



## ODISHA PUBLIC SERVICE COMMISSION

ADVERTISEMENT NO. 09 OF 2016-17

**Special Recruitment to the post of Veterinary Assistant Surgeon, Class-II (Group-B) of Odisha Veterinary Service under Fisheries & A.R.D. Department.**

WEBSITE – <http://opsconline.gov.in> and <http://opsc.gov.in>

Applications are invited Online through Proforma Application Form to be made available on WEBSITE (<http://opsconline.gov.in>) from **07.12.2016 to 28.12.2016** (Note **30.12.2016** is the last date for payment of application fee) for recruitment to the post of Veterinary Assistant Surgeon in Class-II (Group-B) of Odisha Veterinary Service cadre under Fisheries & A.R.D. Department in the pay scale of Rs-9,300/- 34,800/- carrying Grade Pay of Rs.4,600/- with usual Dearness and other allowances as may be sanctioned by the Government of Odisha from time to time. The posts are temporary and likely to be permanent.

The Online application must be followed by submission of Hard copy of the same along with copies of certificates by the last date **07.01.2017**.

2. **VACANCY POSITION:** As per requisition filed by the Fisheries and A.R.D Department, the vacancy position along with reservation thereof is given below:

Sl. No	Category	Vacancy	P.H	Ex-S.M	Sports Person
1	S.T	111 (37-W)	03	03	01
2	S.C	32 (11-W)	01	01	NIL
	<b>TOTAL</b>	<b>143 (48-W)</b>	<b>04</b>	<b>04</b>	<b>01</b>

**N.B-The posts are reserved for only Scheduled Tribes and Scheduled Castes of Odisha.**

(a) The candidates belonging to P.H/ Ex –Servicemen/Sports Person, when selected as per reservation provided for them, shall be adjusted against the category to which they belong.

(b) The Functional classification and physical requirement for P.H Person are given below.

Physical Requirements	Categories of disabled suitable for the job
S,ST,SE,H, MF and RW	OL,BL(MNR)
Note-[S- Work performed by sitting (on bench or chair), ST-Work performed by standing, SE-work performed by seeing, H- Work performed by hearing/speaking, MF-work performed by manipulating (with fingers), RW- Work performed by reading and writing]	Note-[OL-One leg affected (R and/or L), BL-Both legs affected but not arms, Mobility not restricted. Non-Surgical Jobs].

(c) In the event of non-availability or availability of insufficient number of eligible /suitable women candidate(s) belonging to any particular category, the vacancies or the remaining vacancies shall be filled up by male candidates of the same category.

(d) Exchange of reservation between Scheduled Caste and Scheduled Tribe will not be considered.

(e) The number of vacancies to be filled up on the basis of this recruitment is subject to change by Government without notice, depending upon the exigencies of public service at the discretion of the State Government.

3. **AGE:** A candidate must be under 32 (thirty two) years and over 21 (twenty one) years of age on the 1<sup>st</sup> day of January, 2016 i.e. he/she must have born not earlier than 2<sup>nd</sup> January, 1984 and not later than 1<sup>st</sup> January, 1995. Age relaxation shall be as per Govt. Rules prescribed for the purpose.

**SAVE AS PROVIDED ABOVE, THE AGE LIMITS PRESCRIBED CAN IN NO CASE BE RELAXED.**

The date of birth entered in the High School Certificate or equivalent certificate issued by the concerned Board/Council will only be accepted by the Commission.

4. **EDUCATIONAL QUALIFICATION :**

A candidate must possess a Bachelor's Degree in Animal Husbandry & Veterinary Science or its equivalent qualification from any recognized University in India or abroad and must have registered himself/herself under the Odisha Veterinary practitioners Act, 1970.

5. **APPLICATION FEE:** Candidates belonging to Scheduled Caste, Scheduled Tribe of Odisha and persons with Disability (whose disability is not less than 40%) are exempted from payment of this fee.

6. **METHOD OF SELECTION:** The selection of candidates for recruitment to the post shall be made on the basis of written examination and Viva Voce Test.

