GOVERNMENT OF INDIA
MINISTRY OF CULTURE
LOK SABHA
UNSTARRED QUESTION NO-4366
ANSWERED ON -27/03/2023

REGULAR TRAIING TO OFFICERS

4366. SHRI THOMAS CHAZHIKADAN

Will the Minister of CULTURE be pleased to state:-

(a) whether archaeology, epigraphy, numismatics, archaeological science, historical landscape, conservation and restoration are not part of the curriculum in most of the academic institutions;

(b) if so, the details thereof;

(c) whether there exists any system of providing regular training and orientation for in-service officers of different grades in the field of archaeology, epigraphy, numismatics, archaeological science, historical landscape, conservation and restoration; and

(d) if so, the details thereof?

ANSWER

THE MINISTER OF CULTURE, TOURISM AND
DEVELOPMENMT OF NORTH EASTERN REGION

(SHRI G KISHAN REDDY)

(a) Yes, Sir. Two years Post Graduate Diploma in Archaeology, offered by Pt. Deendayal Upadhyaya Institute of Archaeology, Archaeological Survey of India (ASI) includes epigraphy, numismatics, archaeological science, conservation etc. in the curriculum.

(b) Details of the syllabus is attached in annexure-1

(c) Yes Sir

(d) In-service officers from the ASI, State Archaeology Departments and nominated personnel from SAARC & BIMSTEC Countries also get training under the Post Graduate Diploma in Archaeology. Apart from Two Years Diploma course, ASI organizes workshops and short-term training programmes on various subjects related to Archaeology i.e. epigraphy and numismatics, structural & chemical conservation, Geographical Information System (GIS), Stone Tool Typology, Pottery Making & Firing Process, Ceramics, Bead Making in Ancient India & Field Training in Explorations & Excavations etc. for the capacity building of in-service personnel of different grade.

ANNEXURE REFERED IN REPLY TO PART (b) OF THE LOK SABHA UNSTARRED QUESTION NO.-4366 FOR 27/03/2023

(ANNEXURE 1)

Sr No	Name of the Paper	Unit	Syllabus of 02 Years Post Graduate In Archaeology
1.	Paper-I Principles & Methods of Archaeology	1	**1. Introduction to Archaeology** 1. Archaeology: definition, scope, relevance 2. Relation with history and science 3. Terms in archaeology: culture, assemblage
		2	**2. History of Archaeology** 1. The Background: from antiquarianism to modern archaeology 2. Development of field techniques; growth of archaeology as scientific discipline 3. History of archaeology in colonial India: from 18th century to 1947 4. Archaeology in Independent India: contribution of institutions and individuals 5. Archaeological Theories: A historiographical perspective
		3	**3. Methods of Data Retrieval** 1. Field discoveries: aims and methods of Explorations; Chance discoveries; Map and satellite image studies; Village to village survey, salvage archaeology, geophysical methods, sampling methods, Photogrammetry, Geographical Information System 2. Unearthing the sites: planning excavations; layout; techniques of Excavations – Vertical; Horizontal, tools and equipment's 3. Excavation of sites: rock-shelter and prehistoric sites; burial; stupa; mud structures, pottery yard etc 4. Methods of recording the contexts of excavated remains; preparation of sections and plans, role of stratigraphy, three-dimensional recording, site formation processes 5. Retrieval of botanical and other non-artefactual remains: Floatation technique, soil analysis, sample collection of various materials 6. Underwater archaeology: Indian studies 7. Experimental archaeology
		4	**4. Post-Excavation Analysis** 1. Classification of objects / findings 2. Reconstruction of socio-economic aspects, including contextual and site catchment analysis 3. Recording methods (a) Drawing-pottery, site and antiquity, plan, elevation, section (b) Photography-indoor, elementary photochemistry (c) Surveying; instruments and their use, preparation of maps, cartography 4. Scientific analysis of excavated remains 5. Establishment of site laboratory
		5	**5. Chronology and Dating Methods** 1. Stratigraphy: Principles of stratification, factors and process of formation of layers, Identification and recording of strata, Reconstruction of cultural sequence 2. Determining the chronology and periods of the excavated remains

