



## PG TRB

### Subject: ZOOLOGY

#### Unit-I:

Classification Binomial Nomenclature - Invertebata and Chordata - Structure and life history of pathogenic Protozon Entamoeba histoytica Plasmodium viva P.Ovale P.Malariae P.falciparum, Trypanosoma gambiansi; and Leishmania donovoni, Structure and life history of Helminth parasites; Taenia solium, Fasciola hepattca Schistosoma Ascaris lumbricoides. Structure and life history of Amphioxus Balanoglopus Ascidian and their evolutionary significance, vertebrate comparative anatomy; Integument, Brain; Heart and Urinogenital organe. Economically important vertebrates and vertebrate pests. Fishery resources of India.

#### Unit-II:

Biological Chemistry - Structure of atom valencies molecular and structural formula of biochemical compounds. Isomerism Oxidation and reduction. Redox potential (Eh): RH Determination of EH and PH. Buffers Biologically important properties of water. Energy metabolism of carbohydrates. Lipids proteins and Nucleic Neids. Oxidative Physphorylation. Role of major ( Na, K, Ca and P ) and minor (trace) elements in metabolism enzymes, their nature, classification of enzymes Coenzymes and cofactors, Mechanism of action of enzymes Inhibitions of enzyme actions.

#### Unit-III:

Collection of data-primary and secondary, Methods of Classification and tabulation of data.

Diagramatic and graphic representation - Rules of constructing diagrams - Types of diagrams - Bar diagram-Pie diagram, graphs-construction of graphs - Types: Frequency distribution - Histograms - Frequency Polygon-Smooth frequency curve-cumulative frequency curve of 'Ogives'.



Measures of central value - Average-Median-Mode-Measures of dispersion-Mean deviation-coefficient of variation-variance-Standard deviation and standard error.

Correlation Types - Methods of studying correlation co-efficient of correlation Regression analysis.

Statistical inference - Procedure of testing hypothesis - Standard error test of significance for attributes - Test of significances for large and small samples - Student ' t ' distribution.

#### **Unit-IV:**

Cell and Molecular Biology - Prokaryotic and Eukaryotic cells. Ultra structure, Organisation and functions of cell membrane, Endoplasmic reticulum, golgibody, Lysosome, Mitochondrion; Ribosome structure of DNA, A,B,C and Z forms of D.N.A. Transcription mRNA tRNA and rRNA and their functions. Synthesis of eukaryotic RNAS Structure and functions of nucleolus, D.N.A. replication D.N.A. repair, Microtubules cilia and flagella carcinogenic agents, Genetic basis of malignant transformation.

#### **Unit-V:**

Genetics-Gene Interactions, Multiple alleles, Recombination and its molecular mechanism. Linkage, crossing over, chromosome, mapping. Cytoplasmic genes and their expression. Mitochondrial DNA its transcription code and translation, Population genetics Genetic organisation of a Mendelian population. Hardy-Weiberg Law. Derivation of Hardy Weinberg equilibrium.

Animal breeding and human genetics - Inbreeding outbreeding Heteriosis. Expression of Eukaryotic genes in bacterial cells. Transfer of genes into Eukaryotic cells. Genetic Engineering and its applications in Agriculture Animal Husbandary and Medicine. Inborn errors of metabolism.

#### **Unit-VI:**

Physiology - Nutrition - Essential aminoacids, vitamins, minerals and Trace elements required by men. Digestion, Digestive enzymes, digestion, absorption and assimilation of carbohydrates, proteins and lipids. Intermediary metabolism, Respiration - Transport of respiratory gases by blood. Circulation: Types of heart. Movement - Types of muscle cells, Ultra structure of muscle cells. Muscle contraction



and types of contraction. Osmo-iono regulation: Maintenance of water and electrolyte Balance in aquatic and terrestrial vertebrates. Excretion: Vertebrate kidney and formation of urine. Excretion of nitrogenous products. Renal regulation of acid-base balance. Thermoregulation: Temperature and rates of bio-logical activities.

