

झारखण्ड सरकार  
पशुपालन एवं मत्स्य विभाग

261-  
133  
219

“अधिसूचना”

सं० सं०-1 स्था० नियुक्ति (1) 01/2014 प० मा०.....झारखण्ड पशुपालन सेवा (भर्ती, प्रोन्नति एवं अन्य सेवा शर्त) नियमावली 2013 के आलोक में पशुचिकित्सकों की झारखण्ड लोक सेवा आयोग, राँची के माध्यम से नियुक्ति हेतु निम्नालिखित रूप से पाठ्यक्रम निर्धारित किया जाता है :-

- प्रश्न पत्र 1. हिन्दी : 100 अंक
- |     |                        |   |        |
|-----|------------------------|---|--------|
| (क) | निबन्ध (400 शब्दों का) | - | 30 अंक |
| (ख) | व्याकरण                | - | 30 अंक |
| (ग) | वाक्य विन्यास          | - | 20 अंक |
| (घ) | संक्षेपण               | - | 20 अंक |
- प्रश्न पत्र 2. अंग्रेजी : 100 अंक
- |    |                   |   |          |
|----|-------------------|---|----------|
| a. | Essay (400 words) | - | 30 marks |
| b. | Grammer           | - | 30 marks |
| c. | Comprehension     | - | 20 marks |
| d. | Preces            | - | 20 marks |
- प्रश्न पत्र 3. पशु औषधि विज्ञान तथा पशु शल्य चिकित्सा विज्ञान : (200 अंक)  
(Veterinary Medicine & Veterinary Surgery)  
संलग्न पाठ्यक्रम (परिशिष्ट 'क') के अनुसार।
- प्रश्न पत्र 4. पशु गर्भ विज्ञान तथा पशु पोषण विज्ञान : (200 अंक)  
(Veterinary Obstetrics and Gyanecology & Animal Nutrition)  
संलग्न पाठ्यक्रम (परिशिष्ट 'क') के अनुसार।
- प्रश्न पत्र 5. पशुधन उत्पादन एवं प्रबंधन तथा पशु प्रजनन एवं आनुवंशिकी : (200 अंक)  
(Livestock Production and Management & Animal Breeding and Genetics)  
संलग्न पाठ्यक्रम (परिशिष्ट 'क') के अनुसार।

झारखण्ड राज्यपाल के आदेश से,

ह०/-  
(ए०के०ब०का)  
सरकार के अवर सचिव



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ज्ञापांक:- सं० सं०-1 स्था० नियुक्ति (1) 01/2014 प० पा०..... दिनांक.....  
प्रतिलिपि:- सचिव, झारखण्ड लोक सेवा आयोग, राँची को सूचनार्थ एवं आवश्यक कार्रवाई हेतु प्रेषित ।

ह०/-  
सरकार के अवर सचिव

ज्ञापांक:- ..... दिनांक.....  
प्रतिलिपि:- निदेशक, पशुमालन निदेशालय झारखण्ड/अधिष्ठाता, पशुचिकित्सा महाविद्यालय, काँके, राँची को सूचनार्थ प्रेषित ।

ह०/-  
सरकार के अवर सचिव

ज्ञापांक:- 716- ..... दिनांक 25/6/2014  
प्रतिलिपि:- माननीय विभागीय मंत्री के आप्त सचिव/विभागीय अपर मुख्य सचिव के प्रधान आप्त सचिव को सूचनार्थ प्रेषित ।

सरकार के अवर सचिव  
25/6



प्रश्न पत्र 3 'क' का पाठ्यक्रम  
पशु औषधि विज्ञान (Veterinary Medicine)

Concepts of diagnosis, differential diagnosis and prognosis. General systemic. States, hyperthermia, hypothermia, fever, septicemia, toxemia, shock and dehydration. Aetiology, clinical manifestations, diagnosis, differential diagnosis, treatment, prevention and control of the following diseases of cattle, buffalo sheep/goat, equine, pig. Diseases of digestive system with special reference of rumen dysfunction and diseases of stomach in non-ruminates, liver and pancreas. Diseases of respiratory and cardiovascular systems including blood and blood forming organs. Diseases of uro-genital system.