The Plan of Written Examination is mentioned below. The course syllabus is provided in the **Annexure-A** of this advertisement.

Subject	sitting	Duration	No. of Questions	Total Marks	Type of questions
Paper-I (Veterinary Science)	1st	2 ½ hrs	200	400	Objective, General awareness & subject specific.
Paper-II (Animal Science)	2nd	2 ½ hrs	200	400	-do-

7. **PLACE OF EXAMINATION:**

The written examination will be held at Balasore, Berhampur, Bhubaneswar, Cuttack and Sambalpur depending on the number of candidates from the respective Zone. In case sufficient numbers of candidates are not available for any of the Zones of Balasore, Berhampur, Bhubaneswar and Sambalpur, the candidates opting for those Zones will be accommodated at Cuttack.

The candidates are to mention their choice of Examination Zone at appropriate place in the Online Application Form.

8. **OTHER ELIGIBILITY CONDITION:**

(i) The candidate must be a citizen of India.

(ii) The candidate shall be able to speak, read and write Odia fluently and must have passed at least an examination in Odia language equivalent to that of Middle English School Standard conducted by the Board of Secondary Education, Odisha or the Education Department of the Government of Odisha or any other Board or Council of Secondary Education approved by the Government of Odisha in support of passing of Odia Language (M.E. School Standard);

(iii) A candidate, who has more than one spouse living, will not be eligible for appointment unless the State Government has exempted his/her case from operation of this limitation for any good and sufficient reasons;

(iv) Government servants, whether temporary or permanent, are eligible to apply provided that they possess the requisite qualification and are within the prescribed age-limit as provided under Para 3 and 4 of this advertisement. **They must inform their respective Head of Offices in Writing regarding submission of their application for this recruitment and obtain "No Objection Certificate";**

(v) If a candidate has at any time been debarred for certain period/chance(s) by the Odisha Public Service Commission or other State Public service Commission or UPSC from appearing at any examination/ interview, he/she will not be eligible for such recruitment for that specific period /chance(s);

(vi) **Only those candidates, who fulfill the requisite qualification and are within the prescribed age limit etc. by the closing date of Online Application, will be considered eligible;**

9. **OTHER CONDITIONS:**

(i) A candidate found guilty of seeking support for his/her candidature by offering illegal gratification or applying pressure on any person connected with the conduct of the recruitment process or found indulging in any type of malpractice in course of the selection or otherwise, shall, in addition to rendering himself/herself liable to criminal prosecution, be disqualified not only for the recruitment for which he/she is a candidate, but also may be debarred, either permanently or for a specified period, from any recruitment or selection to be conducted by the Commission;

(ii) The provisions of the Odisha Conduct of Examination Act, 1988 (Odisha Act-2 of 1988) are applicable to the examinations conducted by the Odisha Public Service Commission.

(iii) **Application submitted to the OPSC, if found to be incomplete in any respect are liable to rejection without entertaining any correspondence with the applicants on that score;**

(iv) Admission to the Examination/Viva Voce test will be provisional. If on verification at any stage before or after the Examination /Viva Voce test, it is found that a candidate does not fulfill all the eligibility conditions, his/her candidature will be liable to rejection. Decision of the Commission in regard to eligibility or otherwise of a candidate shall be final;

(v) This advertisement should not be construed as binding on the Government to make appointment.

(vi) **Concession meant for S.Cs. and S.Ts by birth are admissible to the Scheduled Castes, Scheduled Tribes of Odisha only;**

(vii) Candidates are required to take due care to annex with the copy of the Printout/Hard Copy of Online Application , the copies of Certificates and other requisite documents as stated under Para-10 of this advertisement;

(viii) **No one will be admitted to the examination unless he/she holds a certificate of admission. The eligible candidate are required to download their Admission Certificate from the Website of the Commission and produce the same before the Center Supervisor for admission to the examination. No separate admission certificate will be sent to the candidates.**

(ix) All persons appointed under the Government of Odisha on or after 1<sup>st</sup> January 2005 shall not be eligible for pension as defined under sub-rule(1) of rule -3 of the Odisha Civil Service (Pension) Rules, 1992; but shall be covered by the new structured defined contribution Pension Scheme in accordance with the Odisha Civil Services (Pension) Amendment Rules,2005.

