

Annexure – XIX

(Enclosure to Notification No. 1479/SS/T9/KGBV/URS/2022, Dt:16.06.2023 of DSE & EO-SPD, TSS, Hyd.)

Syllabus of Written Test for Recruitment of CRTs in KGBVs CRT – Biological Science

Part I - General Studies

1. Current Affairs - Regional, National & International.
2. Indian Constitution; Indian Political System: Governance and Public Policy.
3. Social Exclusion; Rights issues such as Gender, Caste, Tribe, Disability etc., and inclusive policies.
4. Society Culture, Civilization Heritage. Arts and Literature of India and Telangana
5. General Science; India's Achievements in Science and Technology
6. Environmental Issues; Disaster Management- Prevention and Mitigation Strategies and Sustainable Development.
7. Economic and Social Development of India and Telangana.
8. Socio-economic, Political and Cultural History of Telangana with special emphasis on Telangana Statehood Movement and formation of Telangana state.

Part II – Basic Proficiency in English

1. School Level English Grammar:

Articles; Tenses; Noun & Pronouns; Adjectives; Adverbs; Verbs; Modals; Subject-verb Agreement; Non-finites; Reported Speech; Degrees of Comparison; Active and Passive Voice; Prepositions; Conjunctions; Conditionals.

2. Vocabulary:

Synonyms and Antonyms; Phrasal Verbs; Related Pair of Words; Idioms and Phrases; Proverbs.

3. Words and Sentences:

Use of Words; Choosing appropriate words and words often confused; Sentence Arrangement, Completion, Fillers and Improvement; Transformation of Sentences; Comprehension; Punctuation; Spelling Test; Spotting of Errors.

Part III - Perspectives in Education

1. **History of Education:** Pre-Vedic and Post-Vedic period, Medieval period Recommendations of various Committees during British period with special reference to Woods Despatch (1854), Hunter Commission (1882), Hartog Committee (1929), Sargent Committee (1944), Recommendations of various Committees in the post independent period with special reference to Mudaliar Commission (1952-53), Kothari Commission (1964-66), Ishwarbhai Patel Committee (1977), National Policy on Education, 1968, National Policy on Education, 1986, Programme of Action, 1992 and National Educational Policy, 2020.

Aims, Objectives, Functions, Unipolar, Bipolar and Tripolar Processes of Education, Types of Education - Formal, Informal and Non-formal Education, their significance and interrelations, Philosophical, Sociological and Psychological Perspectives of Education.

2. **Teacher Education:** Concept, Teacher Preparation, NCFTE-2009, Pre-service and In service Teacher Education Programs, Teacher Motivation, Continuous Professional Development.

Teacher Empowerment: Meaning, Interventions for Empowerment, Professional Code of Conduct for Teachers, Role of Teacher Organisations in Professional Development of Teachers, National and State Level Institutions for Teacher Education.

3. **Educational Concerns in Contemporary India:**

Environmental Education: Meaning, Scope of Environmental Education, Concept of Sustainable Development, Role of Teacher, School and NGOs in Development and Protection of Environment; **Democracy and Education:** Equality, Equity, Equality of Educational Opportunities, Role of Education in promoting Democracy; **Economics of Education:** Meaning and Scope, Education as Human Capital, Education and Human Resource Development; **Population Education:** Significance of Population Education. Population situation, Approaches to Population Education and Themes of Population Education, Family Life Education, Sustainable development, Adolescence Education, Health Education, Gender Equality, Equity and Empowerment of Women, the Role of School and Teacher, Urbanization and Migration, Life Skills; **Inclusive Education:** Concept, Prevalence, Areas of Disabilities, Disadvantaged Groups, Gender etc., Myths & Facts, Importance of Early Identification and Assessment, Planning Inclusive

Education, Initiatives in Education, Method & Strategies of Classroom Management, Psycho-Social Management, Creation of Awareness – Students, Parents and Society & Sensitization Strategies, Evaluation, Documentation and Maintenance of Records; **Liberalization, Privatization and Globalization; Value Education; Initiatives in Education:** Sarva Siksha Abhiyan (SSA), National Programme for Education of Girls at Elementary Level (NPEGEL), Mid-day-Meal Programme, Rashtriya Madhyamika Siksha Abhiyan (RMSA), Samagra Shiksha and its interventions, KGBVS and Model Schools etc.

