Syllabus for UPSC Indian Forest Services Examination

Animal Husbandry and Veterinary Science - Paper II

The Scope of the Syllabus for optional subject papers for the examination is Broadly of the Honours Degree level i.e. A level Higher than the Bachelors Degree and lower than the Masters Degree. In the case of Engineering subjects, the level corresponds to the Bachelors Degree.

There will be no practical examination in any of the subjects.

Optional Subjects

Total number of questions in the question papers of optional subjects will be eight. All questions will carry equal marks. Each paper will be divided into two parts, viz. Part A and Part B, each part containing four questions. Out of eight questions, five questions are to be attempted. One question in each part will be compulsory. Candidates will be required to answer three more questions out of the remaining six questions, taking at least one question from each Part. In this way, at least two questions will be attempted from each Part i.e. one compulsory question plus one more.

Animal Husbandry and Veterinary Science

Paper II

1. **Health and Hygiene**

1.1. **Histology and Histological Techniques :** Stains-Chemical classification of stains used in biological work-principles of staining tissues-mordants-progressive & regressive stains-differential staining of cytoplasmic and connective tissue elements-Methods of preparation and processing of tissues-celloidin embedding-Freezing microtomy-Microscopy-Bright field microscope and electron microscope. Cytology-structure of cell, organells & inclusions; cell divison-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.

1.2. **Embryology :** Embryology of vertebrates with special reference to aves and domestic mammals-gametogenesis-fertilization-germ layers-foetal membranes & placentation-types of placenta in domestic mammals-Teratology-twin & twinning-organogenesis-germ layer derivatives-endodermal, mesodermal and ectodermal derivatives.

1.3 **Bovine Anatomy-Regional Anatomy :** Paranasal sinuses of OX-surface anatomy of salivary glands. Regional anatomy of infraorbital, maxillary, mandibuloalveolar, mental & coronal nerve block-Regional anatomy of paravertebral nerves, pudental nerve, median, ulnar & radial nerves-tibial, fibular 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 & their application in the biomechanics of mammalian body.

1.4 **Anatomy of Fowl :** Musculo-skeletal system-functional anatomy in relation to respiration and flying, digestion and egg production.

1.5 **Physiology of blood and its circulation, respiration; excretion, Endocrine glands in health and disease.**

1.5.1 **Blood constituents :** Properties and functions-blood cell formation-Haemoglobin synthesis and chemistry-plasma proteins production, classification and properties; coagulation of blood; Haemorrhagic disorders-anticoagulants-blood groups-Blood volume-Plasma expanders-Buffer systems in blood. Biochemical tests and their significance in disease diagnosis.

1.5.2. **Circulation:** Physiology of heart, cardiac cycle-heart sounds, heart beat, electrocardiograms, Work and efficiency of heart-effect of ions on heart function-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 & pulmonary circulation, Blood-Brain barrier-Cerebrospinal fluid-circulation in birds.

1.5.3 **Respiration :** Mechanism of respiration, Transport and exchange of gases-neural control of respiration-chemoreceptors-hypoxia-respiration in birds.

1.5.4 **Excretion:** Structure and function of kidney-formation of urinemethods of studying renal function-renal regulation of acid-base balance; physiological constituents of urine-renal failure-passive venous congestion-Urinary recreation in chicken-Sweat glands and their function. Biochemical tests for urinary dysfunction.

1.5.5 **Endocrine glands :** Functional disorders, their symptoms and diagnosis. Synthesis of hormones, mechanism and control of secretion-hormonal receptors-classification and function.

1.6. **General knowlege of pharmacology and therapeutics of drugs :** Celluar level of pharmacodynamics and pharmaco-kinetics-Drugs acting on fluids and electrolyte balance-drugs acting on Autonomic nervous system-Modern concepts of anaesthesia and dissociative anaesthetics-Autocoids-Antimicrobials and principles of chemotherapy in microbial injections-use of hormones in therapeutics-chemotherapy of parasitic infections-Drug and economic persons in the Edible tissues of animals-chemotherapy of Neoplastic diseases.

1.7. **Veterinary Hygiene with reference to water, air and habitation :** Assessment of pollution of water, air and soil-Importance of climate in animal health-effect of environment on animal function and performance-relationship between industri-alisation and animal agriculture-animal housing requirements for specific categories of domestic animals viz. pregnant cows & sows, milking cows, broiler birds-stress, strain & productivity in relation to animal habitation.

