

SYLLABUS FOR THE SUBJECT OF VETERINARY SCIENCE PAPER – I

Total Marks: 100

Anatomy and Physiology

General terms used in Anatomy and Physiology. Anatomy and Physiology of different systems such as Digestive System, Cardiovascular System, Respiratory System, uro-general system, Endocrine Glands, Nervous System, Sense Organs. Comparative Anatomy and Physiology of different systems of various domestic animals.

Pharmacology and Toxicology

Terminology Drug development and drug regulation. Sources of drugs and drugs classification. Physicochemical properties of drugs, Disposition and bioavailability of drugs. Structure activity and dose response relationship, Drug Resistance, Drug safety, adverse effects, tissue residue and public health. Pharmacology of drugs affecting various systems, Chemotherapeutic agents, antibiotics, antifungal, antiviral, antiparasitic drugs. Terms used in toxicology, Forensic toxicology, Sources of poisoning and poisonous plants. Specific and non specific antidote therapy.

Parasitology

Effects of parasites on their host and their economic significance. Immunity and resistance of parasites. Mode of action of anti-parasitic drugs. Parasitic zoonoses examples, Epidemiology, Diagnosis, Pathogenesis and control of various parasites such as Protozoa (Trypanosoma, Toxoplasma, Babesia, Theileria, Coccidia, Etc). Helminthes (Ascariasis, strongylosis, haemonchus, oestertagia, fasciolosis, schistosoma, Ectoparasites (mange, mite, ticks, flies).

Microbiology

General Microbiology, Diversity of Microbes, Prokaryotes Vs Eukaryotes. Physicochemical requirements of microbes. Microbial preservation and microbial genetics. Immunity natural and acquired. Antigen antibody essential features. Macrophage, B and T lymphocytes Immunoglobulin, regulation of immune response. Theories of antibody formation. Vaccines production, vaccination, autoimmunity, autoimmune diseases. Bacteriology and mycology classification, general characters disease association and diagnosis. Virology properties of viruses and classification, Bacteriophages, Physicochemical characteristics, isolation, identification, immunity and disease association, Important viral diseases, rabies, rinderpest, Foot and mouth disease, PRR, BVD, BSE, ND, Avian Influenza, etc.

Pathology

Common terms, cell injuries and cell death. Disturbance of circulation, inflammation, repair and healing of wounds and fractures. Neoplasia its cause and classification. Pathology of different organs. Meat inspection. Characteristics of good quality meat, differentiation of meat of different animals. Objectives of meat inspection Ante-mortem and postmortem examination. Specific and non specific lesions. Disposal of condemned meat. Laws governing meat inspection in Pakistan. Collection preservation and dispatch of laboratory specimens. Hematological examination and its significance. Bone marrow evaluation, urine and faecal examination, liver and kidney function test. Plasma protein profile, electrolyte and acid base balance. Exfoliative cytology.

Reproduction

Regulation of hormones, Physiology of estrous cycle. Fertilization, Implantation, gestation and parturition, male reproductive system. Biotechnology and recent trends. Artificial insemination technique, estrus synchronization, embryo transfer, Genetic engineering, nuclear transfer and cloning. Disease of reproduction, cervicovaginal prolapse, post partum complications, uterine infections, infertility problems, Genetic and acquired abnormalities of testis accessory sex glands and infertility problems in males.

Veterinary Medicine

General Terms (Fever, Toxemia, Septicemia, Anaphylaxis, Shock, etc.) Diseases of different systems: G.I.T. (Acidosis, Tympany, Enteritis, equine colic) Liver (hepatitis, jaundice, cholelithiasis) Respiratory system (rhinitis, laryngitis, bronchitis, pneumonia, hydrothorax, epistaxis, pleurisy). Nervous Systems (encephalitis, meningitis) Urinary System (Nephritis, Urolithiasis, Pyelonephritis, Cystitis) Others (arthritis, Osteomyelitis, Dermatitis, Seborrhea, Photosensitization, Tumors, Cysts, Keratoconjunctivitis, Cataract, Glaucoma, Otitis), Infectious and Non-Infectious diseases of domestic animals.

Surgery

Fluid replacement therapy and blood transfusion. Management of accidents shock and emergency cases. Small/Large Animal Surgery. General Surgical considerations. Fluid therapy in surgical patients, tissue regeneration, wound healing. Scope of radiology in Veterinary Practice X-ray machine and its working. Nature and production X-ray exposure factors. Radiation hazards and protection X-ray film and its type. Processing of Films. Basic principles to study radiograph. Qualities of good radiograph. Shoeing and its evaluation. Blemishes and vices in animals. Soundness examination, colours and marking in equines.

Veterinary Epidemiology

Principles of epidemiology and its relation to public health. Determinants of disease, Vital Statistics, Incidence, Prevalence, Patterns and disease ecology. Surveillance and monitoring, data collection and interpretation. Analytical epidemiology, Cohort or prospective study, case-control or retrospective study. Experimental epidemiology, clinical trials, field trial or community trials. Epidemic investigation. Control and eradication of transboundary and other infectious diseases. Diseases transmissible to human beings through milk and other dairy products, Meat, Poultry and other foods. Urine and faeces of animals. Environment and residues. Sanitary and phyto-sanitary measures for the prevention of disease during export and import livestock products. Role of veterinary public health in producing safe human food according to WTO standards. Personal hygiene and public sanitation. Active and passive surveillance. Writing a research report.

