



SYLLABUS FOR VETERINARY OFFICER

PAPER-I

(1) General Animal Husbandry Practices:

- (i) Role of Veterinarian in livestock management
- (ii) Food security.
- (iii) Livestock Population Census in the nation and state.
- (iv) National and State Government Policies and Programmes on Animal Husbandry.
- (v) Legislation for control of animal diseases.
- (vi) Contribution of the Livestock Sector to the National and State Economy. Export and import of livestock and livestock products.
- (vii) Conditions and considerations for Establishing Livestock Farms
- (viii) Livestock entrepreneurship

(2) Animal Physiology:

- (i) Physiology of blood - Blood constituents, Blood Cell Formation, Haemoglobin synthesis, Plasma Proteins Production, Coagulation of Blood, Haemorrhagic Disorders, Anti-coagulants, Blood Groups, Blood Volume, Plasma Expanders, Buffer Systems in Blood.
- (ii) Circulation - Physiology of heart, cardiac cycle, heart sounds, heartbeat, electrocardiograms, metabolism of cardiac muscle, nervous and chemical regulation of heart, effect of temperature and stress on heart, blood pressure and hypertension, osmotic regulation, arterial pulse, vasomotor regulation of circulation, shock, Coronary and Pulmonary circulation, Blood-Brain barrier Cerebrospinal fluid-circulation in birds.
- (iii) Respiration - Mechanism of respiration, Transport and exchange of gases, neural control of respiration, Chemo-receptors, hypoxia, respiration in birds.
- (iv) Excretion - Structure and function of kidney, formation of urine, methods of studying renal function, renal regulation of acid-base balance, physiological constituents of urine, renal failure, passive venous congestion, Urinary secretion in chicken, Sweat glands and their function. Bio-chemical test for urinary dysfunction.
- (v) Endocrine glands - Functional disorders, their symptoms and diagnosis. Synthesis of hormones, mechanism and control of secretion, hormonal receptors, classification and function. Endocrine glands in health and disease.
- (vi) Biochemical tests and their significance in disease diagnosis.
- (vii) Animal Reproduction-Detection of estrus and time of insemination for better conception. Anoestrus and repeat breeding.
- (viii) Embryology- Embryology of vertebrates with special reference to Aves and domestic mammals, gametogenesis, fertilization, foetal membranes and

P. Singh



154

placentation (types of placenta in domestic mammals), Teratology, Twins and twinning-organogenesis, Germ layer derivatives-endodermal, mesodermal and ectodermal.

(3) Veterinary Anatomy:

- (i) **Histology and Histological Techniques:** Paraffin embedding technique of tissue processing and H.E. staining, Freezing microtomy, Microscopy Bright field microscope and electron microscope. Cytology- structure of cell organelles and inclusions, Cell division & Cell types, Tissues and their classification, embryonic and adult tissues, Comparative histology of organs-Vascular, Nervous, digestive, respiratory, Musculo-skeletal and urogenital systems, Endocrine glands, Integuments, sense organs.
- (ii) **Bovine Anatomy:** Regional Anatomy, Paranasal sinuses of Ox, surface anatomy of salivary glands. Regional anatomy of infra-orbital, maxillary, mandibulo alveolar, mental and cornual nerve block. Regional anatomy of paravertebral nerves, pudental nerve median, ulnar and radial nerves tibial, tibular and digital nerves, Cranial nerves structures involved in epidural anaesthesia, superficial lymph nodes, surface anatomy of visceral organs of thoracic, abdominal and pelvic cavities, comparative features of locomotor apparatus and their application in the biomechanics of mammalian body.
- (iii) **Anatomy of Fowl:** Musculo-skeletal system, functional anatomy in relation to respiration and flying, digestion and egg production.

