MATERIALS

ITEM NO.	EQUIPMENT	QUANTITY REQUIRED
1.	Feeding trough (Metal and Plastic)	5
2.	Drinkers (Metal and Plastic)	5
3.	Lanterns (source of heat)	5
4.	Foot dips	5
5.	Notebooks for Accounts and Records	5
6.	Wheelbarrow	5

SUPPLEMENTARY WEST AFRICAN COVERAGE

(GHANA - ALTERNATIVE A)

The main syllabus above follows Alternative B for candidates in Nigeria and uses the current Nigeria subject name, Livestock Farming. The topics below are supplementary areas contained in Alternative A for candidates in Ghana. They are included for wider West African reference and should not be treated as part of the Nigeria examination scheme.

ADDITIONAL TOPIC	COVERAGE IN ALTERNATIVE A
Animal food quality and safety	Quality and safety standards of animal food products; practices for maintaining standards; effects of consuming poor-quality animal products; and roles of agencies involved in food safety and quality.
Expanded anatomy and physiology	Detailed study of the central and autonomic nervous systems, endocrine glands and hormones, integumentary, skeletal and muscular systems, reproductive, circulatory, respiratory and excretory systems.
Environmental physiology	Internal and external environment of animals, homeostasis, responses to heat and cold, measurement of temperature, humidity, respiration and heart rate, effects of climate, and ways of reducing environmental stress.
Poultry and hatchery practices	Types and breeds of poultry, production systems, natural and artificial incubation, selection of hatching eggs, incubation conditions, candling, hatchery practices, day-old chick marketing, processing and marketing.
Specialized livestock production	More detailed production and management of pigs, domestic pets, sheep and goats, beef cattle and dairy cattle, including breeds, management, diseases, processing and marketing.
Range and pasture management	Pasture and forage terminology, major forage crops, poisonous plants, pasture establishment and improvement, management of cultivated pastures, harvesting, hay and silage preparation, and use of crop residues.
Non-traditional animal production	Rabbit and grasscutter production, snail farming, enterprise establishment, management, processing and marketing.
Expanded practical skills	Identification of anatomical structures, simple food tests, Pearson Square feed formulation, pests and parasites, disease prevention and control, artificial insemination tools, environmental measurements, management equipment and animal housing materials.