2. **Animal Diseases :**

2.1 Pathogenesis, symptoms, postmortum lesions, diagnosis, and control of infection diseases of cattle, pigs and poultry, horses, sheep and goats.

2.2 Etiology, symptoms, diagnosis, treatment of production diseases of cattle, pig and poultry.

2.3 Deficiency diseases of domestic animals and birds.

2.4 Diagnosis and treatment of nonspecific condition like impaction, Bloat, Diarrhoea, Indigestion, dehydration, stroke, poisioning.

2.5 Diagnosis and treatment of neurological disorders.

2.6 Principles and methods of immunisation of animals against specific disseases-hard immunity-disease free zones-'zero' disease concept-chemoprophylaxis.

2.7 Anaesthesia-local, regional and general-preanaesthetic medication, Symptoms and surgical interference in fractures and dislocation, Hernia, choking, abomassal displacement-Caesarian operations, Rumenotomy-Castrations.

2.8 Disease investigation techniques-Materials for laboratory investigation-Establishment Animal Health Centres-Disease free zone.

3. **Veterinary Public Health**

3.1 **Zoonoses :** Classification, definition; role of animals and birds in prevalence and transmission of zoonotic diseases-occupational zoonotic diseases.

3.2. **Epidemiology :** Principles, 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.

3.3 **Veterinary Jurisprudence :** Rules and Regulations for improvement of animal quality and prevention of animal diseases-state and control Rules for prevention of animal and animal product borne diseases-S.P. C.A.-veterolegal cases-certificates-Materials and Methods of collection of samples for veterolegal investigation.

4. **Milk and Milk Products Technology :**

4.1 **Milk Technology :** Organization of rural milk procurement, collection and transport of raw 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 milks : Pasteurized, standardized, toned, double toned, sterilized, homogenized, reconstituted, recombined and flavoured milks. Preparation of cultured milks,

cultures and their management, youghurt, Dahi, Lassi and Srikhand. Preparation of flavoured and sterlized milks. Legal standards, Sanitation requirement for clean and safe milk and for the milk plant equipment.

4.2 **Milk Products Technology :** Selection of raw materials, assembling, production, processing, storing, distributing and marketing milk products such as Butter, Ghee, Khoa, Channa, Cheese; Condensed, evaporated, dried milk and baby food; Ice cream and Kulfi; by products; whey products, butter milk, lactose and casein. Testing Grading, judging milk products-BIS and Agmark specifications, legal standards, quality control nutritive properties. Packaging, processing and operational control Costs.

5. Meat Hygiene and Technology :

5.1 Meat Hygiene :

5.1.1 Ante mortem care and management of food animals, stunning, slaughter and dressing operations; abattoir requirements and designs; Meat inspection procedures and judgement of carcass meat cuts-drading of carcass meat cuts-duties and functions of Veterinarians in Wholesome meat production.

5.1.2 Hygienic methods of handling production of meat-spoilage of meat and control measures-Post slaughter physicochemical changes in meat and factors that influence them-quality improvement methods-Adulteration of meat and defection-Regulatory provisions in Meat trade and Industry.

5.2. **Meat Technology**

5.2.1 Physical and chemical characteristics of meat-meat emulsions-methods of preservation of meat-curing, canning, irradiation, packaging of meat and meat products; meat products and formulations.

5.3. **Byproducts :** Slaughter house by products and their utilisation-Edible and inedible byproducts-social and economic implications of proper utilisation of slaughter house byproducts-Organ products for food and pharmaceuticals.

5.4. **Poultry Products Technology :** Chemical composition and nutritive value of poultry meat, pre slaughter care and management. Slaughtering techniques, inspection, preservation of poultry meat, and products. Legal and BIS standards.

Structure, composition and nutritive value of eggs. Microbial spoilage. Preservation and mainteancne. Marketing of poultry meat, eggs and products.

5.5. **Rabbit/Fur Animal farming :** Care and management of rabbit meat production. Disposal and utilization of fur and wool and recycling of waste byproducts. Grading of wool.

6. **Extension :** Basic philosophy, objectives, concept and principles of extension. Different Methods adopted to educate farmers under rural conditions. Generation of technology, its

transfer and feedback. Problems of constraints in transfer of technology. Animal husbandry programmes for rural development.

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