



**ODISHA PUBLIC SERVICE COMMISSION  
ADVERTISEMENT NO. 13 OF 2022-23**

**Recruitment to the posts of Veterinary Assistant Surgeon/ Additional Veterinary Assistant Surgeon in Group – A (Junior Branch-II) of Odisha Veterinary Service under Fisheries & Animal Resources Development Department.**

**WEBSITE – [www.opsc.gov.in](http://www.opsc.gov.in)**

Online applications are invited from the prospective candidates through the Proforma application to be made available on the website (<https://www.opsc.gov.in>). The link for registration shall be available **from 30.12.2022 to 30.01.2023** (Note: **30.01.2023** is the last date for submission of Registered Online Application) for recruitment to **659 (Six Hundred Fifty-Nine)** posts of **Veterinary Assistant Surgeon/ Additional Veterinary Assistant Surgeon** in Group – A (Junior Branch-II) of Odisha Veterinary Service under Fisheries & Animal Resources Development Department in the scale of pay of Rs. 56,100/- in Level 12, Cell -1 of Pay Matrix of ORSP Rules, 2017 with usual Dearness and other Allowances as may be sanctioned by the Government of Odisha from time to time.

**2. VACANCY POSITION:**

As per requisition filed by the Fisheries & Animal Resources Development Department, Government of Odisha, the category wise vacancy position along with reservation thereof is given below:-

Sl. No.	Category	Vacancy
<b>1</b>	<b>2</b>	<b>3</b>
1	UR	302 (100-w)
2	SEBC	05 (02-w)
3	SC	118 (37-w)
4	ST	234 (74-w)
<b>Total</b>		<b>659 (213-w)</b>

Out of the total 659 number of vacancies mentioned above, **18 (06-w)** vacancies are reserved for **Persons with Disabilities (whose permanent disability is 40% and more)** & **05 (02-w)** vacancies are reserved for **Sports persons**. Candidates belonging to the categories of Persons with Disabilities, and Sports Persons shall be adjusted against the category to which they belong. The details are given below: -

Sl. No.	Sub-Category	No. of vacancies reserved
<b>1</b>	<b>2</b>	<b>3</b>
1	Sports Persons	05 (02-w)
2	Persons with Disabilities	18 (06-w)
	(i) Category – I [Low Vision with suitable aid]	05 (02-w)
	(ii) Category – II [Hard of Hearing with suitable aid]	05 (02-w)
	(iii) Category – III [Locomotor Disability] a) OL (One Leg affected (R and/ or L)) b) BL (Both Leg affected but not arms (MNR – Mobility not restricted)) c) Acid attack victims without contracture or loss of upper limb fingers	04 (01-w)
	(iv) Category – IV [Multiple disabilities from among disabilities specified in Category I, II & III.]	04(01-w)
<b>Total</b>		<b>23(08-w)</b>

P.T.O.



- (a) Exchange of reservation between Scheduled Caste and Scheduled Tribe shall not be considered.
- (b) In case of non-availability of eligible/ suitable women candidate(s) belonging to the respective category, the unfilled vacancies of that category shall be filled up by eligible/suitable male candidate(s) of the same category.
- (c) 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 have attained the age of **21(twenty-one)** years and must not be above the age of **38 (Thirty-Eight)** years as on the **1<sup>st</sup> day of January 2022** i.e., he/she must have been born **not earlier than 2<sup>nd</sup> January 1984 and not later than 1<sup>st</sup> January 2001.**

The upper age-limit prescribed above shall be relaxed by **05 (five) years** for candidates belonging to the categories of **Socially & Educationally Backward Classes (S.E.B.C.), Scheduled Castes (S.C.), Scheduled Tribes (S.T.), Women & Ex-Servicemen** and by **10 years** for **Persons with Disabilities** whose permanent disability is **40% (Forty percent)** and more.

**Persons with Disabilities belonging to SEBC/SC/ ST categories are eligible for age relaxation benefit of 15 years.**

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

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

- a) possess a **Bachelor's degree in Veterinary Science & Animal Husbandry (B.V.Sc. & A.H.)** or its equivalent degree from any recognized University / College / Institution in India or abroad.
- b) possess required conversion certificates recognized by Veterinary Council of India (VCI) in case of candidate having Degrees from Universities of Foreign Countries;
- c) possess **valid Registration Certificate** under the Odisha Veterinary Practitioners Act, 1970 (Section 21).