(x) Any misrepresentation or suppression of information by the candidate in the Online Application Form, will result in cancellation of his/her candidature or penalty, as may be decided by the Commission.

(xi) Mere empanelment in the select list shall not confer any right for appointment unless the Government is satisfied after making such enquiry as may be deemed necessary that the candidate is suitable in all respects for appointment to the service;

(xii) A candidate who claims change in his/her name after having passed the High School certificate Examination or equivalent examination, is required to furnish copy of publication of the changed name in the local leading daily newspaper as well as copy of notification in the Odisha Gazette in support of his/her change of name.

(xiii) Every candidate selected for appointment shall have to serve the initial period of minimum three years in specific designated area like K.B.K. Districts.

**10. CERTIFICATES/DOCUMENTS TO BE ATTACHED :** Candidates are required to submit along with the printout/hard copy of Online application, true copies of the following certificates and documents, duly attested by the candidate or a Gazetted Officer or Notary Public. The candidates are also required to mention on each document "submitted by me" and put their full signature on the same. **They must not attach original certificates with their applications.** Only those candidates, who are called for the Viva Voce test, will be required to bring with them the original certificates, mark-sheets etc. for verification at the time of Viva Voce test.

If a candidate fails to furnish any of the original documents in respect of the attested copies submitted with the application for verification on the date of interview, before the interview starts, he/she shall not be allowed to appear at the interview.

- (i) H.S.C. or equivalent certificate in support of declaration of age issued by the concerned Board/Council;
- (ii) +2 Sc. / Higher Secondary Examination Certificate issued by the concerned Board/Council;
- (iii) B.V. Sc. Degree Certificate issued by the recognized University;
- (iv) Mark-sheets in support of all the aforesaid examinations i.e. H.S.C. to Bachelor Degree in Veterinary Science including fail Marks if any, issued by the Board /Council/University.
- (v) Registration certificate under the Odisha Veterinary Practitioners Act, 1970.

**NOTE-1** (a) Candidates who have not been awarded percentage of marks, but only "GRADE MARKS", should, along with their applications, produce the conversion certificate from the concerned University indicating the actual equivalent percentage of marks and the conversion formula failing which, their applications are liable to be rejected.

(b) While filling up the relevant box of the Online Application Form, the candidate has to mention details of marks secured in each Semester/ Annual examination leading to award of Degree,

- (vi) Two recent passport size photographs (unsigned and unattested), which has been uploaded in the Online Application Form.
- (vii) Certificate of character from the Principal/Proctor/Dean or Professor in charge of a Department of Teaching of the College or University in which he/she last studied;
- (viii) Caste Certificate by birth in support of claim as S.C. / S.T, whichever applicable.
- (ix) Required Odia pass certificate from the Board of Secondary Education, Odisha indicating Odia as a language subject equivalent to M.E. School Standard or a certificate from the Principal/Headmaster of the School indicating that the candidate has passed Odia in M.E. Standard, if not passed Odia as a subject in the High School Certificate/equivalent examination;
- (x) Discharge Certificate of Ex-Serviceman issued by the Commanding Officer of the Unit last served. Ex-servicemen must submit an affidavit undertaking that he has not been appointed against any civil post after retirement from military service.

- (xi) Identity Card of Sportspersons issued by the Director of Sports, Odisha, wherever applicable;
- (xii) Disability Certificate (indicating percentage of disability) issued by the concerned Medical Board, wherever applicable;
- (xiii) If a candidate claims to possess qualification, equivalent to the prescribed qualification, the rule/authority (With number and date) under which it is so treated, must be furnished with the Printout/Hard Copy of the Online Application Form.

