

RAJASTHAN PUBLIC SERVICE COMMISSION, AJMER
SCHEME & SYLLABUS FOR THE POST OF ASSISTANT
CONSERVATOR FOREST & FOREST RANGE OFFICER GRADE Ist
COMPETITIVE EXAMINATION, 2018
FOREST DEPARTMENT

OPTIONAL SUBJECT - GEOLOGY

Unit I

Physical Geology : Geology and its perspectives. Earth, its size, shape, mass, density, rotational and revolution parameters. Origin and Age of the Earth. Elementary idea of Geodynamic Processes of the Earth: Continental Drift, Sea Floor Spreading and the Theory of Plate Tectonics; Mountains, Earthquake and volcano. Earth surface system: Weathering, Erosion and their role in forestry; Geological work of rivers, glaciers, wind and groundwater and their products.

Unit II

Crystallography: Crystal forms, Symmetry elements of crystallography. Notation system of Weiss and Miller. Classification of Crystal system.

Mineralogy: Structure and classification of silicate minerals. Physical properties of minerals. Physical properties of important Silicate and economic minerals: Quartz, Jasper, Orthoclase, Plagioclase, Microcline, Muscovite, Biotite, Garnet, Olivine, Augite, Hornblende, Tourmaline, Talc, Gypsum, Fluorite, Calcite, Apatite, Barite, Asbestos. Phosphorite, Beryl, Kyanite, Galena, Sphalerite, Pyrite, Hematite, Chromite, Bauxite and Coal.

Unit III

Structural Geology: Concept of Laminations, Bed, Dip, Strike, True and Apparent dips. Elementary idea of cleavage, joints and lineation, Unconformities, Classification of Folds and Faults.

Unit IV

Paleontology: Fossils, their mode of preservation Index fossils.

Stratigraphy: Geological Time Scale. Principles of Stratigraphy; Time unit, Rock unit and Time-rock- unit. Archean Geology : Preliminary idea of Cratons of India. Craton of Rajasthan (Bhilwara Supergroup to include BGC and Pre Aravalli metasediments). Proterozoic and Palaeozoic sequences of Rajasthan:

Aravalli Supergroup, Delhi Supergroup, Vindhyan Supergroup, Marwar Supergroup and Malani Igneous Suite. Mesozoic sequences of western Rajasthan. Tertiary of Western Rajasthan. Quaternary Geology: Thar Desert and Palaeochannels of Saraswati river and its significance in plantation.

Unit V

Igneous Petrology: Composition of magma, Forms, Textures and structures of igneous rocks; Tabular classification of Igneous rocks; Megascopic characteristics of the following rocks: Granite, Syenite, Gabbro, Anorthosite, Peridotite, Dolerite, Pegmatite, Lamprophyre, Rhyolite and Basalt.

Metamorphic Petrology: Metamorphism and its kinds and agents, Texture and structures of metamorphic rocks. Classification of metamorphic rocks. Megascopic characteristics of the following rocks Quartzite, Marble, Slate, Phyllite, Schist, Gneiss, Migmatite, Granulite and Charnokite.

Unit VI

Sedimentary Petrology: Sediments and Sedimentary rocks, the process of their formation Sedimentary Textures and structure, Heavy minerals; Classification of Sedimentary rocks. Elementary knowledge of sedimentary environments.

Environmental Geology: Concept of natural ecosystem, Interaction and interrelation of Atmosphere, Hydrosphere, Lithosphere and Biosphere. Types of Soils and soil zones. Significance of Soils in forestry. Application of landscape and forest in geotourism.

Unit VII

Economic Geology: Definition and types of Economic minerals. Elementary idea of Ore forming process and deposits. Physical properties, mode of occurrence and economic use of following economic minerals along with their locations in Rajasthan state with special reference to Lead, Zinc, Copper, Phosphorite, Gypsum, Quartz, Asbestos, Wollastonite, and Talc. Elementary idea about Petroleum and lignite deposits of western Rajasthan. Relationship of mining and forestry.

Unit VIII

Remote Sensing: Fundamentals of Remote Sensing; study of aerial photographs and imageries for Geomorphology, Structural Geology, Lithology and forestry. Applications of Remote sensing in mineral exploration and forest areas.

Unit IX

Groundwater Hydrogeology: Hydrological cycle, Types of Groundwater, vertical distribution of groundwater. Surface and Groundwater reservoirs : Aquifer, Aquiclude, aquitard and Aquifuge. Hydrogeological properties of groundwater. Darcy's Law.

Unit X

Mineral, Forest and Environmental Policies : Elementary idea of National mineral policy. Mineral concession rules. Environmental policies and forest.

Note :- **Pattern of Question Paper**

- 1. Objective type paper**
- 2. Maximum Marks : 200**
- 3. Number of Questions : 120**
- 4. Duration of Paper : Three Hours**
- 5. All questions carry equal marks.**
- 6. There will be Negative Marking.**