Clinical manifestation, diagnosis, prevention and control of infectious diseases, namely mastitis, haemorrhagic septicaemia, brucellosis, tuberculosis, John's disease, black quarter, tetanus, listeriosis, leptospirosis, actinomycosis, actinobacillosis, enterotoxaemia, glanders, strangles, colibacillosis, fowl typhoid, pullorum disease, fowl cholera, avian mycoplasmosis, salmonellosis, swine erysipelas. Contagious caprine pleuropneumonia, contagious bovine pleuropneumonia anthrax, botulism Chlamydiosis, Q fever, anaplasmosis. Dermatophilosis, aspergillosis (brooders pneumonia), candidiasis, histoplasmosis, sportrichosis, coccidiomycosis, mycotoxicosis, etc.

Aetiology, clinical manifestations, diagnosis, differential diagnosis, treatment, prevention and control of metabolic disorders/production diseases. Milk fever, acute parturient hypocalcaemia in goats sows and bitches, osteodystrophy fibrosa, lactation tetany in mares, downer cow syndrome, ketosis, hypomagnesaemia in cattle and buffalo, azoturia in equines, hypothyroidism and diabetes in dogs. Diagnosis and management of diseases caused by deficiency of iron, copper, cobalt, zinc, manganese, selenium, calcium, phosphours, magnesium, vitamin A, B, C, D, complex, K and C in domestic animals and poultry. Nutritional haemoglobinuria. Diseases of neonates. Diseases of skin,



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musculo-skeletal system, nervous system and sense organs of domestic animals.

Clinical manifestation, diagnosis, prevention and control of infectious diseases, namely foot and mouth disease, rinderpest, bovine viral diarrhoea, malignant catarrhal fever, infectious bovine rhinotracheitis, enzootic bovine leucosis, ephemeral fever, blue tongue, sheep and goat pox, PPR, classical swine fever. Important exotic diseases for differential diagnosis - African swine fever, swine vesicular disease, vesicular stomatitis, Rift valley fever, Aujeszky's disease. Rabies, equine infectious anaemia, canine distemper, infectious canine hepatitis, canine parvovirus disease. Highly pathogenic avian influenza, Newcastle (Ranikhet) disease, Marek's disease, avian leucosis, infectious bronchitis, infectious laryngotracheitis, avian encephalomyelitis, fowl pox, infectious bursal disease, inclusion body hepatitis-hydropericardium syndrome. Other emerging and exotic viral disease of global importance. Amphistomosis, fasciolosis, gastrointestinal nematodiasis, schistosomiasis, echinococcosis, tapeworm infestations (cysticercosis), verminous bronchitis, coenurosis, trichomonosis, blood protozoan infections (trypanosomiasis, theileriosis, babesiosis etc.), canine eperythrozoon infection, coccidiosis.

Definition of animal welfare and ethics. Role of veterinarians in animal welfare. Rules, regulations, laws on animal welfare. Prevention of Cruelty to Animals (PCA) Act, 1960 (59 of 1960). Role and function of Committee for the purpose of Controlling and Supervising Experiments in Animals (CPCSEA). Protection and welfare of performing animals. Welfare of animals during transportation. Animal welfare in commercial livestock farming practices. Protection and welfare of working animals. Pet and companion animal welfare. Animal welfare during natural calamities and disaster management. Legal duties of veterinarians, Common offences against animals and laws related to these offences. Examination of living and dead animals in criminal cases. Cruelty to the animals and bestiality. Legal aspects of : Examination of animals for soundness, examination of injuries and post-mortem examination. Causes of sudden death in animals. Collection and despatch of materials for chemical examination, detection of frauds-doping, alteration of description,



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bishoping Cattle slaughter and evidence procedure in courts. Laws relating to poisons and adulteration of drugs. Livestock importation Act. Evidence, liability and insurance.

Feeding habits, feeds and feeding schedules of zoo animals. Nutrient requirements of wild animals. Restrain, capture, handling, physical examination and transport of wild and zoo animals. Principles of anaesthesia, anaesthetics, chemicals of restraining, Principles of zoo hygiene, public health problems arising from zoos. Prevention, control and treatment of infectious, parasitic, nutritional and metabolic diseases in zoo and wild animal.

Breeds of dogs- commonly seen in India. Detection of oestrus and Breeding of dogs.

Feeding of Dogs - nutritional requirements of important breeds and different age groups. Management of dogs-kennels, care of pups and pregnant bitch.

Common diseases affecting dogs (bacterial, viral, parasitic, fungal, nutritional etc.) - their clinical manifestations, diagnosis, treatment and control. Vaccination/deworming schedules.