**NOTE-2** :Degree Certificate, Caste Certificate, Odia Test Pass Certificate, Discharge Certificate of Ex-serviceman, Identity Card of Sportsperson and Identity Card of Physically Handicapped Person must have been issued by the competent authority before the last date fixed for receipt of applications as indicated at SL. No. (3) on the top portion of this Advertisement.

**11. HOW TO APPLY:**

- (a) **Candidates must go through this Advertisement before filling up the online application form.**
- (b) **Candidates must apply online through the website of OPSC <http://opsconline.gov.in>. Applications received through any other mode would not be accepted and summarily be rejected.**
- (c) **Before filling up the online application form, the candidates must go through the following documents available at OPSC portal.**
  - i) **Instructions to fill up the online application form;**
  - ii) **Guidelines for scanning and Uploading of Photograph, Full Signature and Left Thumb Impression.**
- (d) **Candidates are requested to upload the scanned image of latest passport size photograph along with scanned image of his/her full signature and scanned image of Left Thumb Impression(LTI) in the Online Application Form. The uploaded photograph, full signature and LTI must be clearly identifiable /visible, otherwise the application of the candidate is liable to be rejected by the Commission and no representation from the candidate will be entertained.**
- (e) **Candidates should keep at least 2 copies of the latest passport size photograph which is uploaded on the online application form for future use.**
- (f) **On successful submission of the Online Application Form, a Unique Registration ID will be displayed on the screen as well as on the top of the application form. Candidates are required to take a printout of the finally submitted online application form and put his/her signature under the Declaration for submission to O.P.S.C along with copies of requisite certificates and documents.**
- (g) **Candidates are required to send the Printout/Hard copy of the filled in Online Application duly signed under the declaration along with copies of required certificates and documents etc, as provided under para-10 of this Advertisement by Registered Post/Speed Post to the Secretary, Odisha Public Service Commission, 19, Dr. P.K. Parija Road, Cuttack-753001 so as to reach the same in the office of the OPSC on or before **07.01.2017**.**

The envelope containing the printout/hard copy of the Online Application along with requisite certificates and documents must be super-scribed "**Application for special recruitment to the post of Veterinary Assistant surgeon**". Application received after the closing date shall not be entertained. The Commission will not take any responsibility if the Application is not received in time.

(i) The candidates are advised to submit the Online Application well in advance without waiting for the closing date to avoid last hour rush.

(j) Certificate of admission to the examination /interview of the provisionally shortlisted candidates will be uploaded in the website of the OPSC. The programme of Examination/Interview will be published in the website and in the news-paper .The candidates are required to download their admission certificate from the website of the Commission. No separate correspondence will be made on this score.

12. **FACILITATION COUNTER:**

For any technical guidance on filling up of Online Application Form, the candidates may contact facilitation counter of O.C.A.C. over **Toll Free No.18003456770 or 155335** between 10.30 A.M to 1.30 P.M and 2.00 P.M to 5.00 P.M on any Odisha Government working day.

In case of any guidance/information regarding application or candidature etc., candidates may contact the O.P.S.C. Facilitation Counter over **Telephone No.0671-2304141/2305611 & Extn.-207** in any working day between 10.30 A.M. to 1.30 P.M. & 2.00 P.M. to 5.00 P.M.

Regarding difficulty in payment of fee, if any, the candidates may contact **SBI** over **Telephone No. 0671-2368267 and 9437039604**.

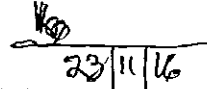
The candidates may also visit the Website of the Commission at **<http://opsc.gov.in>** for detailed information about the programme of the examination etc. and also keep track of publication of various notices to the effect in the leading local daily newspapers for information.

## Closing Dates

- (a) ON LINE APPLICATIONS SHALL BE AVAILABLE IN THE WEBSITE FROM 07.12.2016 TO 28.12.2016, TILL 11:59 P.M
- (b) LAST DATE FOR RECEIPT OF APPLICATION FEE AT ANY S.B.I. BRANCH IS 30.12.2016.
- (c) LAST DATE FOR SUBMISSION OF PRINT OUT / HARD COPY OF ONLINE APPLICATION FORM ALONGWITH COPY OF SPECIFIED DOCUMENTS / CERTIFICATES IS 07.01.2017 TILL 5.00 P.M.

