

**DSC 2014 School Asst Biology
Syllabus for TET Cum TRT Biological
Science Written Exam**

Sl.No	Content	No. of Multiple Choice Questions	Marks
i.	General Knowledge and Current Affairs	10 MCQs	10 Marks
ii.	Child Development and Pedagogy	30 MCQs	30 Marks
iii.	Language I(Opted by the candidate)	30 MCQs	30 Marks
iv.	Language II (English)	30 MCQs	30 Marks
v.	Mathematics & Science (Bio. Science- 70, Maths- 15 & Phy. Science- 15)	100 MCQs	100 Marks
	TOTAL	200 MCQs	200 Marks

Note As the Part-I GK, Part-II Child Development and Pedagogy, Part-III Language (Opted by Candidate), Part-IV English are same for all School Asst Posts we are not publishing again in this Post. [To read the Details of these four Parts \(GK, Pedagogy, Lang-I, Lang-II\) Click Here](#)

Part – V Biology, Maths, Physics (Content and Methodology) (Marks: 100)

V (a) Biological Science (Content and Methodology) (Marks: 70)

Biology CONTENT

1. Biological Sciences : Its importance and human welfare, Branches of Biology, Biologists, Reputed Biological Institutions in India
2. Living World : Life and its Characteristics, Classification of Living Organisms
3. Microbial World : Virus, Bacteria, Algae, Fungi and Protozoan, Useful and Harmful Micro-organisms
4. Cell & Tissues : Cell - Structural and Functional unit of life. Prokaryotic and Eukaryotic Cell, Structure of Eukaryotic Cell, Cell Organelles, Differences between Plant Cell and Animal Cell, Cell Division – Mitosis and Meiosis, Tissues – Structure, Functions and Types of Plant and Animal tissues.
5. Plant World : Morphology of a Typical Plant – Root, Stem, Leaf, Flower, Inflorescence, Fruit - their Structure, Types and Functions, Parts of a Flower, Modifications of Root, Stem and Leaf, Photosynthesis, Transpiration, Transportation (Ascent of Sap), Respiration, Excretion and Reproduction in Plants, Plant Hormones, Economic importance of Plants, Wild and Cultivated Plants, Agricultural Operations, Crop diseases and Control measures, Improvement in Crop yield, Storage, Preservation and Protection of Food and Plant Products
6. Animal World :Organs and Organ Systems including man – Their Structure and Functions Digestive, Respiratory, Circulatory, Excretory, Nervous, Control and Co-ordination and Reproductive, Sense Organs: Structure and Functions of Eye, Ear, Nose, Tongue and Skin. Nutrition in man – Nutrients and their functions, Balanced Diet, Deficiency diseases, Tropical diseases, Skin diseases, Blindness in man: Causes, Prevention and Control, Health agencies, First Aid – Bites: Insect, Scorpion and Snakes, Fractures, Accidents, Life skills, Wild and Domesticated animals, Economic Importance of Animals, Animal Husbandry – Pisciculture, Sericulture, Poultry, Breeding of Cows and Buffaloes
7. Our Environment : Abiotic and Biotic factors and Ecosystems, Natural Resources – Classification, Judicial use of Renewable, Non-renewable and Alternative Resources, Wild Life - Conservation, Sanctuaries, National Parks in India, Bio-Geochemical Cycles, Pollution – Air, Water, Soil and Sound Global Environmental issues – Global Warming (Green House Effect), Acid Rains and Depletion of Ozone layer
8. World of Energy : Work and Energy, Energy transformation, Need for Energy in living organisms, Basal Metabolic Rate (BMR), Energy relations in Ecosystems, Bio-mass and Bio-fuels, Non-Conventional Energy sources
9. Recent Trends in Biology : Hybridization, Genetic Engineering, Gene Bank, Gene Therapy, Tissue Culture and Bio-Technology

Methodology

- 1. The Nature & Scope of Science: A brief introduction of Oriental and Western Science, Nature of Science, Scope of Science, Substantive and Syntactic Structure of Science.
- 2. Aims and Values of Teaching Biological Sciences: Aims of teaching Biological Sciences, Values of teaching Biological Sciences.
- 3. Objectives of Teaching Biological Sciences: Importance of Objectives of Teaching Biological Sciences, Bloom's Taxonomy of Educational Objectives and limitations, Writing Instructional Objectives and Specifications
- 4. Approaches and Methods of Teaching Biological Sciences: Inductive Approach and Deductive Approach, Methods of Teaching 1. Lecture Method, 2. Lecture cum Demonstration Method, 3. Heuristic Method, 4. Project Method, 5. Experimental Method, 6. Laboratory Method.
- 5. Planning for effective Instruction: Year Plan, Unit Plan, Lesson Plan – Herbartian and Bloom's Approach, Criteria for Evaluation of Lesson Plan. Self Evaluation and Peer Evaluation, Learning experiences – Characteristics, Classification, Sources and Relevance, Teaching – Learning Material and Resources in Biological Sciences.
- 6. Science Laboratories: Importance of Practical work in Biological Sciences, Planning Science Laboratory, Procurement, Care and Maintenance of Laboratory Equipment, Maintenance of different Registers, Safety and First aid, Development of Improved Apparatus
- 7. Science Curriculum: Principles of Curriculum Construction, Defects in the existing School Science Curriculum, Correlation of Biological Sciences with other School Subjects, Qualities of a good Biological Science Text-book.
- 8. Biological Science Teacher: Qualities of a good Biological Sciences Teacher, Roles and Responsibilities
- 9. Non-formal Science Education: Science club, Eco-club, Blue-club, Red-ribbon club, Science fairs – Objectives, levels of organizations, importance, Science Laboratories, Role of NGO'S and State in popularizing science.
- 10. Evaluation: Concept and process of Measurement and Evaluation, Continuous Comprehensive Evaluation, Tools of Evaluation, Preparation of Scholastic Achievement Test(SAT), Analysis and interpretation of scores.