**5. EXAMINATION FEE:**

The examination fee for all categories of candidates has been exempted as per **GA&PG Department Notification No. 9897/Gen, dt. 11.04.2022.**

**6. METHOD OF SELECTION:**

- a) The selection of candidates for recruitment to the posts of Veterinary Assistant Surgeon shall be made on the basis of **Written Examination.**
- b) The **total marks** for the written examination shall be **800.**
- c) There shall be two papers i.e., Paper-I & Paper-II, each consisting of 200 questions and carrying 400 marks.
- d) The **duration** of each paper shall be **2 ½ hours.**
- e) The questions shall be of **MCQ (Objective-type) pattern.**

**P.T.O.**



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

Subject	Sitting	Duration	No. of Questions	Total Marks	Type of Questions
<b><u>Paper - I</u></b> Veterinary Science	1 <sup>st</sup>	2 ½ hrs	200	400	Objective, General Awareness & Subject specific.
<b><u>Paper-II</u></b> Animal Science	2 <sup>nd</sup>	2 ½ hrs	200	400	-do-

- h) The Commission shall prepare the list of candidates in order of merit on the basis of the marks secured in the written examination which shall be equal to the number of advertised vacancies.

**Note: - Any details relating to this recruitment like cut-off marks, answer keys, individual marks etc. shall only be declared on the website of the Commission after publication of the final results and select list.**

**7. PLACE OF EXAMINATION:**

The written examination will be held at Cuttack/Bhubaneswar.

**8. OTHER ELIGIBILITY CONDITIONS:**

- (i) The candidate must be a citizen of India;
- (ii) The candidate must be able to speak, read and write Odia and must have –
  - a) Passed M.E. School or higher examination with Odia as a language subject; or
  - b) Passed Matriculation or equivalent examination with Odia as a medium of examination in non-language subject; or
  - c) Passed in Odia as a language subject in the final examination of Class VII from a school or educational institution recognized by the Government of Odisha or the Central Government; or
  - d) Passed a test in Odia in Middle English School standard conducted by the School & Mass Education Department of the Government of Odisha / Board of Secondary Education, Odisha
- (iii) A candidate if married must not have more than one spouse living provided that the State Government may, if satisfied that such marriage is permissible under the personal law applicable to such person or there are other grounds for doing so, exempt any person from the operation of this rule.
- (iv) If a candidate has at any time, been debarred for a certain period/chance(s) by the Odisha Public Service Commission or other State Public Service Commission or U.P.S.C. from appearing at any examination, he/she will not be eligible for such recruitment for that specified period/chance(s);
- (v) 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 & 4 of the Advertisement. They must inform their respective Head of Offices in writing regarding submission of their applications for this recruitment and furnish “No Objection Certificate” during document verification.
- (vi) **A candidate must have to register himself/ herself under the Odisha Veterinary Practitioners Act, 1970 on or before the Last date of submission of online application form.**



- (vii) 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 local leading daily newspaper as well as copy of notification in the Odisha Gazette in support of his/her change of name.
- (viii) **Only those candidates, who fulfil the requisite qualification & within the prescribed age limit etc. by the closing date of filling up online application, will be considered eligible;**

**9. IMPORTANT POINTS:**

- (i) **Online applications submitted to OPSC if found to be incomplete in any respect are liable to rejection without entertaining any correspondence with the applicants on that score.**
- (ii) **Admission to written examination test will be provisional. If on verification at any stage before or after the examination it is found that a candidate does not fulfil all the eligibility conditions, his/her candidature will be liable to rejection. Decision of the Commission in regard to eligibility or otherwise of candidate shall be final.**
- (iii) This advertisement should not be construed as binding on the Government to make appointment.
- (iv) **Concessions meant for SEBC, S.C. & S.T. by Birth are admissible to the Socially & Educationally Backward Classes, Scheduled Caste and Scheduled Tribe of Odisha only;**
- (v) Any misrepresentation or suppression of information by the candidate in the application form will result in cancellation of his/her candidature or penalty, as decided by the Commission shall be imposed on the candidate.