**NB:-**THE ONLINE APPLICATION FORM IF FOUND DEFECTIVE IN ANY RESPECT ARE LIABLE TO BE SUMMARILY REJECTED.

CUTTACK  
DATE : 23 NOV 2016

  
23/11/16  
SPECIAL SECRETARY,  
ODISHA PUBLIC SERVICE COMMISSION,  
CUTTACK.



## ANNEXURE-A

### **Course Syllabus and Plan of Written Examination for recruitment of Veterinary Assistant Surgeon, Class-II (Group-B) under Fisheries & A.R.D. Department.**

---

The Written examination will consist of two papers (Paper-I and Paper-II) ,each paper carries 400 marks.

#### **A. Plan of Examination**

Subject	Sittings	Duration	No. of Questions	Total marks	Type of questions
Paper-I (Veterinary Science).	1 <sup>st</sup>	2 ½ hrs	200	400	Objective, General awareness & subject specific.
Paper-II ( Animal Science).	2 <sup>nd</sup>	2 ½ hrs	200	400	do

#### **B . Outline of course syllabus**

##### **PAPER-I (VETERINARY SCIENCE)**

1. Veterinary Medicine 2. Veterinary Gynaecology and Obstetrics 3. Veterinary Pharmacology and Toxicology 4. Veterinary Parasitology 5. Veterinary Anatomy 6. Veterinary Public Health 7. Veterinary Surgery and Radiology 8. Veterinary Pathology 9. Veterinary Microbiology

##### **1. Veterinary Medicine**

General systemic states (Hyperthermia, fever, shock, dehydration) ,Diseases of various systems of Ruminants (Digestive system, Respiratory system), Infectious diseases of Animals: Bacterial diseases –HS, BQ, Enterotoxaemia, TB, JD, Anthrax, Brucellosis, Leptospirosis). Viral Diseases- FMD, IBR, Canine Parvo, Canine Distemper,. Fungal diseases - Ring Worm, Aspergillosis. Parasitic diseases -Ascariasis, Fasciolasis, Amphistomiasis, Taenia, Mange. Metabolic & Production diseases- Milk fever, ketosis, downer's cow syndrome. Nutritional deficiency diseases- Post Parturient haemoglobinuria, Avitaminosis A, E, D, B and deficiencies of Se, Cu, Fe, Co. Diseases of poultry-RD, IBD, Colisepticaemia)

## 2. Veterinary Gynaecology and Obstetrics

Puberty & sexual maturity in male and female animals. estrus cycle animals. Gestation and its various stages. Pregnancy diagnosis in different species of animals. Fertility, sterility and infertility of various nature. Anoestrus and repeat breeding. Specific and nonspecific agents affecting genital organs of female. Clinical use of hormones in female fertility management. Breeding and pseudopregnancy in bitch. Induction and synchronization of oestrus. Assisted reproductive technologies. Types and function of placenta. Diseases and accidents during gestation. Abortion. Pre and post partum complications. Uterine torsion and different types of prolapse. Dystocia, Various obstetrical operations. Post partum diseases and complications. Various forms of male infertility, its diagnosis and treatment. Impotentia foecundii and impotentia generandi. Artificial insemination. Various methods of semen collection, storage and shipment and its assessment for determination of semen quality.

## 3. Veterinary Pharmacology and Toxicology

History of pharmacology and toxicology, scope of pharmacology, pharmacokinetics: absorption, distribution, metabolism of drugs, pharmacodynamics: mechanism of drug action, types of receptors, receptor action, drug interaction, drug development and designing, drugs acting on digestive system, cardiovascular system, urinogenital system, sympathetic and parasympathetic system, neuromuscular blocking agents, ganglionic stimulants and blockers, autacoids: histaminergics and antihistamines, serotonergics and 5-HT blockers, prostaglandins, bradykinins, pharmacology of neurotransmitters, theories of anaesthetics, intravenous, dissociative anaesthetics, local anaesthetics, hypnotics, sedatives, tranquillizers, psychotic drugs, anticonvulsants, opioids, NSAIDs, antibacterial, antifungal, anthelmintic, anticancer, antiviral, antiprotozoal agents, general toxicology, toxicity of heavy metals, plant poisons, agrochemicals, zootoxins and drugs. Evaluation of toxicity, residual toxicity.

