

RAJASTHAN PUBLIC SERVICE COMMISSION, AJMER

SYLLABUS FOR COMPETITIVE EXAMINATION FOR THE POST OF CHEMIST IN ARCHIVES DEPARTMENT

Part-A

- 40 Questions

Unit-I: History, Culture & Heritage of Rajasthan -

Pre & early history of Rajasthan. Age of Rajputs: Major dynasties of Rajasthan and the achievements of prominent rulers. Emergence of Modern Rajasthan: factors of socio-political awakening of 19th century; Peasants and tribal movements of 20th century; Political struggle of 20th century and the integration of Rajasthan.

Visual Art of Rajasthan - Architecture of forts and temples of Rajasthan; Sculpture traditions of Rajasthan and various schools of painting of Rajasthan.

Performing Arts of Rajasthan - Folk music and musical instruments of Rajasthan; folk dance and folk drama of Rajasthan.

Various religious cults, saints and folk deities of Rajasthan.

Various dialects and its distribution in Rajasthan; literature of Rajasthani language.

Unit-II: Geography, Natural Resource & Socio-Economic Development of Rajasthan

Geography of Rajasthan: Broad physical features- Mountains, Plateaus, Plains & Desert; Major rivers and lakes; Climate and Agro-climatic regions; Major soil types and distribution; Major forest types and distribution; Demographic characteristics; Desertification, Droughts & Floods, Deforestation, Environmental Pollution and Ecological Concerns.

Economy of Rajasthan: Major Minerals- Metallic & Non- Metallic; Power Resources- Renewable and Non Renewable; Major agro based industries- Textile, Sugar, Paper & Vegetable oil; Poverty and Unemployment; Agro food parks.

Unit-III: Current Events and Issues of Rajasthan and India -

Important Persons, Places and Current events of the State. National and International events of importance. New Schemes & Initiatives taken recently for welfare & development in Rajasthan.

Part- B

110 Questions

Unit 1: Atomic Structure –

Atomic Number, Isotopes and Isobars, Concept of shells and subshells, Dual nature of matter and light, De Broglie's relationship, Concept of orbitals, Quantum number, Aufbau principle, Pauli's exclusion principle, Hund's rule and electronic configuration of elements.

Unit 2: Periodic Properties –

Modern Periodic law, Periodic trends in properties of elements, Atomic radii, Ionic radii, Ionization enthalpy, Electron gain enthalpy, Electronegativity, Noble gases.

Unit 3: Chemical Bonding and Molecular Structure-

Valence electrons, Ionic bonds, Covalent bond, Hydrogen bond, Coordinate bond, Vander Waal's forces, Lewis structure, Valence bond theory, VSEPR theory, Hybridization, Molecular orbital theory.

Unit 4: Basic Principles of Organic Chemistry-

General introduction, Methods of purification, IUPAC nomenclature, Inductive effect, Electromeric effect, Resonance, Hyper-conjugation, Isomerism, free radicals,

Electrophiles and Nucleophiles, Application of Green chemistry.

Unit 5: Alcohols, Aldehydes and Ketones-

Alcohol- Nomenclature, Methods of preparation, Physical and Chemical properties of primary alcohols, Uses of methanol and ethanol.

Aldehydes and Ketones- Nomenclature, Nature of carbonyl group, Methods of preparation, Physical and chemical properties, Uses of acetone.

Unit 6: Concepts of Acids and Bases-

Basic properties, Ionization and degree of ionization, Strong and weak electrolytes, pH and its measurement, Buffer solution, Indicator, Non-aqueous solvents, hard-soft acid-base concept.

Unit 7: Analytical Chemistry-

Volumetric and gravimetric analysis, Solvent extraction, Distribution law and batch extraction, Co-precipitation, Colloidal properties, Chromatographic techniques, UV-Visible, IR, Mass and NMR spectroscopy. Laboratory safety measures.

Unit 8: Archives and Archival Materials-

Archival Institutions in India, National and International institutions providing training in conservation of archival materials; Important Books and Journals.

Types of Archival materials, Deterioration types (acidity, tears, holes, fungal growth, stains, weakening of paper).

Agents of deterioration of archival materials (insects, acidity, inappropriate handling, environment).

Unit 9: Conservation Measures-

Preventive Conservation measures - Control and monitoring of environment, Proper handling, storage and display of archival materials.

Remedial Conservation measures (cleaning, fumigation, deacidification, repair and mending), Traditional materials and methods of conservation.

Unit 10: Laboratory reagents, tools and equipment-

Starch paste, Polyvinyl acetate, Thymol, p-dichlorobenzene, Cellulose acetate, Acid free paper.

Fumigation chamber, pH paper and Meter, Equipment for measuring tensile and bursting strength, Identification of paper and ink, Polymers, adhesives and preservatives used in conservation of archival materials.

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Scheme of Examination

S. No.	Subject	No. of Questions	Total Marks	Examination Duration
Part-A	General Knowledge of Rajasthan	40	40	2.30 Hours
Part-B	Concerned Subject	110	110	
Total		150	150	

1. The competitive examination shall carry 150 marks and 150 questions of Multiple Choice Type questions.

2. There shall be one paper. Duration of Paper will be Two hours and Thirty Minutes.

3. Negative marking shall be applicable in the evaluation of answers. For every wrong answer one-third of the marks prescribed for that particular question shall be deducted.

Explanation :- Wrong answer shall mean an incorrect answer or multiple answers.

उक्त पद हेतु आयोजित की जाने वाली परीक्षा के लिए ओ.एम.आर. उत्तरपत्रक में प्रश्नों के विकल्प भरने के संबंध में विशेष निर्देश:-

1. Each question has five options marked as 1, 2, 3, 4, 5. You have to darken only one circle (bubble) indicating the correct answer on the Answer Sheet using BLUE BALL POINT PEN.

2. It is mandatory to fill one option for each question.

3. If you are not attempting a question then you have to darken the circle '5'. If none of the five circles is darkened, one third (1/3) part of the marks of question shall be deducted.

4. After solving question paper, candidate must ascertain that he/she has darkened one of the circles (bubbles) for each of the questions. Extra time of 10 minutes beyond scheduled time, is provided for this.

A candidate who has not darkened any of the five circles in more than 10% questions shall be disqualified.