Orientation to Veterinary Clinics including hospital set up, administration and functioning. Methods of record keeping. Retrieval, processing.

Relating generic and trade names of drugs along with their doses, indications and contraindications to prescribed treatment regimens. Familiarization and practice of first aid procedures and emergency medicine. Practice of collection, labeling, packaging and evaluation of laboratory samples.

Clinical practice comprising of clinical examination of the patient, with emphasis of history taking, examination techniques-palpation, percussion and auscultation, systematic examination of various systems, recording of clinical observations viz. temperature, respiration, pulse, cardiac sounds cariac function, pulmonary function, functional motility of digestiv system, routes and techniques of administration of medicaments.



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257  
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128 (11)

Collection of materials like urine, faeces skin scraping, blood milk and other body fluids for laboratory tests. Vaccination and other disease prevention and control programmes in the field. Practice of feeding of sick animals.

Familiarization with equipment used in different sections of the Hospital. Restraining and positioning of different species of animals for examinations, diagnosis and surgical treatment. Prescription of common drugs, their doses and used in clinical surgical practice. Passing of stomach tube and gastric tube. Catheterization and urine collection.

Topography anatomy of Cattle, Horse and Dog.

First aid in fractures and dislocations and other affections of joints, facial paralysis, Eye worm & other minor affections of Eye. Irregular teeth and their rasping, tail amputation, knuckling.

Training in examining clinical samples (biochemical, pathological, parasitological and bacteriological). Clinical evaluation of blood (Haemoglobin, packed cell volume, total erythrocytic count, erythrocytic sedimentation rate, total leukocytic count and differential leucocytic count) from clinical samples. Sedimentation rate, total leukocytic count and differential leucocytic count) from clinical samples. Laboratory evaluation and diagnosis of samples for parasitic disease (routine faecal examinations-direct smear method, simple sedimentation and floatation methods, Quantitative faecal examination, pastural larval counts), Examination of skin scrapings, examination of blood smear/blood for diagnosis of blood protozoan diseases.

Biochemical aspects of digestive disorders, endocrine functions. Role of enzyme for detection of tissue/organ affections. Preparation of microscopic slides from tissue collected for diagnosis and its' histopathological interpretation. Diagnosis of important bacterial, fungal and viral diseases.



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प्रश्नपत्र 3 'ख' का पाठ्यक्रम  
पशु शल्य चिकित्सा विज्ञान  
**Veterinary Surgery & Radiology**

Management of shock, haemorrhage, Principles of fluid therapy in surgical patients. Differential diagnosis and surgical treatment of abscess, tumors, cyst, haematoma, necrosis, gangrene, burn. Wound: classification, symptoms, diagnosis and treatment; complications, their treatment and prevention.

Preanaesthetic considerations and preanaesthetics. Anaesthesia, local analgesia/anaesthesia, General anaesthesia, anaesthetic agents (like barbiturates, dissociative agents). Inhalation anaesthesia and agents, maintenance and monitoring of general anaesthesia. Anesthetic emergencies and their management. Only awareness of neuroleptanalgesia, electro-anaesthesia, hypothermia, muscle relaxants. Post operative pain management.

Production and properties of X-rays. Factors influencing production of X-ray

Principles of viewing and interpreting X-ray films, classification of radiographic lesions. Contrast radiography: classification, materials, uses, indications and contra indications. Biological effects of radiation, radiation hazards and their prevention by adoption of safety measures. Principles of ultrasonography and its applications in veterinary practice.

Affections of the horn and their treatment (avulsion of the horn, fracture of the horn, horn cancer and fissure in horn). Debudding and amputation of the horn. Affections of the teeth and their treatment.

Congenital abnormalities, irregular molars. (shear mouth, sharp disease. Bishoping, Affections of salivary glands and their treatment (Trauma, sialoliths, salivary cysts, salivary fistula). Affections of the upper and lower jaw and treatment. Affections of the ear and their treatment. (haematoma and chronic otorrhoea). Eye: Clinical examination of the eye.

Surgical affections of the eye: Entropion, ectropion, tumor of eyelid.

Conjunctiva: Conjunctivitis, occlusion of nasolacrimal duct, squint.

Eyeball: affections of the eye: hydrophthalmia, glaucoma, tumors of eye,



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panophtalmia, glaucoma, tumors of eye, panophtalmia, injuries and infections of anterior and posterior chambers. Worm in the eye. Affections of esophagus: choke, esophageal stenosis dilation and diverticulum. Tracheal injuries and tracheal collapse. Affections of pharynx and larynx.