## 4. Veterinary Parasitology

Host-parasitic relationship (Parasitism, Mutualism, Symbiosis, and Commensalism). Different type of host and Parasites. Study of common parasites of ruminants. Fasciolidae, Paramphistomidae, Schistosomatidae, Moniezia, Taeniidae, Humonchus, Thelazia, Onchocerca, Esophagistomum, Bunostomum, Dirofilaria, Ascaridae, Trypanosomatidae, Eimeriidae, Babesiidae, Theileriidae, Ixodidae. Study of common Parasites of Dog. Echinostomatidae, Taeniidae, Ancylostomatidae, Toxocara, Demodex, Sarcoptes. Study of common Parasites of Poultry – Prosthogonidae, Syngamidae, Eimeriidae. Control of Gastro intestinal nematodes in ruminants. Control of Arthropodes. Common Anthelmintics, Insecticides and their uses.

### **5. Veterinary Anatomy**

Gross Anatomy of viscera organs, heart, blood vessels, nervous system, bones of the appendicular skeleton, eye and ear. Gross study of the bones of appendicular and axial skeleton of Ox/buffalo as type species and comparison of sheep, goat, pig, horse, dog and fowl. Classification and structure of muscles, joints, ligaments and nerves of domestic animals. Histology of the visceral organs, lymphatic system and nervous system. Embryology of domestic animals and birds. Development Anatomy of visceral organs. Foetal circulation. Topographic anatomy of the thoracic, abdominal and pelvic visceral organs, nerve, locks, auscultation, palpation and percussion, and sites of intramuscular injections in small and large domestic animals.

### **6. Veterinary Public Health**

Meat inspection, methods of slaughter, transportation of meat animals. Meat preservation and Meat-borne diseases. Hygienic processing of milk products, sanitation and sources of contamination of milk. Milk-borne diseases, Bacteriophage and germicidal properties of milk. Objectives, Classification and methods of prevention, control and eradication of zoonotic diseases. Socio-economic condition and human health zoonoses. Sources, quality, contamination and prevention of water. Disposal of sewage, sanitation of animal house. Air pollution, prevention of air and water-borne diseases. Recycling of farm wastes.

### **7. Veterinary Surgery and Radiology**

General Surgery and Anaesthesiology : Sterilization, preparation of surgical pack, bandaging, sutures, suturing materials, different knots, wound, fractures, dislocation and other affections of joints, catheterization and haemostasis. Pre-anaesthetics, general anaesthesia and different combinations used in small animal, local and regional anaesthesia, general anaesthesia in large animal. Radiology. Regional and Clinical Surgery : Types of X-ray machine, adaptation of safety measures, use of diagnostic x-ray, radiographic film processing, interpretation, ultra sound. Affection of lip, cheek, tongue, palate, nose, horn, teeth, salivary gland, eye, ear, neck and oesophagus. Regional and Clinical Surgery-II and Lameness :Surgical approach to thorax, abdomen, urogenital system. Hernia and its treatment. Affection of limbs, hoof and foot. Lameness, soundness certificate and physiotherapy.