			3. Other methods of Relative chronology: Typology, Statistical studies 4. Absolute methods of dating: Radiocarbon, Potassium-argon, Thermoluminiscence, Pollen analysis, Fluorine test, Obsidian hydration, Dendrochronology
		6	**6. Report writing and Publication** 1. Report writing 2. Preparation of text, drawings, photographs 3. Preparation of dummy, proof reading
2	**Paper – II** **Application of Sciences in Archaeology**	1	**GEOARCHAEOLOGY** 1. Geological time-scale – the position of the Quaternary Period within the standard geological column; plio-pleistocene boundary 2. Rocks – types of rocks: igneous, sedimentary and metamorphic, their characteristic features, origin and field structures, general information on rocks found in India 3. Minerals – definition and types, simple physical properties for distinguishing common minerals: colour, luster, transparency, hardness (Moh's scale of hardness), fracture and cleavage, crystalline forms of minerals and conditions of crystal formations 4. General study of rock forming minerals: quartz, feldspar, mica 5. Minerals used in the manufacture of ancient objects – quartz, chalcedony, agate, jasper, flint, opal, amethyst, carnelian, mica, garnet, calcite, gypsum, talc, beryl, topaz, jade etc. 6. Weathering, soils and palaeosols in archaeology: various land forms, nature and causes of weathering, rate of weathering, weathering and site formation, weathering and relative dating, soil micromorphology and archaeology, loess, paleosols 7. Fluvial environments in archaeology: river terraces and other formations, alluvial archaeology – understanding site formation and palaeoenvironment; lacustrine deposits and sea level changes 8. Formation of caves and glacial deposits – moraines 9. Quaternary formations with special reference to India , Geochronology, Biota, Sedimentology 10. Pedology, volcanic ash deposits
		2	**ANTHROPOLOGY** 1. Meaning and scope of Anthropology and its relevance in archaeological studies 2. Physical anthropology and its application to archaeology, measurements of skull and bones, prognathism, cranial capacity, etc
		3	**ENVIRONMENTAL ARCHAEOLOGY** 1. Palaeo-environmental survey of India during Pleistocene and Holocene with examples 2. Palaeo-environmental indicators and varieties of evidences 3. Methods of study, sample collection, different techniques applied 4. Human – land relationships: understanding the impact of environmental change on early societies

		4	**ARCHAEOZOOLOGY** 1. Application of archaeozoology in reconstruction of past 2. Survey of animal fossil remains and archaeozoological remains from archaeological sites in India 3. Palaeontology, fossilization, taphonomy, diatom 4. Sample collection, processing, methods of analysis
		5	**ARCHAEOBOTANY** 1. Application of archaeobotany in reconstruction of the past 2. Survey of plant remains and related evidences from archaeological sites in India 3. Study of wood, grains, impressions, fossils, coprolites, phytoliths, pollens and spores 4. Sample collection, processing, methods of analysis, plant DNA
		6	**HUMAN OSTEOLOGY AND PALAEOPATHOLOGY** 1. Application of human osteology in construction of past and various methods of study 2. Survey of disposal of dead from archaeological sites in India 3. Collection methods, methods of cleaning and reconstruction, age and sex estimation, palaeopathology; DNA polymorphism; blood residual studies
		7	**QUANTITATIVE METHODS AND INFORMATION SCIENCE** 1. Place of quantitative methods in archaeological research 2. Introduction to simple statistics and its application in interpreting the past 4. Data management systems, GIS, Remote sensing 5. Types of computer languages, use of readymade soft wares 6. Concepts of modelling: use of computers I simulation and modelling of archaeology
		8	**Archaeological Chemistry** 1. Role of Chemistry in different fields of archaeology **2.** Application of chemistry in archaeology: Indian examples **3.** Preliminary study of soils and sediments, pH, colour, texture, organic carbon, calcium carbonate, phosphate contents **4.** Application of chemistry in bones, building materials, metals etc.
		9	**Archaeometallurgy** 1. Analysis of metal artifacts and their interpretation **2.** Survey of metallurgical studies carried out in Indian archaeology
3	Paper-III Prehistory	1	**INTRODUCTION** 1. Prehistory: definition, scope, terminology and periodisation 2. Quaternary Period: position of prehistory in geological chronology, climatic conditions 3. Prehistoric sites: type and nature of sites, landscape configuration, primary and secondary sites 4. Stone tool technology, typology, material and study of stone artefacts

