

ALIGARH MUSLIM UNIVERSITY, ALIGARH

FACULTY OF LIFE SCIENCE

SYLLABUS FOR

M.SC. MUSEOLOGY

Introduction, chemical composition of atmosphere- Particles, ions and radicals and their formation. chemical and petrochemical reactions in atmosphere, smog formation, pollution by chemicals, petroleum, chlorofluorocarbons. Biogeochemical cycles of Carbon, Nitrogen and Phosphorus. Green house effect, acid rain, air pollution control and their chemistry. Analytical methods for measuring air pollutants.

Composition, micro and macro nutrients, pollution – fertilizers, pesticides, plastics and metals, waste treatment.

Cement, sugar, paper and pulp, drugs, thermal power plants, nuclear power plants etc. disposal of wastes and their management

Chemical solution to environmental problems, biodegradability, principles of decomposition, Bhopal gas tragedy, Chernobyl etc..

Basic metallurgic operations: Pulverization, calcinations, roasting, refining. Physicochemical principles of extraction of: Iron, copper, lead, silver, sodium, aluminum, magnesium, zinc, chromium.

Inorganic materials of industrial importance: Their availability, forms structure and modification, Alumina, Silica, Silicates, Clays, Mica, Carbon, Zeolites.

Material Science :- Mechanical properties of material and change with respect to temperature. Materials of construction used in Industry.

Materials of Alloys- Important metals and alloys, iron, copper, aluminum, lead, nickel, titanium, and their alloys- mechanical and chemical properties and their applications.

Angiosperms: Identification, Nomenclature and Classification

Comparison of systems of classification (Bentham & Hooker and Engler & Prenatal): Primitive and Advance features; Salient features of Botanical Nomenclature.

Diagnostic features of the following families with reference to local flora and economic importance: Ranunculaceae, Malvaceae, Brassicaceae, Pappilionaceae, Ceasalpynaceae, Solanaceae, Astraceae, Poaceae.

Ecosystem development and energy flow:

Ecosystem: Concept and structure, energy flow, ecological efficiencies etc. Biotic and abiotic components their interrelationships. Trophic organisation, autotrophy, heterotrophy, parasitism, detritus and decomposition.

Systematics in practice- Importance of herbarium specimens and their preparation; Role of herbaria and botanical gardens.

Human ecology and ecological management:- The Human population , renewable and non-renewable recourses and their management, conservation of biodiversity, endangered species.

Geology and its perspective: Earth in the solar system: origin, size, shape, mass, density, rotational and revolution parameters. Formation of core, mantle, crust, hydrosphere & biosphere. Origin of oceans, continents and mountains. Earthquake and earthquake belts, its measurement.

Volcanoes: types and distribution. Types of rocks and their significance. Palaeobiology: Definition, branches and scope. Preservation, potential of organism, requirement of fossilization. Fossils, process of fossilization and different kinds of fossils. Elementary idea about origin of life.

Introduction to Natural History: Ecology & Evolution, Geological time chart, Taxonomy and binomial nomenclature, Concept of species and genus. Characteristic features of animal phyla from protozoa to mammals. Current Environmental Issues and Nature Conservation.

Cell structure and chemical organisation: Techniques in cell biology, cell culture, cell theory, structure of prokaryotic and eukaryotic cells, animal and plant cell, chemical organisation of cell.

Genetics: Mendelian inheritance, genetic control and pedigree. Gene interaction Linkage and crossing over, sex determination. Structure of chromosome, Chromosomal disorder and karyotypes(Human).

Introduction to History and Archaeology: Ancient Indian History and its Sources, Medieval Indian History: Sultanate Period and Mughal Period: Important Rulers and their contribution to Art and Architecture
Important Battles of Indian History and their impact on Socio-economic conditions
Basics of Archaeology, Contribution of Archaeology in History writings, Historical Sources etc. Relation of Museology field with History and Archaeology.

Basics of Fine Arts and History of Arts: Elements of Arts, Colour Wheels and Colour Schemes

Important Painters of the world and their work, Pre-Historic Paintings of India: Ajanta Paintings and their techniques.

Mughal Paintings, Pahari Paintings, Rajasthani Paintings, Bengali Schools of Arts, Modern Indian Paintings, Mathura School of Arts.

Important Sculpture of Pre-Historic Periods, Mauryan Period and Gupta Period.

Brief Survey of Indian Architecture: Rock Cut Temples, Stupas, Mughal Architecture etc.

Introduction to Geography: Physical Geography: Land Forms, Weather and Climate, The Geography of Natural Resources, Population Geography, Human Impact on the Environment, Concept of Sustainability. Geographic Coordination System: Latitude, Equator, Tropic of Cancer, Tropic of Capricorn. Geographical Data: Its importance and uses in various disciplines. Use of Remote Sensing and GIS.

Environmental Studies and Issues: Environment and its Multidimensional Nature: Forest Resources, Water Resources, Energy Resources and Land Resources etc. Bio-Diversity and its types. Hot Spots of Bio-diversity, In-situ and Ex-situ conservation

Social Issues and the Environment, Environmental Pollution: Water, Air and Land, Causes of Environmental Degradation. Climate Change and Global Warming. Conservation Laws.

General Knowledge Pertaining To: Cultural and Natural Heritage of India (Tangible & Intangible): Dances, festivals, Music, Drama, monuments, traditions & rituals, flora, fauna, national parks, bird sanctuaries, fragrances and calls & voices of animals etc. National and International Laws Pertaining to Natural and Cultural Heritage. History, History of Arts, History of Science. Current environmental and health Issues. Important Museums, Archives and Libraries of India. Other important current event and issues of the world.