## 8. Veterinary Pathology

Causes of diseases, haemodynamic derangements, cellular degeneration and necrosis, apoptosis, gangrene, calcification, jaundice, growth disturbances, inflammation, wound healing, autoimmune diseases, neoplasms and their classification including benign and malignant tumors. Pathological changes in digestive, respiratory, musculoskeletal, cardiovascular, haemopoetic, urinary, reproductive, nervous and endocrine systems, skin, eye and ear. Pathology of viral diseases like Foot and Mouth disease, PPR, Rabies, Canine distemper, Infectious canine hepatitis, Canine parvovirus, etc, Bacterial diseases like Tuberculosis, Johnes disease., anthrax, clostridial diseases, pasteurellosis, brucellosis, salmonellosis and colibacillosis etc, mycoplasma diseases, fungal diseases, helminthic and protozoan diseases, nutritional and metabolic diseases involving carbohydrates, protein, fat, minerals, vitamins metabolism; Toxicosis. Pathology of bacterial, viral, mycoplasmal, parasitic, fungal, nutritional diseases and vices of poultry

## 9. Veterinary Microbiology

History of Microbiology , Classification and nomenclature of bacteria, Pathogenicity, Virulence and infection, Resistance and susceptibility of host, Bacterial genetics, Plasmids, Antibiotic resistance. General properties, Replication, Cultivation and Purification of viruses. Cell-Virus interactions, Viral genetics , Interferon. Immune system, Development of humoral and cellular immune responses, Antigens, Antibodies, Major histocompatibility complex, Serological reactions. Autoimmunity and immunotolerance. Immunization of animals, Biologicals. Pathogenicity and diagnosis of bacterial and fungal diseases caused by Staphylococcus, Streptococcus, Bacillus, Clostridium, Mycobacterium, Enterobacteriaceae, (E.coli, Samonella, Yersinia, Klebsiella and Proteus), Campylobacter, Brucella, Pasteurella and Pseudomonas, Listeria, Actinobacillus, Actinomyces, Arcanobacterium and Corynebacterium, Dermatophilus, Fungi: Dermotophytes, Rhinosporidium, Candida, Mycotic mastitis and abortion, Mycotoxicoses. Various families of DNA and RNA viruses causing diseases in livestock and poultry, laboratory diagnostic techniques, immunity to viral infections.

**PAPER-II (ANIMAL SCIENCE)**

1. Veterinary Physiology 2. Veterinary Biochemistry 3. Veterinary and Animal Husbandry Extension 4. Animal Nutrition 5. Livestock products Technology. 6. Livestock production and Management 7. Animal Genetics and Breeding.

**1. Veterinary Physiology**

Properties of blood as body fluid, Anaemia, Immunogenic functions of leucocytes, Blood coagulation, Cardiac cycle, Regulation of cardiac output, ECG and its interpretations, Haemodynamics and Circulatory shock, Role of kidney in body homeostasis, Neuromuscular junction, Excitation – contraction coupling, Mechanism of muscle contraction, General organization of Nervous system, Propagation of impulse, Mechanism of synaptic transmission, Sensory receptors, Sense organs, Digestion in monogastric and ruminant animals, Mechanism of breathing, Transport of blood gasses, Respiration in birds, Endocrine control of body functions, Role of hypothalamo - hypophysial axis on endocrine control, Feedback mechanism of hormone secretion, Male and female reproductive hormones, Endocrine control of male and female reproductive life, Mechanism of heat and cold adaptation in domestic animals.

**2. Veterinary Biochemistry**

Study of chemistry, properties and function of carbohydrates, lipids, proteins, vitamins, and nucleic acids. Enzyme – Definition properties, factors affecting enzyme catalysis kinetics, inhibition and regulation. Study of Metabolism of carbohydrates, lipids and proteins. Electron transport chain, energy metabolism in domestic animals. Principles of DNA recombinant technology, Embryo Transfer Technology(ETT), monoclonal antibodies. Biochemistry of hormones, source, structure and biochemical function. Biochemistry of blood and other body fluids. Role of Blood sugar, ketone bodies, proteins, enzymes, BUN in disease diagnosis. Biochemistry of respiration, renal function, detoxification in the body.

**3. Veterinary and Animal Husbandry Extension**

Philosophy ,Principles of Extension Education. Extension teaching methods, Adoption and diffusion of livestock innovations. Leadership and role of leaders in livestock development. Extension Communication. Farming system and farming type. Livestock and livestock products marketing. Social change Social groups. Social transformation in relation to animal rearing. Animal Husbandry programme, planning and evaluation. Panchayati Raj Institutions.