V(b) Mathematics (Content and Methodology) (Marks : 15)

Content

1. 1. Number system: Whole numbers, place value, comparison, fundamental mathematical operations ; Addition, Subtraction, Multiplication and Division, Indian Currency, Prime and Composite numbers, Prime factors, Lowest Common Multiple (LCM) and Greatest Common Multiple (GCM).
2. 2. Fractions: Concept of fractions, proper fractions, improper fractions, mixed fractions, decimal fractions, comparison, addition, subtraction, multiplication, division of fractions and decimal fractions. Use of fractions in daily life. Rational Numbers; definition, four fundamental operations; properties of numbers (N, W, Z and Q), Square, Square root, Cube, Cube root, and factorization.
3. 3. Arithmetic: Unitary method, Ratio & Proportion, percentages, average, profit – loss.
4. 4. Geometry: Rotation, Types of Angles, Construction and measurement of Angles, line, axis, shapes, reflection and symmetry.
5. 5. Measurements: Length, Weight, Capacity, Time, Perimeter and Area, their standard units and relation between them.
6. 6. Data Applications: Introduction to Data, data presentation, Bar graph.

Methodology

- 1. Meaning, Nature and Definitions of Mathematics
- 2. Correlation with other school subjects and daily life.
- 3. Aims, values and instructional objectives of teaching Mathematics
- 4. .Child Centered and Activity Based Approaches in Teaching Mathematics
- 5. Methods of Teaching & Remedial measures in Mathematics
- 6. . Instructional Material, TLM and Resource Utilization in Mathematics 7. . Curriculum, Text Book & Instructional Planning
- 8. Evaluation, tools of evaluation and Continuous Comprehensive Evaluation

V (c) Physical Science (Content and Methodology) (Marks : 15)

CONTENT

1. 1. Measurements: Units and Different Systems –C.G.S., M.K.S., S.I. Triangulation method for measuring long distances, Measurement of Length, Area, Volume, Mass, Density and Time.
2. Fundamental and Derived units. Measuring instruments – Scale, Tape, Vernier Calipers, Different types of clocks,
3. 2. Natural Resources – Air, Water: Water pollution, Harnessing of water, States of water, Hardness of water, water pressure Air pollution, Atmospheric Pressure, Air pressure, Archimedes' principle, Pascal's law, Bernoulli's Principle, Hydrometer, Barometer. Laws of floatation, Specific gravity, Surface tension, Fluid Mechanics.
4. 3. Our Universe: Constellation - Zodiac, Space travel; Solar system, Satellites, stars, comets; Earth-layers of earth.
5. 4. Natural Phenomenon: Light: Rectilinear propagation of Light, Shadows, transparent and opaque materials; reflection, Laws of reflection, refraction, Reflection at spherical mirrors, refractive index of glass slab Sound: Sources of sound, Transmission of sound, Sound Pollution, Waves, Kinds of Waves, Wave Propagation, Musical instruments.
6. Heat: Heat and Temperature, Measurement of Temperature and Thermometer, Change of State due to heat
7. 5. Mechanics - Kinematics, Dynamics: Scalar and Vectors.
8. Types of Motion; Speed, Velocity, Acceleration, Newton's Laws of Motion, Friction, Momentum, principals of Conservation, Centre of Gravity, State of Equilibrium.
9. 6. Magnetism and Electricity: Magnetism: Natural Magnets and Artificial Magnets, properties of Magnets, Magnetic Induction, uses of Magnets, Methods of Magnetisation.
10. Electricity: Circuit Connection-Components, Primary Cells, Charge; Effects of Electric Current (Light, Heat, Magnetic), Primary Cells, Current Flow, Heating and Magnetic Effects of an Electric Current, Series, Parallel connections, Symbols of Electrical Elements, Modern World Instrument. Information and Communication Technology, Computers.
11. 7. Matter-Its changes: Elements and Compounds, Symbols, Formulae, Chemical Equations Action of heat on substances, Physical and Chemical changes, types of chemical changes Preparation of Gases (Oxygen, Hydrogen, Carbon- Di-Oxide, Chlorine, Hydrogen Chloride) Acids, Basis, Salt.
12. Water and its constituents. Hardness of water. Sulphur, Nitrogen, Phosphorous and their compounds. Common salt and its constituents.
13. 8. Laws of Chemical Combination and Chemical Calculations: Laws of chemical combination, Calculations based on chemical equations.

Methodology

- 1. Definition, Nature, Structure and History of Science
- 2. Aims, Values and Instructional Objectives of teaching Science
- 3. Method of Teaching Science
- 4. Instructional Material in Teaching Science – TLM in Science.
- 5. Instructional Planning
- 6. Science Laboratory
- 7. Science Teacher - Changing Roles
- 8. Science Curriculum and its transaction
- 9. Science Textbook.
- 10. Evaluation – CCE - Designing, Administration, Analysis, Scholastic Achievement Test (SAT)