Syllabus for the Post of Conservation Assistant in Department of Archaeology, GNCTD

History of Architecture in India

- Origin of physical forms and structures in Indian architecture
- Harappan and Post Harappan Architecture
- Pre-Mauryan and Mauryan Architecture
- Development of Stupa Architecture - Sanchi, Bharhut, Amaravati, Nagarjunakonda, Sarnath etc.
- Beginning of Rock-cut Architecture – Sudama Cave, Lomas Rishi, Bhaja, Kondane, Nasik, Pitalkhora, Karle Khandgiri, Ajanta and Elephanta etc.
- Rock-cut Architecture – Mamallapuram and Ellora (Kailash Temple) etc.
- Rock-cut Architecture of Ajanta, Pitalkohra and Ellora (Buddhist and Jain Caves) etc.
- Beginning of Temple Architecture - Sonkh, Deogarh, Bhitargaon, Aihole and Pattadakal etc.
- Evolution of Nagara Style of Temple - Gwalior, Khajuraho, Bhubaneshwar and Konark etc.
- Evolution of Dravidian Style of Temple - Aihole, Pattadakal, Badami, Mamallapuram, Thanjavur, Hampi etc.
- Evolution of Vesara style of temple - Mount Abu, Gujarat and others Somanth, Halebid etc.
- Regional Architecture Styles
- Architecture of Sultanate period.
- Architecture of Mughal period.
- Anglo-Indian Architecture.

Conservation, Preservation and Restoration of Heritage components and Conservation technique

Ancient Monuments, Remains and Heritage Buildings

- Idea of shelter, pit dwelling, rock alignments, memorials, shrines, tanks and fortification
- Mediums of construction
- Functional aspects of earthen and timber architecture and its associated technology
- Deterioration, conservation, preservation and maintenance

Stone and Burnt Brick Structures, including rock cut specimens

- Rock cut, stone and Burnt Brick Architecture, use of building materials and technology in historical building
- Significance of stone/ brick architecture and rock cut structure
- Technology, deterioration, conservation, preservation and maintenance
- Review of Indian building technology with special reference to important buildings with case studies

Historical Gardens, Cultural Landscapes and Archeological Sites

- Nature of Archaeological sites, landscapes
- Historical Settlements - Salient features, patterns etc.
- Heritage Complexes - concept, conservation and preservation
- Development of site historical landscape and restoration of natural and artificial surrounding

Conservation Techniques

- Structural Consolidation and repairs Structural failures, and stresses and their patterns, Under pinning, rock bolting, filleting, jacketing, grouting etc.
- Temporary support, propping and strutting, reconstruction
- Foundation strengthening, nature of soil, failures, consolidation etc.

Restoration and conservation of Architectural Decorative Elements like Inlay, stucco, tiles, glass and mirror work and field studies in conservation

Architectural and Engineering Technology

Architectural Technology

- Basic principle and concepts of architectural technology
- Architectural design and functional requirements and factors influencing architecture
- Architectural design and engineering systems
- The integration of various building and supports systems

Engineering Technology

- Basic Principles and concepts of construction engineering technology
- Interrelated nature of structures, construction and environmental system
- Structural forms and arches, slabs, plates, beams, curved surface structures
- Lateral forces and static and dynamic loads and structural technology

Building Materials and Structural Systems

- Traditional building materials used in India, from pre-historic times till date: Earth, clay, stone, brick, timber, bamboo, lime, iron, metals and glass.
- Lime— types, manufacturing process, and uses.
- Cement and concrete for external rendering, physical and chemical properties, permeability Stones.
- Mortars used in architecture.
- Decorative architectural material
- Materials used in structural, non – structural and decorative applications: mortars, renders, paints and plasters, additives and stabilizers.
- Categorization of materials as organic and inorganic, mixture of both and compound materials: physical, chemical and mechanical properties.
- Common binding materials, their properties and techniques of preparation.
- Process of Identification of defects: Field investigations, field-tests, Standard test methods, equipment used for detecting and measuring common problems in historic buildings.
- Diagnosis and assessment of defects and common problems in historic building materials.
- Remedial measures for common material defects in historic structures.
- Cleaning and maintenance of Historic building fabric.
- Introduction to historic building technology, structure and construction systems.
- Sub structure : Foundation, walls, piers and columns
- Super structure I : Beams, arches, vaults, domes
- Super structure II : Brackets, Chhatris, Door, Windows, Balconies etc.
- Farmwork : centering, scaffolding (wood and steel) trusses and frames, joints and joining.
- Problems in Historic buildings due to alteration in material properties and performance.
- Theory of structures and analysis of structural components of historic buildings: Load transfer systems, support systems, spanning systems, infill material, strength and weakness of traditional

building technologies and composite structural systems (foundations, arches, domes, vaults, columns, beams, roofing etc).