		2	**WORLD PERSPECTIVE** 1. Hominid fossils and the question of human evolution: Human evolution tree, Australopithicus, Homo habilis, Homo erectus, Neanderthal, Java man, Peking man and other major hominidae fossil evidences. India 's place in the current scheme of human evolution – Narmada skull and other discoveries 2. Prehistory of Africa (a) Prehistory of South Africa :Palaeoenvironment and Stone Age cultures with special reference to Olduvai Gorge (b) Prehistory of East Africa : Palaeo-environment and Stone Age cultural succession (c) Late Stone Age cultures and Rock art 3. Prehistory of Europe (a) Lower Palaeolithic cultures of Europe : Palaeo-environment, important sites with cultural remains (b) Middle Palaeolithic cultures of Europe (c) Upper Palaeolithic culture and art of Europe (d) European Mesolithic cultures 4. Mousterian culture of Central Asia
		3	**SOUTH ASIAN PERSPECTIVE** 1. A historiographical perspective – from Robert Bruce Foote till the present 2. Palaeo-environment conditions with special reference to Potwar plateau and Kashmir , Rajasthan, Son valley, Teri sites, etc (a) Survey of Lower Palaeolithic cultures, distribution, artefacts, technology, raw material, economy, contextual occurrence of tools, chronology, types of sites (b) Important sites and regions: Potwar plateau (de Terra & T.T. Paterson's work, current understanding), Kashmir, Himachal Pradesh, Rajasthan, Delhi & Haryana, Central India with special reference to Bhimbetka&Adamgarh, south India with reference to Attirampakkam, Renigunta&Hunsgi – Baichbal valley, Chota Nagpur plateau, Uttar Pradesh, Maharashtra, Nepal, etc 3. 3. (a) Survey of Middle Palaeolithic cultures, distribution, artefacts, technology, raw material, economy, contextual occurrence of tools, chronology, types of sites 4. (a) Survey of Upper Palaeolithic cultures, distribution, artefacts, technology, raw material, economy, contextual occurrence of tools, chronology, types of sites, epi-palaeolithic (b) Important sites: Patne, Kurnool caves, evidence from Sri Lanka and Bangladesh ,etc Important sites: Bagor and Tilwara, Langhnaj, Birbhanpur, Teri sites, Adamgarh, Bhimbetka, Sarai NaharRai, Mahadaha, Damdama 5. (a) Survey of Mesolithic cultures in India, distribution, artefacts, technology, raw material, economy, question of microliths, pottery, etc in association with animal domestication (b) Important sites: Bagor and Tilwara, Langhnaj, Birbhanpur, Teri sites, Adamgarh, Bhimbetka, Sarai NaharRai, Mahadaha, Damdama 6. Rock Art (a) Recording system, interpretation of rock art, dating of rock art