Fracture of rib. Perforated wounds sterna fistula, pneumocele, traumatic pneumothorax. Hernia: classification, etiology, diagnosis and treatment, (umbilical, ventral, inguinal, perineal, diaphragmatic). Surgical affections of the stomach in dogs (cardia, pyloric stenosis, torsion). Surgical affections, diagnosis and treatment of stomach in ruminants (ruminal impaction, traumatic reticulitis, diaphragmatic hernia abomasal displacement, omasal impaction). Surgical affections of intestines: intestinal obstruction, intussusceptions, strangulation (volvulus in large and small animals. Caecal dilation, torsion. Affections of rectum: prolapsed, rectal tear, anal adenitis. Congenital anomalies of colon, rectum, anus. Urolithiasis and urethral stenosis their sequelae and surgical treatment. Surgical affections of penis and sheath, affections of testicle, scrotum. Surgical affections of udder and teat.

Body conformation of the horse in relation to lameness (trunk, fore limb and hind limb) Lameness: definition, classification and diagnosis. Shoulder slip (sweeny), bicipital bursitis, omarthritis, capped elbow, radial paralysis, carpitis, bent knee, and knock-knee. Hygroma of knee, open knee, blemished knee. Fracture of carpal bone, fracture of accessory carpal, contraction of digital flexors. Splints, sore shin, wind puffs, sesamoiditis. Osslets, ringbone, quitter, side bone, Navicular disease, pyramidal disease. Laminitis, sand crack, seedy toe, fractures of third phalanx, pedal osteitis, and sole penetration. Cancker, thrush and corn, Monday morning disease, cording up, myositis of psoas, iliac thrombosis, Crural paralysis, trochantric bursitis. Upward luxation fixation of patella, stringhalt, gonitis, rupture of tendoachilles, Thoroughpin, bog spavin, spavin, curb, capped hock. Bovine lameness: contusion of sole, ulceration of sole, septic laminitis, avulsion of hoof and subluxation of patella. Interdigital fibroma, cyst, sand crack, hoof deformities. Specific joint disease (septic arthritis, degenerative joint



disease) in large animals and their treatment. Specific joint disease in dogs and their treatment. (Intervertebral disc protrusion, spondylosis) elbow and hip dysplasia Fracture and dislocation: Classification and general principles of fracture repair. Application of external and internal immobilization for different bone fractures in small and large animals. Complications of fracture healing. Affections of tendon, tendon sheath, bursa and ligaments. Principles of physiotherapy, classification, scope and limitations.

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प्रश्न पत्र 4 'क' का पाठ्यक्रम

पशु गर्भ विज्ञान

**(Veterinary Obstetrics & Gynaecology)**

Reproductive tracts in domestic animals. Estrus detection. Different methods of pregnancy diagnosis, superfoetation and superfecundation, Anatomical, hereditary, nutritional, hormonal & infectious causes of infertility & sterility, Anoestrus, Repeat Breeding, Endometritis, Cystic ovarian disease, Pseudopregnancy in bitch, Transmissible venereal tumor in bitches.

Synchronisation of estrus, Embryo transfer Technology, Types & function of placenta, Diseases and accidents during gestation, Abortion, Fetal mummification, Fetal maceration, Pyometra, uterine torsion, dropsy of fetal membrane cerico-vaginal prolapse, Termination of pregnancy, Parturition & involution of uterus. Care and management of dam & newborn. Types causes of dystokia, approach, diagnosis and treatment of dystokia, obstetrical operations. Uterine prolapse, retention of placenta, metritis.

Forms of male infertility. Diseases of male genitalia & coital injuries. Testicular hypoplasia & degeneration, Artificial insemination. Methods of semen collection, semen evaluation. Extension, of semen, Extenders used for semen preservation. Preservation of semen at different temperature. Technique of A.I.



प्रश्न पत्र 4 'ख' का पाठ्यक्रम

पशु पोषण, विज्ञान  
**(Animal Nutrition)**

Nutritional terms and their definitions. Importance of minerals (major and trace elements) and vitamins in health and production, their requirements and supplementation in feed. Common feeds and fodders, their classification, availability and importance for livestock and poultry production. Various physical, chemical and biological methods of feed processing for improving the nutritive value of inferior quality roughages. Preparation, storage and conservation of livestock feed through silage and hay and their uses in livestock feeding. Harmful natural constituents and common adulterants of feeds and fodders. Feed additives in the rations of livestock and poultry; Antibiotics and hormonal compounds and other growth stimulants, and their uses.