## **Unit-VII:**

Sensory physiology: Chemo-reception. Mechano-reception, Thermo-reception, Photoreception. Nervous coordinations: Transmission of impulses in nerve cells. Central Nervous system. Autonomic Nervous System. Memory and learning, Chemical coordination: Endocrine glands and hormones. Endocrine Interrelations. Neure endocrine reflexes. Growth and reproduction: Growth moulting and metamorphosis in crustaceans, Insects and vertebrates. Pheromones in reproduction. Physiology of human reproduction. Developmental Biology and Immunology-Gametogenesis - Organisation of egg cytoplasm. Fertilisation Biochemical and Electron-Microscopic studies, Parthenogenesis-Cleavage and Metaphenetic movements - Fate maps - presumptive. Organ forming areas - Formation of Primary organ rudiments - Gradients in the determination of organ rudiments - involvement of genes in developmental process General Metabolism during gastrulation - Integration of gastrulation. Organizer: Organogenesis with reference to heart, eye, brain and kidney. Cell differentiation - The chemical basis of cell differentiation Selective action of genes in differentiation - Control of differentiation by the intraorganic environment. Extra embryonic membranes. Placenta-Sex differentiation and gonadal hormones, congenital abnormalities in humans Growth, aging and senescence.

## **Unit-VIII:**

ANTIGENS AND ANTIBODIES - Specific and non-specific immune mechanism Immunity (innate and acquired) - Antigens - Epitopes - Antigenic determinants - Adjuvants. Immunoglobulin molecules as antigens - allotypes Immune system and lymphoid organs. Macrophages - T-Cell and B Cell Antibodies production Immune response: Humoral and cell mediated immunity - regulation of immune response - Tolerance - Antigen and antibody reaction - Physical and Biological - Vaccination - Allergy - AIDS - Congenital immunodeficiencies. Environmental Biology - Biotic and abiotic factors of



the environment Biogeochemical Cycles - Eco System - Concepts. Resource Management - Ecological energetics; energy transformation, productivity - food chain - Food webs, Pyramids.

### **Unit-IX:**

Zoogeography of Indian wild mammals. Indian primates - Natural Resources - Conservation of natural resources and wild life (Protection) Act. Wild life - Sancturries of Tamil Nadu. Environmental degradation - factors affecting environment. Patterns of Behaviour - Instinctive and learning behaviour - social behaviour - social organisation - Social behaviour in mammals Aggression and courtship. EVOLUTION: Origin of life - Theories of evolution evidences for evolution - Natural selection - Micro evolution - Hardy - Weinberg Equilibrium - genetic draft. Speciation - Mechanism of speciation - Phyletic and sudden speciation modes of gradual speciation - Incomplete species - Species problems - Allopatric and sympatric speciation.

### **Unit-X:**

Macro evolution: Geological records - Fossils and fossilization - evolutionary trends - Parallel evolution - Progressive and retrogressive trends - Rates of evolution.

Course of evolution: Chemical evolution - evolution of prokaryotic cells. Speculative origin of Eukaryotic cells - Origin of Metazoa. Primate and Human Evolution Human racial diversity - Theories of human racial origins - Future evolution of man. MAN AND BIOSPHERE - Man's role in conservation of natural resources. Biosphere. Human activities that modify the biosphere. Human resource management. Tribals and biosphere. Future of man and biosphere.



# Educational Psychology

## Unit - 1

Pre-primary Education - Programme of Pre-primary Education - universalization of Primary Education - Equality of opportunity - Secondary and Higher Secondary Education - Need for uniform pattern - Non-formal and Adult Education - Functional Literacy Programme - Programmes for workers in industry - programme for dropouts - Role of Educational institutions in Non-formal Education - Open School / Open University, Quantity and Quality of Education - State and National leave - Unemployment and underemployment - Delinking employment from degrees - Skill development - Vocation Skill oriented education - Man power planning and education Brain drain - Special problems of rural and tribal people - illiteracy and poverty - Eradication of poverty through Education.

## Unit - 2

National integration - International understanding - Value Education in action- Nation and health - sanitation - Safety and first aid - Women's education - Education for handicapped Education for gifted - Population Education - Need for protecting the environment - Environmental Education - Language policy - Medium of education - channel of international communication Management of Schools, private, aided, Government, Local authorities - Government Department of education, administration and academic supervision - Headmaster / Headmistress as an administrator and academic supervisor.

