Government of Andhra Pradesh
Department of School Education
State Council Educational Research & Training

DSC - SCHOOL ASSISTANT SYLLABUS – BIOLOGICAL SCIENCE

1. G.K & current Affairs -	**-**	**10M**
2. Perspectives of Education	**–**	**05M**
3. Classroom implications Educational Psychology	**–**	**05M**
4. **Content**	-	**44M**
5. Methodology	-	**16M**
Total	-	**80 M**

PART - A

I. GENERAL KNOWLEDGE AND CURRENT AFFAIRS (Marks: 10)

II. PERSPECTIVES IN EDUCATION (Marks: 05)

1. History of Education :

- The Education in Ancient India - Pre-Vedic and Post-Vedic period, Medieval Education.
- Education in Pre Independent era - Woods Despatch (1854), Hunter Commission (1882), Hartog Committee (1929), Sargent Committee (1944).
- Education in Post Independent era - Mudaliar Commission (1952-53), Kothari Commission (1964-66), Ishwarbhai Patel committee (1977), NPE-1986, POA-1992

2. Teacher Empowerment:

- Need, interventions for empowerment, Professional code of conduct for teachers, Teacher motivation, Professional development of Teachers and Teacher organizations, National / State Level Organizations for Teacher Education, Maintenance of Records and Registers in Schools.

3. Educational Concerns in Contemporary India:

- Democracy and Education, Equality, Equity, Quality in Education, Equality of Educational opportunities.
- Economics of Education, Education as Human Capital, Education and Human Resource Development, Literacy - Saakshar Bharat Mission.
- Population Education, Gender - Equality, Equity and Empowerment of Women, Urbanization and migration, Life skills.
- Adolescence Education
- Health and Physical Education
- Inclusive Education - Classroom Management in Inclusive Education
- Role of Education in view of Liberalization, Privatization and Globalization
- Value Education, Peace Education
- Programmes and Projects – APPEP, DPEP, Sarva Siksha Abhiyan, National Programme for Education of Girls at Elementary Level (NPEGEL), Rashtriya Madhyamika Siksha Abhiyan(RMSA), Rashtriya Aveshekar Abhiyan (RAA), KGBVs, Model Schools.

- Incentives and special provisions – Mid Day Meals, Free Books, Scholarship, Awards, Welfare Hostels, Transportation.
- Current Trends in Education – Badi pelusthondi, Badi ki Vasta, Mavuru – Mana Badi, Vidyanjali, Swacha Patasala, Inspire, Kalavutsav.

4. **Acts / Rights:**
   - Right of Children to Free and Compulsory Education Act - 2009
   - Right to Information Act - 2005
   - Child Rights
   - Human Rights.

5. **National Curriculum** - Framework, 2005: Perspective, Guiding Principles, Learning and Knowledge, Teaching Learning Process, Assessment, Systemic Reforms.

III. Classroom implications Educational Psychology – 05Marks

1. **Individual differences:** Inter and intra individual differences, meaning, nature and theories of intelligence with special emphasis to multiple intelligence, IQ, assessment of intelligence, EQ, Creativity. Attitude, Aptitude, Interest, Habit and its Influence on Intelligence – Class room implementation.
2. **Learning:** Theories and approaches of learning, learning curves, Factors, Phases, Dimensions of learning, Types of learning, Transfer of learning. Memory, Forgetting, Learning and assessment– Class room implementation.
3. **Personality:** Nature, characteristics and theories of personality, factors of Personality, Assessment of Personality, Mental health, Adjustment, Stress – nature, Symptoms and management. Emotional intelligence, Management of emotions – Class room implementation.

PART - B

IV. CONTENT (Marks: 44)

1. **Biological Sciences:** Importance and Human Welfare, Branches of Biology, Biologists.
2. **Living World:** Life and its Characteristics, Classification of Living Organisms, Nomenclature, different types of classification. Need for classification, Biological classification levels and Hierarchy of classification, species concept. Animal diversity, invertebrates, Chordates.
3. **Microbial World:** Virus, Bacteria, Algae, Fungi and Protozoan, Useful and Harmful Micro-organisms. Immunity, vaccination, Immunological disorders. Infections, life style diseases.
4. **Cell & Tissues:** Cell – Structure cell theory , cell organelles and their functions, differences between prokaryotic and Eukaryotic cells, plant cell and animal cell, cell cycle, cell division , Mitosis and Meiosis, tissues, structure, functions and types of plant and Animal tissues, Cancer biology, stem cells. Transportation of materials through the cells. Internal organization of plants, histology - anatomy of flowering plants.
5. **Plant World :** Morphology of a Typical Plant - Root, Stem, Leaf, Flower, Inflorescence, Fruit - their Structure, Types and Functions, Parts of a Flower, Seed dispersal Modifications of Root, Stem and Leaf, Photosynthesis, Transpiration, Transportation in plants (Ascent of Sap), Respiration, Excretion and Reproduction in

Plants, Plant Hormones, food from the plants. 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. Single cell proteins (SCP), plant enzymes, mineral nutrition, plant growth and development.

6. **Animal World:** Organs and Organ Systems including man - Their Structure and Functions Digestive, Respiratory in human, type studies of the animals. Circulatory, . Immunology, Excretory, Locomotion in protozoa and humans - Muscular, Skeletal Systems, Nervous, Control and Coordination and Reproductive: Sexual, a sexual fission, syngamy, conjugation. Reproductive health – Birth control methods, Sense Organs: Structure and Functions of Eye, Ear, Nose, Tongue and Skin. Nutrition in man - Nutrients and their functions, Balanced Diet, Deficiency diseases, Health - Tropical diseases (Viral, Bacterial, Protozoan, Helminth, Arthropod), Skin diseases (Fungal), 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, animal behavior.
7. **Heredity and Evolution**: Terms, Mendel laws, Sex determination in humans, In heritance of Blood Groups, Erythroblastosis foetalis, Theories of Evolution, Speciation, Evidences of Evolution, Human Evolution, sex linkage, genetic disorders, syndromes, human genome project, evolutionary forces, DNA and finger printing.
8. **Our Environment – Ecology:** Abiotic and Biotic factors of Ecosystems, Ecosystem - Types, components, adaptations, Food chains, Food web and Ecological pyramids, Natural Resources

   - Type of water managements, soil waste land management, forests, sustainable development, fossil fuels and bio fuels, 4Rs, bio-geo-chemical cycles, pollution, air, water, soil, global environmental issues – global warming – (Green House Effect), acid rains and depletion of Ozone layer; Population - interaction in Eco-system, plant ecology.
9. **Recent Trends in Biology:** Hybridization, Gene - Genetic material, DNA , RNA, Genetic Engineering, Gene Bank, Gene Therapy, Tissue Culture and Bio-Technology – applications. Transgenic animals and plants, cloning, molecular diagnosis, bio medical technology, bio molecules, molecular biology.
10. **Biodiversity – Conservation:** Biodiversity – levels of bio diversity, conservation, wild life, sanctuaries, national parks in India, importance of species, diversity to the Ecosystem.

V. Teaching Methodology (Marks: 16)

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. Academic Standards in Biological Science.
5. 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.
6. 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.
7. 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 Improvised Apparatus
8. 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.
9. Biological Science Teacher: Qualities of a good Biological Sciences Teacher, Roles and Responsibilities
10. Non-formal Science Education: Science club, Eco-club, Blue-club, Red ribbon club, Science fairs - Objectives, levels of organizations, importance, Science Laboratories, Role of NGOS and State in popularizing science.
11. 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.