Importance of scientific feeding. Norms adopted in conducting digestion trial. Measurement of digestibility. Factors affecting digestibility of a feed. Feeding standards, their uses and significance, merit and demerits of various feeding standards with reference to ruminants. Nutrient requirements of livestock-energy and protein requirement for maintenance and production. Balanced ration and its characteristics. General principles of computation of rations. Formulation of rations and feeding of dairy cattle and buffaloes during different phases of growth, development and production (neonate, young, mature, pregnant, lactating and dry animals; breeding bull and working animals). Formulation of ration and feeding of sheep and goat during different phase of growth, development and production (milk, meat and wool). Use of NPN compound for ruminants.

Nutrient requirements in poultry, swine and equine-Energy and protein requirement for maintenance and production. Formulation of rations as per Bureau of Indian Standards (BIS), National Research Council (NRC) and Agricultural Research Council (ARC) specifications. Feeding of swine (Piglets, Growers Lactating and pregnant sows,

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Breeding boar, Fattening animals), equine (foal, yearling, broodmare, stallion and race horses) and poultry (Starter, Growers Broilers, Layers) With conventional and unconventional feed ingredients. Feeding of ducks. Laboratory Animal Nutrition: Nutrient requirements of mice, rat, rabbit and guinea pig. Diet formulation and preparation and feeding practices. Feed supplements. Feeding of various categories of livestock during scarcity period.



प्रश्न पत्र 5 'क' का पाठ्यक्रम

पशु उत्पादन एवं प्रबंधन .

**(Livestock Production & Management)**

Introductory animal husbandry. Common animal husbandry terms. Body conformation and identification. Dentition and ageing of animals. Transport of livestock by rail, road, air and on foot. Common farm management practices including disinfection, isolation, quarantine and disposal of carcass. Introduction to methods of drug administration. Common vices of animals, their prevention and care. Organic livestock production.

General principles affecting the design and construction of building for housing for various livestock species. Selection of site. Arrangements of the building with special reference to Indian conditions. Creation of local materials. Building materials used for construction of wall, roof and floor of animal houses, their characteristics, merits and demerits. General management and feeding practices of calves, heifers, pregnant, lactating and dry animals, and bulls. Housing systems, layout and design of different buildings for dairy animal including backyard dairy and mixed farms. Routine dairy farm operations Methods of milking and precautions. Factors affecting quality and quantity of milk production. Clean milk production. Dairy farm accounts and records. Concepts of input and output cost of dairy farming (small and large holdings). Important traits for meat, milk and fibre. General management and feeding-practices during different stages of growth, development and production (milk, meat and wool) in small and large holdings. Breeding schedule and management of ram and buck. Weaning and fattening of lambs and kids. Glossaries of terms in work industry. Shearing of sheep. Housing systems, layout and design of different buildings for small ruminants. Judging for the quality and confirmation of body parts of cattle buffalo, sheep and goat. Culling of animals.

Importance of grasslands and fodders in livestock production. Agronomical practices for production of leguminous and non-leguminous

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fodders in different seasons. Soil and water conservation and irrigation drainage for fodder production. Harvesting and post harvest techniques for fodder preservation. Fodder production for small units through inter cropping or back yard cultivation. Recycling of animals washings and waster in fodder production.

Introduction and scope of swine farming in the country. Demography of swine population. Management of different categories of swine for optimal production: breeding and pregnant sows; sows at farrowing and after farrowing; pig-lets, growing stock, lactating sows, feedlot stock. Housing of swine. Swine feeds and feeding. Economics of pig farming. Equine population of India. Horses, donkeys and mules and their utiily. Dentition and ageing of horses. Handing, restraining, care and routine management of equines including grooming, sadding and exercise. Stable and its management. Feeding routine for horse, Vices o horses. Care of stallion, Mating of Horses broodmare and its care. Foaling and care of newborn. Breeding mules. Care of race horses and preparing horses for show. Doping and its detection.

Importance of laboratory animal breeding care and housing standards of mice, rats and guinea pigs. General considerations on feeding and breeding of laboratory animals. Scope of rabbit farming in the country, breeds and their distributions in India and abroad. Care and management of kindling animals and kindling. Care of new born, growing stock. Harvesting of products Breeding, and selection techniques for optimal production feeds and feeding for rabbit production. Housing of rabbit. Diseases and parasite control, hygienic care.