Animal Husbandry Development Programmes. Information communication technologies. E-learning. Information kiosks. Economics -wants, goods, wealth, utility, price, value, real and money income. Factors of production. Demand projections of livestock produce. Consumer behaviour,demand. supply and price determination. Marketing of livestock, and perishable and non-perishable livestock products. marketing channels ,cattle fairs. Import and export of animal and animal products. Resource Management. Book keeping. Economics of a dairy unit, poultry, piggery, sheep and goat units. Livestock Entrepreneurship.

#### **4. Animal Nutrition**

Measure of feed energy, partitioning of feed energy. Energy and protein requirement for maintenance, growth, pregnancy, lactation, egg, wool and meat production, evaluation of protein quality for ruminants and non-ruminants. Non-protein nitrogen utilization in ruminants diets. Importance of minerals and vitamins in health and production, their requirement and supplementation in feed. Feed additives in rations of livestock and poultry. Preparation and conservation of fodder through hay and silage. Anti- nutritional and toxic factors present in different feed stuffs, Digestibility trials- direct, indirect and indicator methods. Feeding standard: their merits and demerit. Balanced ration and formulation of ration. Feeding of dairy cattle, buffaloes, sheep and goat in maintenance, growth, production and reproduction. Feeding of swine and poultry. Feeding of lab animals (rat, guinea pigs and rabbits). Feeding during scarcity and natural calamities.

#### **5. Livestock Products Technology**

Composition of milk, properties & factors affecting milk composition. Clean milk production, packaging of milk. Preparation of milk products and utilization of By-products. Construction of slaughter house and its sanitation. Pre-slaughter care, transport, Antemortem and post mortem examination, slaughtering and dressing techniques of food animals. Utilization of slaughter house by –products and organic wastes. Structure, composition and nutritive value of meat, poultry and egg. Different preservation techniques of meat and egg. Eating quality attributes sensory evaluation and preparation of diff meat products. Meat Food products order, meat cutting and packaging.

## 6. Livestock Production Management

Common animal husbandry terms, Livestock Production Systems, transport of livestock, organic livestock production. important breeds, feeding and management practices of calves, heifers, pregnant, lactating, dry, bulls and bullocks. Draughtability of cattle & buffalo. Housing systems. Factors affecting quality and quantity of milk production. Clean milk production. Economics of dairy farming. Sheep & goat population and breeds. Feeding and management, housing systems. Judging of cattle buffalo. Importance of grasslands and fodders in livestock production. Classification of fodder crops. Silage and hay making. Swine management. Dentition and ageing of horses. Handling, restraining, care and routine management of equines including grooming, saddling and exercise. Feeding routine for horse. Vices of horses. Doping and its detection. Care and management of mice, rats and guinea pigs. And their feeding . SPF and germ free laboratory animals. Overview of Indian Poultry Industry. Classification of poultry, common breeds of poultry including duck, quail, turkey & guinea fowl and their descriptions and their management. Backyard and semi intensive systems of rearing. Common poultry diseases. Vaccination schedule. Bio- security measures in poultry farms, vices of poultry.

## 7. Animal Genetics & Breeding

History of Genetics, Chromosome numbers and types in livestock and poultry, Mendelian principles, gene interaction; multiple alleles; lethal; sex-linked, sex limited and sex influenced traits; linkage and crossing over, Mutation, Chromosomal aberrations; Quantitative inheritance. Gene and genotypic frequency, Hardy-Weinberg law, Components of phenotypic and genotypic variance; Concept of genotype and environment interaction, Heritability, repeatability, genetic and phenotypic correlations. Classification of breeds; Economic characters of livestock and poultry, Basis of selection, Response to selection, Methods of selection, Selection for combining ability, sire evaluation, field progeny testing, Inbreeding, its merits and demerits, out breeding; crossbreeding, heterosis, open nucleus breeding system (ONBS), Conservation of germplasm, Current livestock and poultry breeding programmes in the state and country.

\*\*\*\*\*