

1. Animal Production Management:

Importance of livestock in India Agriculture and National economy. Livestock production and production statistics of India and World. Role of animal production in rural development. Relationship between plant, animal, soil and climate. Effect of climate on animal production. Concept of biodiversity. Biodiversity conservation. Livestock farming systems. Economics of livestock farming and farm Business Management. Generation of technology, its transfer and feedback. Constraints in transfer of technology.

Day to day management practices for cattle buffalo, sheep, goat, pig, poultry and rabbit. Management of work animals. Housing of animals and birds. Assessment of pollution of water, air and soil. Management of animals under drought, flood and other natural calamities. Laboratory animal and wildlife management. Pasture and grassland management. Supply of greens throughout the year.

2. Animal Nutrition:

Principles of animal and avian Nutrition. Feed resources, evaluation and processing technology. Conservation of feeds and fodder. Energy and protein nutrition in ruminants, non-ruminants and birds. Minerals and Vitamins. Toxic compounds and anti-metabolites and their management. Developing practical ration for different farm species.

3. Animal Genetics and Breeding:

Animal genetics resources of India and world. Principles of genetics, chemical nature of DNA, RNA and their models and functions. Cytogenetics, Immunogenetics and their application in animal improvement. Biotechnology, Systems and strategies for improvement of livestock for milk, meat, wool and draught and poultry for egg and meat. Breeding for threshold character.

4. Veterinary anatomy and physiology:

Bovine anatomy. Different systems. Anatomy of fowls. Histology and histological technique. Embryology of vertebrates with special reference to avian and domestic mammals. Physiology of blood and its circulation, respiration, excretion, digestion and endocrine glands. Physiology of growth, milk production and reproduction. Biochemical processes. Semen quality evaluation, preservation and artificial insemination in domestic mammals and birds. Biotechnology of reproduction.

5. Veterinary Pharmacology:

General knowledge of pharmacology and therapeutics of drugs. Cellular level of pharmacodynamics and Pharmacokinetics. Modern concepts of anesthesia and Dissociative anesthetics. Autocoids. Drug action on autonomic nervous system. Principles of chemotherapy. Drugs and chemical residues (poisons) in edible tissues of animals.

6. Animal Diseases:

Pathogenesis, symptoms, postmortem lesions, diagnosis, treatment, control and prevention of infectious diseases of domestic animals and birds. Etiology, symptoms, diagnosis, treatment of production diseases of domestic animals and birds. Deficiency diseases of domestic animals and birds. Diagnosis and treatment of nonspecific condition like impaction, bloat, diarrhea, indigestion, dehydration, stroke, poisoning etc. Diagnosis and treatment of neurological disorder. Principles and methods of immunization of animals and birds against

specific diseases. Hard immunity. Disease free zones. Zero-disease concept. Chemoprophylaxis. Disease investigation. Classification, definition, role of animals and birds in prevalence and transmission of zoonotic diseases. Principles, definition of epidemiological terms. Epidemiological features of air, water and food borne infections. Anesthesia – local, regional and general. Symptoms and surgical interference in fracture, dislocation, hernia, chocking and other conditions of farm animals. Caesarian operation, remenotomy, castration. Diseases of reproductive system, infertility and sterility, pregnancy diagnosis. Common obstetrical problems in farm animals. Rules and Regulations for improvement of animal quality and prevention of animal diseases. State and central acts. Wildlife (protection) Act. Biological Diversity Act. S.P.C.A. Veterolegal cases.

7. Meat, egg and wool technology:

Ante mortem care and management of food animals. Stunning, slaughter and dressing operations. Post-mortem examination. Abattoir requirement and design. Meat inspection procedures. Meat cuts. Physicochemical characteristics of meat. Meat preservation. Meat products. Packaging. Meat trade and industry. Poultry products technology. Nutritive value of egg. Preservation of egg. Grading of egg, wool and meat. Legal and BIS standard. Slaughter house by-products.

8. Dairy Technology:

Physico-chemical and nutritional properties of milk. Quality, testing and grading raw milk. Quality storage grades of whole milk, skimmed milk and cream. Processing, packaging, storing, distributing, marketing, defects and their control and nutritive properties of the following milk, pasteurized, standardized, tone, double toned, sterilized, homogenized, reconstituted, recombined and flavoured milk. Preparation of cultured milks. Cultures and their management. Yoghurt, dahi, lassi and srikhan. Preparation of flavoured and sterilized milk. Legal standard Sanitation requirement for clean and safe milk and for the milk plant equipment. Selection of raw materials, assembling, production, processing, storing, distributing and marketing milk products such as butter, ghee, channa, cheese, condensed, evaporated, dried milk, baby food, ice cream and kulfi, and by-products –they products, butter milk, lactose and casein. Testing, grading and judging milk products. BIS and Agmark specification, legal standards, Quality control. Packaging, processing operational control and costs. Organisation of rural milk procurement, collection and transport of raw milk.

9. Fishery Science

Fishes of India

Classification of fishes, Zoogeography. Fisheries resources and management.

Inland capture fisheries

Ecology of riverine environment. Different river system and their fisheries. Dams and their effects on fish migration. Pollution. Effects of pollutants on fish metabolism, improvement of fish stocks. Cold water fisheries. Conservation of fish genetic resources. Fisheries of lakes, beels and reservoirs. Development and exploitation of reservoir fisheries. Reservoir management. Sport fisheries and resources.

Inland culture fisheries

Fish culture in freshwater ponds. Ecology and productivity of fish ponds. Breeding and culture of indigenous carps. Food and feeding habit of cultivable fishes. Establishment and management of fish farm and hatcheries. Transport of fish seed and brood fish. Composite of fish culture. Poly culture, Culture of exotic fishes. Sewage fed fisheries. Culture of air-breathing fishes. Culture of predatory carnivorous fishes. Freshwater prawn culture. Finish and selfish culture in brackfish water ponds. Nutrition of cultivate fished. Integrated aquaculture. Fish pathology: Parastic infection. Non-parasitic infection. Non-parasitic infection. Fish health management. Role of fish farmer's development agencies.

Marine fisheries

Marine fish resources and potential. Pelagic fisheries. Demersal fisheries. Fishing gear and crafts. Mari culture.

Oceanography

Biological oceanography. Physical oceanography. Chemical oceanography.

Fish processing:

Biochemistry of fish. Quality of fresh fish and fishery products. Methods of fish preservation and processing: drying, curing, icing, freezing and canning. Fishery by-products. Value addition of fishery products. Export of fishery products.