RECOMMENDED BOOKS

1. *Cunningham. I. G. 2002. Text Book of Veterinary Physiology. W. B. Sanders Co. 3rd Edition. USA.*
2. *Adams. H.R., 2001. Veterinary Pharmacology & therapeutics, 8th Ed. Iowa State University Press USA.*
3. *Urquhart. G.M.J. Armour, J.L. Duncan. A.M. Dunna and F.W. Jennings. 2000. "Veterinary Parasitology". Longman Scientific and Technical, UK.*
4. *Quinn, P.J., 2002. veterinary Microbiology and Microbial Disease. 1st. Ed. Blackwell Science, Ltd., USA.*
5. *Latimer, K.S., E.A. Mahaffey and K.W. Prasse, 2003. Duncan & Prasse's Veterinary Laboratory Medicine Clinical Pathology. 4th Ed., Iowa State Press. Ames, Iowa, USA.*
6. *Kumar, V.R.S. Cotran and S.L. Robbins, 2003. Robbins Basic Pathology, 7th Ed., Saunders, Philadelphia, Pennsylvania, USA.*
7. *Hafez, E.S.E., 2000. Reproduction in Farm Animals. 7th Edition., Lea and Febiger, Philadelphia, USA.*
8. *Radosits, O.M., C.C. Gay, D.C. Blood and K.W. Hincheliff, 2000. veterinary Medicine, 9th Ed. Bailliere Tindall, London, U.K.*
9. *Thrusfield, M., 2005, Veterinary Epidemiology, 3rd Ed. Blackwell Science, London, UK.*
10. *Jones, H.J., M. W. Hubbert and H. Hagstard, 200. zoonoses-Recognition. Control and Preventio. Blackwell Science, Ltd., Oxford, UK.*

**ANIMAL HUSBANDRY
PAPER-II**

Total Marks: 100

Animal Nutrition

Basic terms used in Animal Nutrition. Digestion of carbohydrates, proteins and lipids in monogastric and ruminants. Bio-chemical pathways that influence nutrient metabolism. Metabolism of proteins, carbohydrates, lipids as nutrients, energy metabolism, classification, functions and deficiency symptoms of minerals and vitamins factors affecting nutritive value of feeds. Techniques for estimating nutritive value of feed stuffs. Factors effecting the nutritive value of feeds. Measures of food energy; gross energy, metabolisable energy, net energy. Determination of digestibility, digestion coefficient. Calculation of TDN. Nutritive ratio. Role of probiotic in animal nutrition. Feeding of urea to ruminants. Technology for urea. Molasses mineral blocks. Procedure for block making. Feed raw materials handling, storage, grinding, mixing, processing and storage of finished feed. Quality control in feed processing. Feed stuff laws and regulations.

Poultry

Development of poultry industry in Pakistan; present status and future potential of poultry industry; important classes, breeds and varieties of poultry and their characteristics; objectives of poultry breeding for meat and egg production; qualitative and quantitative traits and their heritability estimates, systems of breeding and their significance; pure breed vs present day hybrid used for meat and egg production; the role of selection in genetic improvements. Brooding, rearing and laying house equipments; raising of broilers; rearing of layer chicks; shifting and housing of pullets; cage vs floor management; layer and breeder management; causes of poor performance of layer and breeder flocks and development of managerial strategies for its improvement; factors affecting pullet development; basic principles for site selection; poultry house construction and design; requirements of housing from biological engineering, economic and hygienic point of view.

Livestock Management

Routine practices at dairy and sheep/goat farms. Management of animals at different stages. Housing, Feeding and production management. Management during inclement weather. Management of range livestock. Judging of animals. Breeding practices. Sanitation procedure. Planning for year round feed and fodder supply and preservation. Manure handling and disposal hygienic milk production practices. Maintaining farm records and evaluation. Financial and labor management. Transportation and marketing of animals and their production.

Animal Breeding and Genetics

Genetic and phenotypic correlation. Emerging techniques. Traits of economic importance in farm animals. Use of computer for data handling and analysis. Breeding systems; random mating, inbreeding, line breeding and out breeding; selection of superior animals, principles, basis, kinds and methods; traits of economic importance in cattle, buffalo sheep, goats and poultry; animal genetic resources, their conservation and preservation; emerging breeding technologies; national breeding policy, constraints and future breeding plans.

RECOMMENDED BOOKS

1. *D.N. Panday and Amita Bajpai 2003. Recent Trend in Animal Nutrition and Feed technology for livestock, pets and laboratory animals.*
2. *Sainsbury, D. 1999. Poultry Health and Management; chickens, turkey, ducks, geese and quails, Blackwell scientific publications, London, UK.*
3. *Hunton, P. (Editor). 1995 Poultry production: production system approach. Elsevier science publishers, Amsterdam, the Netherlands.*
4. *Lagates, J.E. and E.J. Warwich, 1990. Breeding and improvement of Farm Animals. McGraw-Hall Publishing Co. New York.*
5. *Bourdon, R.M. 2000. Understanding Animal Breeding. Prentice-Hall, Inc. Upper, Saddle River, New Jersey.*
6. *Jagdish, P. 2005. Principles and practices of Dairy Farm Management. Kalyani publishers Delhi India.*
7. *Shah, S.I. 1994. Animal Husbandry. National Book Foundation, Islamabad, Pakistan.*