(4) Livestock Production Management:

- (i) Common terms used in Animal Husbandry, Identification, Dentition, Casting, restraining.
- (ii) Indices to assess the reproductive efficiency of Dairy animals.
- (iii) Laws and practices governing Dairy sector in India.
- (iv) Climatology and livestock production - effect of photo period on livestock productivity, Livestock and global warming.
- (v) Economic importance of Integrated Farming System (IFS).

(5) Animal Nutrition:

- (i) Nutritional terms and definitions.
- (ii) Classification of feeds and fodders.
- (iii) Storage and conservation of feeds and fodders.
- (iv) Utilization of unconventional feeds, Industrial and animal by-products.
- (v) Wildlife nutrition.
- (vi) Use of feed additives.
- (vii) Feed milling technology.
- (viii) Laws and regulations of the feed manufacturing industry, Codex Alimentarius Commission (CAC), Hazard Analysis and Critical Control Points (HACCP).

P. Prinjankar



- (ix) Therapeutic diets for pet animals.
- (x) Feeding of animals during disaster.
- (xi) Hydroponic fodder.

(6) Animal Genetics & Breeding:

- (i) Important breeds of cattle, buffalo, sheep, goat, pig and poultry with special reference to economic characters.
- (ii) Principles of Genetics and Cytogenetics.
- (iii) Molecular techniques and their applications in Animal Breeding, including DNA chips and selection of High Genetic Merit breeding stock.
- (iv) Current livestock and poultry breeding policies and programmes of the Government.
- (v) Wild animal breeding in captivity.
- (vi) Conservation of Animal Genetic Resources.

(7) Milk Technology:

- (i) Prospects of Milk Industry in India.
- (ii) Composition, nutritive value & Physio-chemical properties of milk.
- (iii) Layout of milk processing plant and its management.
- (iv) Good Manufacturing Practices (GMP) and implementation of Hazard Analysis and Critical Control Point (HACCP) in milk plant, Food safety standards for milk and milk products.
- (v) Sampling of milk, Platform tests, Estimation of fat, solid not fat (SNF) and total solids, Cream separation, Detection of adulteration of milk.
- (vi) Food Safety and Standards Authority of India (FSSAI).
- (vii) Milk Parlour Systems.

(8) Meat Science & Technology:

- (i) Layout and management of rural, urban, and modern abattoirs.
- (ii) HACCP concepts in abattoir management.
- (iii) Animal Welfare and Pre-Slaughter Care of Meat Animals.
- (iv) Significance of Meat Inspection in Wholesome Meat Production.
- (v) Procedures of ante mortem and post-mortem examination of meat animals.
- (vi) Slaughtering and dressing of meat animals and birds.
- (vii) Importance of evaluating meat animals and grading their carcasses.
- (viii) Utilization of abattoir byproducts, rendering and treatment of condemned meat and carcasses.
- (ix) Management of effluent treatment from the abattoir.
- (x) The prospect of the meat industry in India.
- (xi) Structure and composition of muscle.
- (xii) Nutritive value of meat.
- (xiii) Fraudulent substitution of meat.

P. Prakash



- (xiv) Preservation of meat and poultry; drying, salting, curing, smoking, chilling, freezing, canning, irradiation, and chemicals.
- (xv) Modern Processing Technologies for Meat and Meat Products.
- (xvi) Concept of value addition - Importance of value addition in the meat industry.
- (xvii) Physicochemical and microbiological quality of meat and its products.
- (xviii) FSSAI Codex Alimentarius Commission rules and regulations on meat.
- (xix) Duties and role of Veterinarians in slaughterhouse.
- (xx) Byproducts from the slaughterhouse and their economic utilisation.
- (xxi) Methods of collection, preservation, and processing of the hormonal glands for medicinal use.