			(b) Survey of rock art in India
4.	**Paper – IV** **Protohistory**	1	**INTRODUCTION** Protohistory: definition, scope, terminology Beginning of agriculture and domestication of animals and plants
		2	**II. WORLD PERSPECTIVE** Survey of early agricultural societies in West Asia , Egypt and China Neolithic cultures of south-east Asia
		3	**III. SOUTH ASIAN PERSPECTIVE**
			1. Survey of Neolithic cultures with special reference to the early domestication of wheat-barley and rice cultivation
			a. distribution, artefacts, technology, raw material, economy, question of microliths, pottery, etc in association with animal domestication
			b. Regional distribution of sites
			i) Baluchistan
			ii) Northern India
			iii) Central India
			iv) Eastern and north-eastern India
			v) Peninsular India
			2. Chalcolithic cultures
			A Diagnostic features, range and chronology
			B Chalcolithic cultures of Baluchistan and adjacent areas
			C Chalcolithic cultures of Rajasthan: Ahar, Gilund, Balathal, Ojiyana, Ganeshpur-Jodhpura sites
			D Chalcolithic cultures of central India :Kayatha, Navdatoli, Maheshwar, Eran
			E Chalcolithic cultures of eastern India :Chirand, Senuwar, PanduRajarDhibi, Mangalkot, GolbaiSasan
			F Chalcolithic sites of Ganga plain: Sohgaura, Narhan, Malhar, Lahuradewa
			G Chalcolithic cultures of Deccan : Jorwe, Prakash, Bahal, Nevasa, Daimabad, Chandoli, Sonegaon, Inamgaon, Kaote
			H Neolithic-Chalcolithic cultures of South India :Piklihal, Brahmagiri, Sanganakallu, Tekkalakota, Hallur, Maski, T.Narsipur
			3. Harappan Civilization
			A Terminology, history of Harappan studies in India , discovery and identification of the Harappan civilization
			B Emergence of the early Harappan period – Ravi , Hakra and Amri cultures
			C Early Harappan period, concept and evolution of terminology, characteristic features, different cultural zones during early Harappan period and distribution pattern
			i) Important sites: Amri, KotDiji, Harappa, Nausharo, Kulli, Mehi, Nal-Nundara, Mundigak, Rahman Dheri, Sarai Khola, Kalibangan, Dholavira, Banawali, Rakhigarhi, Baror, Bhirrana

			D Nature of transition from early Harappan to mature Harappan
			E Mature Harappan period, concept, distribution pattern and extent, characteristic features, standardisation
			i) Town planning and settlement types, architecture
			ii) Society and social organisation
			iii) Agriculture, floral remains
			iv) Faunal remains
			v) Trade: Inland and Foreign, Mesopotamian contacts, literary references, items traded
			vi) Writing and script, seals and sealing
			vii) Weights and linear measurements
			viii) Pottery
			ix) Religion
			x) Arts and Crafts (painting, terracotta figurines, glyptic art, bronze, steatite, faience figurines, etc)
			xi) Technology • Stone (blade and bead industry), faience, shell, ivory, stone ware, terracotta, pottery, steatite, textile, • Bronze, copper, tin, silver, gold • Survey of raw material sources of various items
			xii) Funerary customs
			xiii) Chronology
			xiv) A survey of excavated Harappan sites: Mohenjodaro, Harappa , Dholavira, Rakhigarhi, Banawali, Kalibangan, Lothal, Surkotada, Bagasra, Kuntasi, Nageshwar, Rangpur, Desalpur
			4. Late / Post Harappan period
			a) Distribution, different cultural zones, chronology
			b) Jhukar-Jhangar, Cemetery H, Gandhara Grave Lustrous Red Ware
			c) Important sites: Jhukar, Harappa , Banawali, Dholavira, Rangpur, Hulas, Alamgirpur, Bhagwanpura, Mitathal
			d) Decline and various theories
			e) Legacy of Harappan civilization
			5. Ochre Coloured Pottery & copper hoards
			a) Distribution: Bahadarabad, Bisauli, Saipai, Lalqila, Atranjikhera, Hastinapur, Jodhpura
			b) Typology
			c) Associated pottery and the cultural affiliation
			d) Dating
			6. Iron Age Cultures
			a) Antiquity of iron in India

