

**Maharashtra Public Service Commission**  
**Civil Services Exam – Mains Optional**  
**Animal Husbandry and Veterinary Science**  
**(Code No : 105)**

Paper - I

**Standard** : B.V.Sc.& A.H, Degree

**Total Marks** : 200

**Nature of Paper** : Conventional Type

**Duration** : 3 Hours

- Note :**
- 1) Answers to this paper must be written in English only.
  - 2) This paper will test the candidate's ability to comprehend, to analyse, to interpret, to criticise and to appraise subject matter related to the topics/sub topics mentioned below.
  - 3) It is expected from candidates to study the latest and recent developments and happenings pertaining to the topics/sub topics mentioned below.

**Section - A ( Marks : 50 )**

**Veterinary Anatomy, Physiology and Biochemistry**

- 1) **.01)** Anatomy and physiology of digestive, respiratory, cardiovascular, musculo-skeletal and urogenital system.  
**.02)** Physiology of nervous system and sensory organs; Growth and development of embryo in livestock and poultry.
- 2) Physiology of digestion and absorption in ruminants and non-ruminants; Anatomy and physiology of mammary gland with reference to endocrine control; Environmental physiology and its influence on growth and production.
- 3) Biochemistry of carbohydrate, protein, lipids, enzymes, co-enzymes, co-factors and their role in metabolism; Biochemistry of blood and body fluids.

**Section - B ( Marks : 50 )**

**Animal Genetics and Breeding**

- 4) Principles of animal genetics; Heritability, repeatability, genetic correlation and their applications; Hardy - Weinberg Law.
- 5) **.01)** System of mating; Inbred lines; Heterosis; Selection of breeding animals; Response to selection; Sire index; Open nucleus breeding system.  
**.02)** National and state livestock breeding policy; Importance of conservation of livestock and poultry germplasm.
- 6) Chromosome complements of various productive animals; Chromosomal aberrations, their effect on fertility and productivity of livestock with special reference to dairy animals; Importance of cytogenetics in animal breeding.

**Section - C ( Marks : 50 )**

**Livestock and Poultry Management and Nutrition**

- 7) **.01)** Breeds of cattle, buffaloe, sheep, goat, pigs and poultry; Judging of farm animals; Transportation of animals; Care and management of young stock, dry, pregnant, lactating animals, breeding bulls; Dentition of animals; Farms records.  
**.02)** Economics of livestock and poultry farming; Farm structure - system of housing and management of dairy animals and poultry; Dairy farming and clean milk production;

Preparation of animals for show/exhibition; Preparation of project reports of livestock and poultry farm; Importance of sheep and goat production in National economy.

- 8) Feeding and management of animals under draught, flood and other natural calamities; Management of zoo/lab animals. Standards of potable water and its supply for livestock and poultry; Importance of sanitation at livestock farm and disposal/use of livestock waste; Herd health management of cattle and buffalo.
- 9) .01) Importance of nutrients in animal health and production; Nutrients and their requirement, metabolism in livestock and poultry; Digestion, absorption and metabolism of carbohydrate, protein, fat in livestock and poultry; Role of minerals, trace elements and vitamins in livestock and poultry nutrition; Nutritional deficiency and their management;
- .02) Feed additives, antibiotics, probiotics, growth stimulants in livestock and poultry nutrition; Conventional and non-conventional feeds and fodder and their importance in livestock and poultry; Evaluation of feed as a source of energy; Feeding standards, balanced ration, computing balanced ration for growth, maintenance, breeding and production of livestock and poultry.

#### Section - D ( Marks : 50 )

##### Livestock Products Technology, Globalisation and Extension

- 10) Composition and nutritive value of milk, meat and poultry egg; Pasteurisation of milk; Preparation of traditional and value added dairy products; Preservation and transportation of milk; meat and poultry products; Pricing of dairy products; Standards of quality control of milk, meat and meat products; Factors affecting the quality of meat and meat products; Identification and differentiation of meat; Role of milk, meat and poultry products in human nutrition.
- 11) Abattoir practices; Methods of slaughter and dressing; Utilisation of slaughter house by-products.
- 12) International standards for edible animal products for their exports/import; Legal aspect of export and import of animal products.
- 13) **Extension** : Concepts and principles of extension; Different methods of extension education; Evaluation of technology and its transfer to the livestock and poultry entrepreneur; farmers and industry; Communication and skill in Identification of problems of dairy, poultry and meat industry; Development and execution of animal husbandry programme for rural development; Role of NDDDB and dairy co-operatives in dairy development; Organisation of livestock show; Calf rally, exhibitions and training programmes in rural and urban area. Involvement of unemployed women, marginal and small farmers in livestock and poultry production. Use of Audio-Visual aids and Information Technology in extension.