PAPER-II

(1) Veterinary Microbiology:

- (i) General Microbiology, Bacterial Growth, Bacterial Nutrition, Metabolism, Bacterial Genetics, Determinants and pathogenicity markers, Bacteriophages, Antimicrobial agents - resistance and susceptibility. Morphological structure of the virus, classification of the virus, Replication of DNA & RNA viruses, Viral Interactions, pathogenesis, Oncogenic virus. Immune response to viral infections. Systematic Veterinary Bacteriology and Virology: Bacterial and Viral diseases of veterinary importance.
- (ii) Prions, emerging & trans-boundary diseases.
- (iii) Veterinary immunology - Poultry & livestock immune system, types of immunity, Organs and cells of the Immune system, Antigens and their characteristics, Immunoglobulins, Major Histocompatibility Complex (MHC), Hypersensitivity, Antigen-antibody Interaction, Immunological diseases.
- (iv) New Diagnostic Techniques- ELISA, PCR, Genome sequencing.
- (v) Veterinary Vaccine, Quality control, recent advances in Vaccine Delivery, Adjuvants & Vaccine failure.
- (vi) Veterinary Mycology, morphology, cultural characters, virulence factors, Antigenic components, pathogenesis, Diagnosis and control of fungal infection, Systematic study & animal mycoses.

(2) Veterinary Pathology and Parasitology:

- (i) Pathology of disturbances in circulation and growth.
- (ii) Inflammation & its classification.
- (iii) Various cell types and their functions.
- (iv) Pathology of autoimmune diseases.
- (v) General characteristics and classification of neoplasms.
- (vi) Post- mortem techniques, Collection, preservation, and dispatch of morbid materials for diagnosis.

P. Prityanku



- (vii) Diseases affecting the Digestive System, Respiratory System, Musculoskeletal System, Cardio-vascular System, Hematopoietic System, Lymphoid System, Urinary System, Reproductive System, Nervous System, Endocrine System, Skin and Appendages, Ear and Eye.
- (viii) Pathogenesis, gross and microscopic pathology of various bacterial, viral, fungal, and parasitic diseases of animals and poultry.
- (ix) Pathological changes in nutritional and metabolic diseases.
- (x) Pathogenesis, gross and microscopic pathology of heavy metal toxicities.
- (xi) Classification of parasites, Types of Parasitism, Commensalism, Symbiosis, and Predatorism.
- (xii) Types of hosts.
- (xiii) Immunity against parasitic infections.
- (xiv) Standardized nomenclature of animal parasitic diseases.
- (xv) General description of helminth parasites, Classification, life cycle in relation to transmission, pathogenesis, epidemiology, diagnosis, and control of various helminthes of animals and birds.
- (xvi) General description, classification, lifecycle, transmission, pathogenesis, and control of various insects and Arachnida affecting domestic animals and birds.
- (xvii) Classification, life cycle in relation to transmission, pathogenesis, diagnosis and control of protozoal diseases of animals and poultry.
- (xviii) Important Parasitic and Zoonotic Diseases.

(3) Veterinary Pharmacology and Toxicology:

- (i) Drug action, Pharmacokinetics (absorption, distribution, biotransformation, and excretion) and Pharmacodynamics (structure and function of receptors, dose response curve).
- (ii) Anesthetics (local and general), sedatives, analgesics.
- (iii) Antibiotics and Chemotherapy (general principles including resistance, antibacterials, anthelmintics, antiprotozoal).
- (iv) Ethno -Veterinary medicine.
- (v) Pharmacy - Preparation of ointments, liniments, and injectables.
- (vi) Dispensing of pharmaceutical preparations.
- (vii) Toxicology (General principles of treatment of poisoning, antidotes, toxicity of pesticides, herbs, venoms, and toxins).
- (viii) Herbal drugs in Veterinary Practice.
- (ix) Dose calculations, prescription writing & drug approval process.

(4) Veterinary Clinical Medicine:

- (i) General, Special and systemic clinical examinations of livestock & poultry.
- (ii) Clinical Diagnostic Techniques.
- (iii) Diseases of digestive system, cardiovascular, respiratory, urinary, nervous,

P. Prinjankar



musculoskeletal, hemopoietic, mammary gland, skin, and sense organs - Etiology, clinical signs, pathogenesis, diagnosis, treatment, prevention and control.