4. Constitutional Provisions relevant to Education: Acts/Rights, Right of Children to Free and Compulsory Education Act, 2009, Right to Information Act 2005, Child Rights, Human Rights, PWD Act, 2016 and other Provisions pertaining to Education.
5. National Curriculum Framework, 2005 and NCFSE, 2023.

Part IV - Content

- I. **Biological Sciences:** Its importance and human welfare, Biologists.
- II. **Living World:** Life and its Characteristics, Classification of Living Organisms
- III. **Microbial World:** Virus, Bacteria. Algae. Fungi and Protozoan. Useful and Harmful Micro-organisms
- IV. **Cell & Tissues:** Discovery of the cell, Diversity in Cells, Cell is a Structural and Functional unit of life. Prokaryotic and Eukaryotic Cell. Structure of Eukaryotic Cell, Cell Organelles – Structure and functions, differences between Plant Cell and Animal Cell. Cell Division - Mitosis and Meiosis – their significance, Tissues - Plant and Animal tissues - Structure, Functions and Types.
- V. **Plant World:** Morphology of a typical flowering plant - Root, Stem, Leaf, Flower - Parts of a Flower and their functions, Fruit, Modifications of Root. Stem and Leaf, Photosynthesis, Transpiration, Transportation (Ascent of Sap). Respiration, Excretion and Reproduction in Plants, Plant Hormones, Economic importance of Plants, Agricultural Operations – production of food from plants, seasonal crops, Crop diseases and Control measures, Improvement in Crop yield, Storage Preservation.
- VI. **Animal World:** Organs and Organ Systems including man - Their Structure and Functions Digestive system, Respiratory system, Circulatory system, Excretory

system, Nervous system - Control and Coordination and Reproductive system. 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 humans: Causes, Prevention and Control, Health agencies, Economic Importance of Animals, Animal Husbandry, Breeding of Cows and Buffaloes

- VII. Heredity and Evolution:** Mendel's Laws of inheritance, Reasons for selecting Pea plant, blood groups and Rh-factor, Thalassaemia, Sex determination in human beings, Theories of Evolution – Lamarckism, Darwinism, Evidences of evolution – Homologous, analogous, vestigial organs, evidences from embryology and fossils, Human evolution.
- VIII. Our Environment:** Abiotic and Biotic factors, Ecosystem, Food chain, Food web, ecological pyramids and types, Natural Resources Classification, Energy Flow in an ecosystem, Judicial use of Renewable, Non-renewable and Alternative Resources, Wild Life Conservation, Sanctuaries, National Parks in India. Bio- Geochemical Cycles, Environmental pollution - Air, Water, Soil and Sound – causes, effects and preventive measures, Global Warming (Green House Effect), Acid Rains and Depletion of Ozone layer. Energy relations in an Ecosystem. Bio-mass and Bio-fuels Non-Conventional Energy sources
- IX. Applied Biology:** Recent Trends in Biology, Tissue culture, Pisciculture, Sericulture. Poultry management, Hybridization.

Part V - Pedagogy

Unit-I - Nature of Science:

The Nature and scope of Science, The History and Development of Science, including the eminent contributions of important Biologists – Aristotle, William Harvey, Lamarck, Charles Darwin, J.C. Bose, M.S. Swaminathan, Birbal Sahni, Elizabeth Blackburn, Recent advancement in Biological Science, Biological Science in Everyday Life.