#### Paper - II

**Standard** : B.V.Sc. & A.H, Degree

**Total Marks** : 200

**Nature of Paper** : Conventional Type

**Duration** : 3 Hours

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  - 2) This paper will test the candidate's ability to comprehend, to analyse, to interpret, to criticise and to appraise subject matter related to the topics/sub topics mentioned below.
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#### Section - A ( Marks : 50 )

### **Veterinary, Pharmacology and toxicology, Parasitology and Pathology**

- 1) .01) Drugs acting on central nervous system, cardiovascular system, digestive system, respiratory system, urogenital system.
- .02) Anti-microbial drugs, indigenous drug and their uses. Toxicity caused by metals, non-metals, plants, agrochemicals.
- 2) Host, parasite relationship, mode of transmission and dissemination of parasites; Morphology and pathogenesis of helminth parasites, arthropods, protozoan diseases affecting man, animal and poultry.
- 3) .01) Pathology of cardiovascular, hemopoietic, respiratory, digestive, musculoskeletal and urogenital system. Neoplasm, classification and diagnosis of different tumors.
- .02) Pathogenesis and pathognomic lesions in important microbial diseases of livestock and poultry; Diagnostic pathology : biopsy, cytology, post mortem and haemato biochemical test for diagnosis of diseases of livestock and poultry; Collection, preservation, dispatch and transportation of biopsy and autopsy material for diagnosis of diseases in livestock and poultry.

### **Section - B ( Marks : 50 )**

#### **Microbiology, Animal Biotechnology and Veterinary Public Health**

- 4) Morphology, classification, cultivation, identification of microbes; Sources and transmission of infections; Sterilization and disinfections.
- 5) Types of microbial diseases; Immune system and immunity - antigens, antibodies, serological tests, immunisation and immuno-prophylaxis; Hypersensitivity.
- 6) **Bacterial diseases** : anthrax, hemorrhagic septicemia, black quarter, enterotoxaemia, mastitis, tuberculosis, brucellosis, Jonne's disease, leptospirosis, coli-infections
- 7) **Fungal diseases** : Dermatomycosis, mycotoxicosis.
- 8) **Viral diseases** : Pox infections, Bovine rhinotrachities, Foot and mouth disease, PPR, Blue tongue, Rabies, canine distemper, Raniket disease, Infectious bursal disease, Marek's disease, Infectious bronchitis, Bird influenza.
- 9) Various animal bio-technological techniques and their applications in Veterinary and Animal Sciences viz. Recombinant DNA technology; Cloning; Transgenic animals; Embryo transfer technology; In-vitro fertilization; Application of polymerase chain reaction; Hybridoma technique and monoclonal antibodies; Cell culture technique and their applications.
- 10) Milk hygiene and public health, clean milk production, quality control of milk and milk products.
- 11) Meat inspection, Differentiation of meat of food animals, food/ water borne disease and food intoxication.
- 12) Zoonosis, prevention and control of zoonotic diseases.
- 13) Environmental pollutants, Disposal of sewage, Effect of environmental pollutants on animal and human health.

### **Section - C ( Marks : 50 )**

#### **Methods of Clinical Examinations**

- 14) .01) Concept of animal and diseases; Clinical signs, diagnosis and treatment of hyperthermia, hypothermia, fever, septicaemia, toxemia, dehydration and shock. Diseases of digestive respiratory, cardiovascular, urogenital, nervous and musculo-skeletal system and sensory organs.
- .02) Clinical symptoms, diagnosis, treatment, prevention and control of metabolic diseases of cattle and buffalo; Clinical signs, diagnosis, treatment and control of deficiency diseases caused due to iron, cobalt, zinc, calcium and phosphorous.

- .03) Clinical signs, diagnosis, treatment, prevention and control of bacterial, viral, fungal and parasitic diseases of cattle, sheep, goat, dogs and poultry. Clinical signs, diagnosis, treatment and control of teat and udder affections in cattle and buffalo.
- .04) Objectives and application of epidemiology and preventive medicine. Laws regulating animal diseases. Principles and concept of general epidemiology.
- .05) Legal duties of veterinarian, common offences against animals and laws related to these offences. Legal point and examination of living and dead animals in criminal cases, cruelty to animals; Legal aspects of soundness, injuries and postmortem examination of animals. State and Central Government acts relating to animals. Code of conduct and ethics of veterinarians, Regulations of Indian Veterinary Council Act, 1984; Animal Insurance.

**Section - D ( Marks : 50 )**

**Veterinary Surgery and Animal Reproduction**

- 15)** Principles of surgery, Pre and post operative considerations ; Care and management of wound, abscess, tumour, cyst, hernia, necrosis, gangrene, burn, frost bite, shock, dislocation and affections of joints; Surgical affections of head, neck, thorax, abdomen, genital organs and their treatment in livestock; Diseases of limbs and their treatment in bovine, caprine and equines ; Physiotherapy.
- 16)** Anesthesia and management of local, regional, general and balanced anesthesia in domestic and wild animals; Preanesthetic medication and management of anesthetic emergencies; X-ray, ultrasonography and their application in diagnosis and treatment of diseases.
- 17)** Puberty and sexual maturity in animals; Role of hormones in reproduction; Detection of heat; Oestrus synchronisation, artificial insemination, super ovulation; Diagnosis of pregnancy.
- 18)** Diseases and accidents of gestation; Fertility, infertility, sterility, repeat breeding in animal reproduction; Herd health reproductive programme; Parturition and it's management; Dystocia and its treatment; Semen Collection; Evaluation and preservation of liquid and frozen semen.