- (iv) Routes of administration of drugs / medicines / vaccines to Livestock & Poultry.
- (v) Prevention and control of metabolic diseases and deficiency diseases.
- (vi) Diseases of toxicants.
- (vii) Fluid therapy including blood transfusion, emergency and critical care medicine.
- (viii) Interpretation of laboratory results.

(5) Veterinary Public Health:

- (i) **Zoonoses:** Classification, definition, role of animals and birds in prevalence and transmission of zoonotic diseases- occupational zoonotic diseases.
- (ii) **Epidemiology:** - Principle, definition of epidemiological terms, application of epidemiological measures in the study of diseases and disease control. Epidemiological features of air, water and food borne infections.
- (iii) Veterinary Jurisprudence – Duties of Veterinarian, Common offences against animals and Laws governing import and export of animals, Certification of products, Drugs and Cosmetic Act 1940, Manufacturing Practices of Veterinary Biological, Basic knowledge on Institutional Bio safety Committee (IBSC), Committee for the control and supervision of experimentation on animals (CCSEA) and Animal Welfare Board (AWB).
- (iv) Vetero-legal cases, Certifications, Materials and Methods of collection of samples for Vetero-legal investigation.

(6) Veterinary Surgery & Radiology:

- (i) Basic principles of surgery.
- (ii) Preparation of the operation theatre, operative sites and instruments for surgery.
- (iii) Types of wounds and fractures, their correction in domestic animals.
- (iv) Types of suture materials and their use.
- (v) Surgical procedures for abscesses, hematoma, cysts, tumors, necroses, and treatment of burns.
- (vi) Common anesthetic techniques used in domestic animals.
- (vii) Chemical restraint of domestic & Wild animals.
- (viii) Common surgical problems and their surgical correction in domestic animals (example: debudding, horn cancer, tail gangrene, paraphimosis, dermoid cyst,

P. Pringle



hoof trimming, preparation of teaser, ovario-hysterectomy, rumenotomy, atresia-ani, repair of hernia etc.).

- (ix) Advances in surgery - intra-medullary pinning, laparoscopic surgery.
- (x) Basic radiography technique and use of ultrasonography in livestock.
- (xi) Methods of Castration & Spaying technique.

(7) Gynaecology & Obstetrics:

- (i) Hormones in animal reproduction and their clinical use.
- (ii) Estrus cycle in different animal species and signs of estrus.
- (iii) Maternal recognition of pregnancy in different animal species.
- (iv) Methods of pregnancy diagnosis in different species.
- (v) Estrus synchronization in domestic animals.
- (vi) Infertility in male and female domestic animals.
- (vii) Parturition in domestic animals, diseases, and accidents of gestation.
- (viii) Causes of dystocia in different animal species and their correction.
- (ix) Post-partum complications in different animal species.
- (x) Procedures of semen collection, processing, and artificial insemination in cattle, buffalo, and other species.
- (xi) Animal birth control programs.

(8) Animal Husbandry Extension Education:

- (i) Principles and Elements of Extension Management in Animal Husbandry.
- (ii) Extension Teaching Methods, Audiovisual Aids, emerging social media use.
- (iii) Characteristics of Rural & Urban societies.
- (iv) Human Resource Management in the Animal Husbandry sector (Importance of trainings for stakeholders: women, youth, farmers, entrepreneurs).
- (v) About RSETI-Rural Self Employment Training Institute, A-HELP - Accredited Agent for Health and Extension of Livestock Production, Pashu Sakhi, MAITRI-Multipurpose Artificial Insemination Technician in Rural India.
- (vi) ICT initiatives in the Livestock Sector of State and Central Governmental Schemes
- (vii) Livestock entrepreneurship, avenues, and job opportunities.

P. Prityankhy
Secretary
Arunachal Pradesh
Public Service Commission
Itanagar