Reproduction in fowl, male and female reproduction systems, formation of eggs, structure of eggs. Important economic traits of poultry, egg production, egg weight, egg quality, growth, feed consumption and feed efficiency, fertility and hatchability, plumage characteristics and comb types. Scavenging system of management: raising of chicks, scavenger feed base of village. Low input technology; backyard and semi intensive unit of various sizes; their description, management and economic achievements.



Mixed farming and poultry raising. Brooding and rearing practices used for chicken duck, quail, turkey. Economic production of chicken, Hatching and feeding norms for poultry. Marketing of poultry and poultry products.

**HOUSING** : Location of poultry. Types of poultry houses. Different types of rearing-advantages and disadvantages. Space requirement for different age groups under different rearing systems. Environmentally controlled housing. **BROODING MANAGEMENT** - Brooding: Types of brooders; preparation shed to receive chicks; importance of environment (temperature, humidity and ventilation). Feeding and vaccination in early stage of chicks.

**REARING AND MANAGEMENT** - Care and management of growing. Laying/broiler birds of both breeders and commercial categories of poultry. Battery cage management: different types and sizes. Poultry judging.

**LITTER MANAGEMENT** - Litter materials, litter-borne diseases and control; potential for poultry litter used as fertilizers; recycling for livestock feeding and power generation; Special management care in adverse weather conditions/stress; summer management; dietary modification to minimize heat stress; special management during rainy and winter season; other stress management-vices in poultry and its remedial measures.

**BIOSECURITY** - Proactive measures to minimize entry of infections in farm premises-farm fencing, disinfectant pits, restriction of movement, etc.

**FEEDING** - digestive system and digestion in chicken. Classification, selection of common feed ingredients and their nutrient composition. Nutrient requirement for different age groups. Feed formulation, economics of feed formulation-cost/unit nutrient. Feeding systems and feeding management, economization of poultry feeding. Feed restriction, Disinfection; Types of disinfectants; mode of action; recommended procedure; precaution and handling.

**ECONOMICS** - Economics of layer and broiler production; Projects are ports layer in different systems of rearing. Projects reports for broilers-

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प्रश्न पत्र 5 'ख' का पाठ्यक्रम

पशु प्रजनन एवं अनुवांशिकी  
**(Animal Breeding & Genetics)**

Introduction and importance. Statistics, parameters, observation, recording and graphical representation of data. Probability and probability distributions: binomial, Poisson and normal. Measures of central tendency and measures of dispersion (simple and grouped data): Moments and skewness to kurtosis. Correlation and regression. Tests of hypothesis and t, Z,  $X^2$  and F tests of significance and their inter-relationship.

Completely Randomized Design (C.R.D.) and Randomized Block Design (R.B.D). Analysis of variance.

Computer and its components: Types of computer; Hardware, software, human ware and firm ware. Type of memories. Computer languages and their scope and limitations. Computer programming: Use of computer in animal husbandry and veterinary practices.

History of Genetics, Chromosome numbers and types in livestock and poultry. Mitosis, Meiosis and gametogenesis. Overview of Mendelian principles; Modified Mendelian inheritance: gene interaction; multiple alleles; lethal; sex-linked, sex limited and sex influenced traits; linkage and crossing over, Gene and genotypic Hardy - Weinberg law and its application; Forces (e.g. Mutation, migration, selection and drift) Changing gene and genotypic frequencies value means components of phenotypic and Genotypic variance; Concepts of genotype and environment interact, Resemblance between relatives; Heritability, repeatability, genetic and phenotypic correlations.

Classification of breeds; Economic characters of livestock and poultry and their importance; Breeding/Selection techniques for optimal production. Selection; Response to selection and factors affecting it, Bases of selection individual, pedigree, family, sib, progeny and combined; indirect selection; Multitrait selection.



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Classification of mating systems; Inbreeding and out breeding-genetic and phenotypic consequences viz., inbreeding depression and heterosis; Systems of utilization of heterosis; Selection for combining ability; Breeding methods for the improvement of dairy cattle and buffaloes (crossbreeding, sire evaluation, field progeny testing, open nucleus breeding system (ONBS)), sheep, goat, swine and poultry; Breed development; Conservation of germplasm.

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