			b) Painted Grey Ware culture i) Distribution pattern, relation to late Harappan culture ii) Survey of PGW sites in Pakistan and India iii) Important sites: Ahichchhatra, Hastinapur, Bhagwanpura, Atranjikhera	
			7. Megalithic cultures of India	
			a) Distribution pattern, different types of megaliths, survey of various regional types of megaliths including rock-cut chambers	
			b) Habitation sites	
			c) Important sites: Burzahom, Naikund, Mahurjhari, Kunnatur, Adichanallur, Kodumanal, Brahmagiri, Maski	
5	**Paper – V Historical Archaeology**	1	**SECTION I** 1. Definition and scope. 2. Brief review of archaeology of pre-Mauryan period from 6th century B.C. to 4th century B.C. and contemporary cultural assemblage including potteries of the sub-continent. 3. Technology and elements of economy – historical urbanization. 4. Archaeology of Mauryan period: NBP and other contemporary wares, use of scripts and other salient elements: late 4th century B.C. to 2nd century B.C.	
		2	**SECTION II** 5. Archaeology of post-Maurya period (2nd century B.C. to end of 3rd century A.D.). 6. Archaeology of the period of the Guptas and other contemporary dynasties (4th century A.D. to 6th century A.D.).	
		3	**SECTION III** 7. Archaeology of 7th century A.D. to 10th century A.D. in different regions. 8. Archaeology of 11th century A.D. to 13th century A.D. in different regions	
		4	SECTION IV 9. Archaeology of 14th century A.D. to 16th century A.D. in different regions. 10. Archaeology of 17th century A.D. to 19th century A.D. in different regions.	
		5	1. Cultural sequence of important sites: Sites for detailed study	
			1. Taxila	8. Hampi
			2. Ahichchhatra	9. Bhokhardan
			3. Hastinapur	10. Sannati
			4. Kausambi	11.Nagarjunakonda
			5. Sishupalgarh	12. FatehpurSikri

			6. PuranaQila	13. Arikamedu
			7.Chandraketugarh	14. Adam
		6	**Sites for general study**	
			1. Rajghat	11. Nalanda
			2. Mathura	12. Bhangarh
			3. Sonkh	13. Ambari
			4. Kumrahar	14. Alagankulam
			5. Sravasti	15. Semthan
			6. Brahmagiri	16. Korkai
			7. Banavasi	17. Thanesar (Harsha-ka-Tila)
			8. Champaner	18. VadgaonMadhavpur
			9. Rangmahal	29. Chandor
			10. Lalkot	20. Velha Goa
6	**Paper – VI Epigraphy &Numismatics**		**General**	
			1. Antiquity of writing in old world civilizations (Pictograph, Ideogram, Syllabic and Logo-Syllabic to Alphabet)	
			2. Epigraphy as a source of Indian history	
			3. Writing materials and antiquity of writing in India	
			4. Origin and development of Kharoshthi and Brahmi scripts	
			5. Eras and Dates in Indian inscriptions	
			6. Symbols and Signs in Indian inscriptions	
			7. Early Indian numerals	
			8. Study of seals, sealings and copper plates	
			9. Study of some important inscriptions from north and south India (i) Asokan Rock Edict XIII, Pillar Edict II (ii) Hathigumpha inscription of Kharavela (iii) Besnagar inscription of Heliodorus (iv) Junagadh inscription of RudradamanI (v) Allahabad pillar inscription of Samudragupta (vi) Aihole inscription of Pulakesin II (vii) Ikshvaku inscription of Virapurushadatta (viii) Nasik cave inscription of GautamiputraSatakarni (ix) Banskhera inscription of Harshavardhana (x) Mandagapattu inscription of Mahendravarman I (xi) Uttiramerur inscription of Parantaka I (xii) Brihadeswara temple inscription of RajarajaChola I	
		10	10. Palaeography – North Indian Scripts (i) Early Brahmi (ii) Sunga, Kushana and Kshatrapa inscriptions (iii) Gupta and post-Gupta inscriptions (iv) Box-headed and Nail-headed characters (v) Siddhamatrika (vi) Sarada (vii) Gaudiya (viii) Evolution of Nagari script 11. Palaeography – South Indian Script	