**10. CERTIFICATES/DOCUMENTS TO BE ATTACHED:**

Candidates who will qualify in the written examination will be required to bring with them the hard copy of online application form along with copies of following certificates/documents and originals of the same for verification of their eligibility as per terms and conditions of the advertisement, the date of which shall be notified later on in due course, failing which his/her application shall be rejected for the said post. The candidates are required to mention on each copy of documents **"Submitted by me"** and put their **full signature and date on the same**. **They must not attach the original certificates to their applications.**

- (i) H.S.C. or equivalent certificate in support of declaration of age issued by the concerned Board/Council;
- (ii) Intermediate/ +2 Examination Certificate issued by the concerned Board/ Council.
- (iii) B. V. Sc. Degree Certificate and Marksheet issued by the recognized University;
- (iv) Three recent passport size photographs (unsigned & unattested) which has been uploaded with online application form.
- (v) Registration Certificate under the Odisha Veterinary Practitioners Act, 1970.
- (vi) Any proof of identity.



- (vii) Caste Certificate by birth in support of claim as S.E.B.C/ S.C./ S.T. wherever applicable  
**(Please see Note-1);**
- (viii) Required Odia Test Pass Certificate;
- (ix) Disability Certificate (indicating percentage of permanent disability) issued by the concerned Medical Board wherever applicable;
- (x) **Discharge Certificates** 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, wherever applicable;
- (xi) Sports Certificate issued by the Director of Sports, Odisha; wherever applicable.
- (xii) No Objection Certificate issued by the Competent Authority.
- (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 Application Form.

**NOTE 1:**

- (i) Candidates claiming to be belonging to S.E.B.C./ S.C. /S.T. categories of Odisha by birth are required to submit copy of the relevant Caste Certificate issued by the competent authority in the prescribed form. Candidates of SEBC category (other than Creamy Layer) must submit copy of Caste Certificate issued by the competent authority within the last three years by the closing date for submission of online application form in the prescribed form.
- (ii) The SEBC certificate which is more than three years old by the closing date of submission of online application form is liable for rejection.
- (iii) Women candidates belonging to S.E.B.C. / S.C. / S.T. Categories are required to submit Caste Certificates by birth showing "daughter of .....". Caste Certificates by virtue of marriage (i.e., showing "wife of .....") are not acceptable and liable for rejection.
- (iv) **O.B.C. CERTIFICATES WILL NOT BE ACCEPTED IN LIEU OF S.E.B.C. CERTIFICATES AND CANDIDATES SUBMITTING OBC CERTIFICATES ARE LIABLE FOR REJECTION.**
- (v) Community (Caste status) once mentioned by the candidates shall not be changed under any Circumstances.

The competent authorities are: - District Magistrate/ Collector or Additional District Magistrate or Sub-Divisional Magistrate/Sub-Collectors or Executive Magistrates or Revenue Officers, not below the rank of Tahasildar /Additional Tahasildar of Government of Odisha.

**NOTE 2:**

Degree Certificate, Registration Certificate, Caste Certificate, Odia Test Pass Certificate, Sports Persons Certificate, Discharge Certificate and Disability Certificate of Person with Disabilities (indicating % of permanent disability) must have been issued by the Competent Authority within the last date fixed for submission/ receipt of online application form.

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## 11. GROUND OF REJECTION OF APPLICATION

Applications of candidates will be rejected by the Commission on any of the following grounds:

- (a) In-complete online application form.
- (b) Non-submission of hard copy of online application form at the time of verification of original documents.
- (c) Not signing Declaration (full signature) in the hard copy of online application form.
- (d) Not passing Odia Test (M.E. standard) /not furnishing Odia Test pass evidence as required under Para- 8 (ii) of the Advertisement.
- (e) Not coming within the age limit of candidate as mentioned Para - 3 of Advertisement (Overage relaxation shall not be allowed to P.W.D. candidates with less than 40% permanent disability).
- (f) Not having requisite qualification as provided under Para - 4 of Advertisement.
- (g) Not furnishing copies of certificates/documents as provided under Para - 10 of Advertisement.
- (h) Submission of wrong information/ false information about qualification/ Age/ O.T. Pass evidence/ Category status (SEBC/ SC/ ST/ PWD/ Sports Persons/ Women etc.).
- (i) Suppression of facts / information about eligibility, if any.
- (j) Any other ground as per the decision of the Commission.