**History and Culture of Tamil Nadu:**

## Unit - 3

Political - Spiritual - Religion - Literature - Language - Education - Natural Resources - Trade - Occupations - Historical places - Tourist centers - Arts - Games - Society.



## Unit -4

The Learner, Learning process - Learning situation - Significance of Education  
Psychology to the teacher concept of growth and maturity - development characteristics  
and trends - Development tasks and education - Development of mental abilities -  
Attention, inattention and distraction - span of attention, sensation and perception -  
factors in perception - Errors - concept formation - piglets states of cognitive  
development - concept maps language. Imagination, thinking and reasoning -  
Psycholinguistics - Implications for the teacher.

## Unit -5

Special characteristics of adolescents and their problems, attitudes, interest, group  
behavior, Discipline Leadership - Nature and importance of learning - individual  
differences in learning - Learning curves - Transfer of learning - Learning styles -  
Factors in learning - Types of learning - Trial and error - Conditioning - Classical and  
operant - Learning by insight - Imitation - Levels of learning - Remembering and  
forgetting - Learning Disabilities.

## Unit - 6

Motivation - Maslow's hierarchy of needs - roles of rewards and punishments - Levels  
of aspiration - Achievement motivation - Goal as a motivational factor - Nature of  
intelligence - Theories of intelligence - Assessment of intelligence - IQ constancy -  
Distribution - uses of intelligence test - Creativity - Creativity and intelligence -  
Identification and promotion of creativity - Meaning of personality - Factors  
influencing personality - Assessment of personality - integrated personality - concept of  
mental health hygiene - conflict and frustration - Unrest - Adjustment - Defence  
mechanisms - Mental illness - Guidance and counselling.



## Unit -7

Meaning of educational innovation - principles involved in innovation - Emergence of school -In cultural, social and religious setting - Innovations that emerged from educational experiments-Tagore:- Santi Niketan- Gandhiji:- Basic Education - A.S.Neill;- Progressive School -Sri Aurobindo :- Ashram Schools. Rousseau: Children's Education - Montessori - Sense Experience - Bertrand Russel- Education for Social Order - Froebel-Kindergarten- Dewey- Pragmatic life J. Krishnamoorthy-Freedom in learning situation. Influence of Psychological factors on innovation - principles underlying self-learning devices. Piaget-Experiment's and discovery learning - Child-centered learning. Effects of cultural, religious and social factors on innovation- Principles of equality - conformity to common educational goals.

## Unit -8

Modernization of education - National Educational Policy (1986) - DPEP Special focus on Teacher Education (DTERT, DIETs, BRCs, CRCs) MLL based curriculum and syllabus - Joyful learning - Autonomy in institutional structures - Individual freedom- Library based learning: Self-paced instruction -pace setting schools - Mobile schools- De-Schooling and non-classroom learning - community schools - school complex Distance education and open learning- Education through mass communication - special education -Sainik school - Defence academy - Educational Technology - need for and use of Instructional technology - mass media for instructional purposes - Review of radio and TV educational programmes - educational computing.



# Subject: General Knowledge

Marks - 10

## Unit-I Indian History

History of India - Vedic period 1526 AD to 1947 - Free India - Modern India

## Unit – II Indian Constitution

Origin of Indian Constitution - Salient and special features - Fundamental rights - Legislature - Judiciary Executive - Audit franchise - Human rights.

## Unit – III History of Tamil Nadu

Ancient period - Sangam age - Chera, Chola, Pandya's - Economical, political, Social Conditions - Literature Architecture - Fine arts - Geography of Tamil Nadu - Natural boundaries - Resources - Rivers and places.

## Unit-IV Personalities Books and authors - Discoveries

## Unit-V Sports & Games Confined to India

## Unit- VI Abbreviations

## Unit – VII Every Day Science

## Unit-VIII Current Affairs

JOIN



[Professor Academy](#)



[YouTube](#)



[Telegram](#)



[Instagram](#)



[Whatsapp Channel](#)

[Whatsapp Group](#)

7070701009, 8124408794