Unit-II - Aims of Learning Biological Science:

Values, Aims and Objectives of Teaching Biological Science, Knowledge and understanding through Science, Nurturing Process, Skills of Science, Development of

Scientific Attitude and Scientific Temper, Respect for Evidence, Open Mindedness, Truthfulness in reporting observations, Critical thinking, Logical thinking, Skepticism, Objectivity, Perseverance, Role of Science Teacher, Relating Biological Science Education to Physical Science and Social Environment, Technology, Society and Environment.

Unit-III - Learning objectives of Biological science:

Meaning of Learning objectives, Developing of Learning objectives and features well developed learning objectives, Bloom's Taxonomy of Educational objectives, specific / behavioral / instructional objectives, Anderson and Krathwohl's Taxonomy, Academic Standards in Biological Science.

Unit-IV - Biological Sciences Curriculum:

Historical of Development of Curriculum Framework, Curriculum Framework - Curriculum and Syllabus, Principles of Curriculum construction in Biological Science, Organization of subject matter – different approaches - correlated, integrated, topical, concentric, unit and chronological. Recommendations of NCF-2005 and TSCF -2011 on Science Curriculum National Focus Group Position Paper on Science and State Position Paper (2011) on Science, Constructivist approach in Biological Science, Trends of Science Curriculum / Syllabus, moving from Textbook to Teaching-Learning Materials, going beyond the Textbook, Print Resources: Textbooks, Popular Science Books, Journals and Magazines, Edger Dale's Cone of Experiences-Using the Cone of Experience, Teacher as Curriculum Developer.

Unit-V - Approaches and Methods of teaching Biological Science:

Lecture method, Lecture cum Demonstration method, Historical method, Heuristic method, Project method, Laboratory method, Problem Solving method, Scientific method, Microteaching, Team teaching, Inductive and Deductive Approaches, Constructivist Approach- 5 E Learning Model, Collaborative Learning Approach (CLA), Problem Solving Approach (PSA), Concept Mapping, Experiential Learning, Multimedia approach in teaching learning process and Programmed learning, Computer Assistant Instruction (CAI) and Computer Aided Learning (CAL).

Unit-VI - Planning for Effective Instruction in Biological Science:

Year plan, Unit plan, Lesson plan, Learning experiences, Characteristics, Classification, Source and relevance, Teaching Learning Material (TLM) – Characteristics

and importance, Principles to be followed in preparation and usage, Classification, Types, Hardware and Software in TLM, Planning ICT applications.

Unit-VII – Community and Learning Resources

Using Community Resources - Bringing community to the class, taking class to the community: Field visit, Pooling of Learning Resources, Teaching Learning Material and Improvisation of Apparatus, Science Kits, Laboratory as a Learning Resource, different forms of ICT and its applications in Biological Science Education – Audio aids, Video aids, Educational TV, Use of computer for simulation, internet and Open Learning Resources.

Unit-VIII – Assessment and Evaluation in Biological Sciences:

Test, Examination, Measurement, Assessment and Evaluation, Continuous and Comprehensive Evaluation (CCE), Performance Based Assessment, Assessment Framework - Purpose of assessment, Learning Indicators, Tools and Techniques of Assessment - Written test, Project work, Field trips and field diary, Laboratory work, Interview/Oral test, Journal writing, Concept mapping, Use of Rubrics, Recording and Reporting of the project work, Technical and Academic Guidance, Measurement of students' achievements, Grading system, Measurement of process skills, Portfolio: Its role in evaluating students' performance, Assessment as a reflecting process, Assessment of Learning of Students with special needs.

Unit-IX - Pedagogical Shift in Biological Science:

Pedagogical Shift: Science as Fixed Body of Knowledge to the Process of Constructing, Knowledge, Learners, learning and teachers, Scientific method to Science as inquiry, Inclusion- Science curriculum, Diversity in class approaches, Information and Communication Technology (ICT), Continues Professional Development (CPD): Role of reflective practices in professional development of biological teachers, Content-cum-methodology: Meaning, Concept & Nature.

Unit-X – Child Development

Psychology of teaching and learning of Biological Science, Learning disabilities – Difficulties in education of Exceptional and disabled children.