**NB:** Application /candidature of a candidate shall be rejected at any stage of recruitment process when discrepancy is noticed/ detected.

## 12. HOW TO APPLY:

- (a) Candidates must go through the details of this Advertisement available in the Website of OPSC before filling up online application form.
- (b) Candidates must apply online through the concerned Website of the OPSC <http://opsc.gov.in>. Applications received through **any other mode** would not be accepted and summarily rejected.
- (c) **Before filling up the online application form, the candidates must go through detailed instructions available at OPSC portal.**
- (d) The online application form is automated and system driven and will guide the candidate seamlessly in filling the application. The requisite options shall be enabled and information shall be asked as per data furnished by the candidate. Before filling up the information, ensure that accurate information is fed, for edit option is limited & on confirmation there is no scope for further edit even if wrongful entry has been made while filling up application.



- (e) 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-hand Thumb Impression (LTI) in the online application form. The uploaded photograph, Specimen (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.
- (f) Candidates should keep at least two copies of latest passport size photograph which is uploaded to the online application form for future use.
- (g) On successful submission of the online Registration, a unique "Permanent Public Service Account Number (PPSAN)" will be assigned to the applicant. Candidates are required to take a printout of the finally submitted online Registration/Re-registration and finally submitted Online Application forms and put his/ her signature under the declaration for submission to OPSC along with copies of requisite certificate & documents as and when asked.
- (h) The candidates are advised to submit the Online Application Form well in advance without waiting for the closing date to avoid last hour rush.
- (i) Certificate of Admission to the written examination to the eligible candidates will be uploaded in the Website of the OPSC prior to the date of written examination which will be published in the Website of the Commission and Newspapers. The candidates are required to download their Admission Certificate from the Website of the Commission and produce the same at the Examination centre for admission to the written examination. No separate correspondence will be made on this score.
- (j) "Intimation letters" to candidates for document verification and **"Attestation form"** shall be uploaded in the website of OPSC prior to the date of Document Verification.
- (k) Any complaint on the conduct of examination must be sent to the Grievance Wing of the Commission by e-Mail ([opsc@nic.in](mailto:opsc@nic.in)) within 03 (Three) days of completion of the examination.

**13. FACILITATION COUNTER:**

*To resolve any technical problem faced in filling up of online Registration/ Re-registration and Application forms, candidate may contact OPSC Technical Support over Telephone No. 0671-2304707 between 10.30 A.M. to 1.30 P.M. & 2.00 P.M. to 5.30 P.M. on any Odisha Government working days.*

In case of any guidance/information on this advertisement & recruitment, candidates may go through the **FAQ** available in the website of the Commission or contact the O.P.S.C. Facilitation Counter over Telephone No. 0671-2304141/2305611 & Extn. - 205 on any working day between 10.30 A.M. to 01.30 P.M. & 02.00 P.M. to 05.30 P.M.

The candidates are required to visit the website of the Commission at <http://opsc.gov.in> for detailed information about important notices, rejection of applications, the date & time of Written Examination, Document verification and also keep track of publication of various notices to the effect in the leading local dailies for information.

**CLOSING DATES**

**ONLINE REGISTRATION AND SUBMISSION OF ONLINE REGISTERED APPLICATIONS CAN BE DONE IN THE WEBSITE FROM 30.12.2022 TO TILL 30.01.2023 (11:59 P.M).**

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

**CUTTACK  
DATE - 20.12.2022**

  
**SECRETARY  
ODISHA PUBLIC SERVICE COMMISSION  
CUTTACK**



## ANNEXURE-A

### **Course Syllabus and Plan of Written Examination for recruitment of Veterinary Assistant Surgeon, Group-A (J.B.-II) 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, Haemonchus, Thelazia, Onchocerca, Esophagostomum, 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. Faetal 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, Salmonella, Yersinia, Klebsiella and Proteus), Campylobacter, Brucella, Pasteurella and Pseudomonas, Listeria, Actinobacillus, Actinomyces, Arcanobacterium and Corynebacterium, Dermatophilus, Fungi: Dermatophytes, Rhinosporidium, Candida, Mycotic mastitis and abortion, Mycotoxicoes. 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 - hypophyseal 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.

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