- Common Structural defects in historic buildings, cause and nature of distress: types of cracks, differential settlement, geo-technical issues.
- Methodologies for inspection and diagnosis of structural defects: Introduction to various types of tests such as Destructive Tests (DT), Minor Destructive Tests (MDT),
- Non-Destructive Tests (NDT). Monitoring techniques.
- Structural analysis techniques. Conservation of historic building: Immediate temporary emergency measures for distressed buildings: shoring, underpinning, shuttering etc. Stabilization, consolidation, grouting, pointing, strengthening retrofitting and replacement etc.
- Deterioration and conservation of 20th century heritage structures in concrete and other modern materials.

Management of Historic Building Systems

- Definitions and concepts: maintenance and management.
- Historic building maintenance, management problems and remedial measures.
- Information Management: methods of documenting and recording of historic structures, areas, cities and regions. Compilation of inventories of cultural resources.
- Process of identification of heritage assets and methodology of listing.
- Computer application in Heritage Recording and Monitoring Information Systems (MIS).
- Photography, Arial Photography and Photogrammetry.
- Maintenance and management techniques: Case studies of maintenance programs, Consequential repairs, Special repairs, Annual repairs and Risk preparedness.
- Preparation of Maintenance programs for historic buildings; Planning, Policy formulation, and standards for maintenance.
- Specification of Conservation and Maintenance works: material specifications, performance specifications, measurement and valuation of conservation works.
- Management of Conservation projects: Parties and their responsibilities, types of contracts and agreements, tenders, evaluation and award, contract administration, cost control, work plan project monitoring and reporting, quality control and certification.

Integrated Urban Conservation

- Reading the morphology of a historic settlement and its associated region.
- Parameters/systems that shape historic settlements and their architectural form: the city assembled and the city shaped in the Indian context.
- The discourse on traditional and contemporary urbanism.
- Historic cities as repositories of knowledge: the Indian context.
- Historic urban landscapes approach: Urban conservation as an interdisciplinary and multidisciplinary process.
- History of integrated urban conservation approaches in the world with select examples: York, Chester, Bath, Bologna, Ferrara, Cairo.
- Approaches to integrated conservation in India with select examples explaining urban conservation tools and methods: Inner city regeneration, adaptive reuse, infill development etc.
- Institutional framework for urban conservation and renewal strategies in India.

Heritage Law and Jurisprudence

- The role of law and its importance for society.
- Principles and approaches to heritage legislation in the International context e.g. Malraux Act, Civic amenities Act, World Heritage Sites regulatory frameworks and case studies.
- Overview of evolving heritage management systems and linked legislation in India; ASI: Conservation Policy.
- Detailed assessment of the Indian legal framework in the context of protected and unprotected buildings and historic settlements: AMASR, Model Heritage Act, Planning legislation, Municipal Acts, Environment Act, Rent Control Act, Slum Act, Land Acquisition Act etc.
- AMASR Act Amendment 2010 and implications for urban conservation.
- The Delhi Ancient and Historical Monuments and Archaeological Sites and Remains Act, 2004 (DAHMASR Act 2004).
- Regulatory mechanisms and planning incentives for conservation.
- Public Interest Litigation for Heritage assets: Case studies.
- Legislation pertaining to adaptive reuse: International case studies.

Heritage Tourism

- Sustainable tourism: definitions and approaches.
- Importance of tourism in India: Potentials and problems.
- International Charters and National policies & programmes.
- Pilgrimage as an aspect of cultural tourism.
- Tourism management and infrastructure improvement for better heritage resource management.
- Potential of adaptive reuse and conservation planning: Tourism Impact Assessment and Evaluation of carrying capacity for significant heritage destinations such as hill stations, pilgrim towns, sacred landscapes, eco-sensitive areas.
- Role of host communities and stakeholder groups for participatory tourism management in historic areas: Case Studies.
- Formulation of visitor management plans.

Documentation Tools

- Understanding and need for documenting different types of heritage components. Introduction to various methods of documentation. Standards of documentation. Methods of inventory, survey questioners and data recordings. Methods of demography and population studies – population projections, introduction to Census data and sale surveys.

- Difference between data and documentation. Appropriate documentation techniques of various scales and components of cultural resources. Application of documentation techniques. Communicating documentation including technical skills and competence. Principles of surveying, scales and measurements, types of instruments and their uses. Errors in measurement and corrections, recording field notes and obstacles in surveying.