			(i) Tamil-Brahmi (ii) Satavahana, Ikshvaku and Kadamba inscriptions (iii) Origin and development of Telugu-Kannada script (iv) Pallava-Grantha (v) Grantha (vi) Tamil script (vii) Vatteluttu
		11	12. Developmental stages of the following Brahmi letters a, ka, cha, na, pa, bha, ma, ya, sha, sa, ha
		13	13. Use of diacritical marks
		14	**Arabic and Persian Inscriptions** 14. Arabic and Persian inscriptions: broad characteristics of the main varieties of Arabic and Persian inscriptions found in Indo-Islamic calligraphy 15. Arabic and Persian calligraphy with special reference to Kufic, Nask, Thulth, Nastaliq, Tughra, Shikasta, Makus 16. Arabic numerals, chronograms and eras 17. Use of diacritical marks
			NUMISMATICS 1. Numismatics as a source of history 2. Origin and antiquity of coinage in India 3. Coins from excavations and their significance 4. Metal content of coins, weight and shape 5. Authority of issuing coins – Janapadas, Cities, Guilds, Ganas and Dynasties Technique of minting coins: Punch-marked, cast, die-struck and mints in the medieval period 6. Broad characteristics and identification of dynastic coins: Punch-marked, cast copper coins, Indo-Greek, Saka, Satavahana, Kushan, Gupta, Huna, Indo-Sassanian (Gadhaiya), and Rajput 7. Broad characteristics and identification of coins of Chola, Delhi Sultanate, Vijayanagara, Mughal, Kashmir and Ahom
7	**Paper – VII Art & Iconography**	1	**ART**
			1. Art in prehistoric India
			2. Art in protohistoric India – sculpture in diverse mediums, paintings and other works of art
			3. Ancient Indian art in diverse mediums (stone, terracotta, stucco, bone, ivory, metal, etc.): Maurya, Sunga, Satavahana, Kushan, Gupta, Vakataka, Pallava, Chalukya, and Rashtrakuta art traditions with special reference to different art centres / schools, e.g. Amaravati, Bharhut, Sanchi, Mathura, Gandhara, Sarnath, Mahabalipuram, Kanchipuram, Badami, Aihole, Ajanta, Ellora and Bhubaneswar
			4. Early medieval Indian art styles: Pratihara, Chandella, Paramara, Chola, Hoysala, Pala and Kakatiya
			5. Early and medieval mural paintings– technique and styles; with special reference to Ajanta , Bagh, Sittannavasal, Ellora, Thanjavur, etc.
			6. Miniature paintings: Rajasthani, Deccani, Mughal and Pahari schools

			7. Survey of metal images of India with special reference to Pala, Pallava, Chola and Kashmiri styles
		2	**ICONOGRAPHY**
			1. Antiquity and concept of Indian iconography
			2. Brief introduction to sources, mudras, asanas and ayudhas of deities
			3. Brahmanical Iconography: Siva, Vishnu, Surya, Brahma, Ganesa, Karttikeya, Devi (Mahishamardini, Saptamatrikas, Parvati, Lakshmi) Navagrahas and Ashta-dikpalas.
			4. Buddhist Iconography: origin of Buddha images, Dhyani Buddha, Bodhisattva (Avalokiteswara, Maitreya, Manjusri), Tara, MahaMayuri and Prajnaparamita
			5. Jain Iconography: evolution of Jaina images, Adinatha, Neminatha, Parsvanatha, Mahavira, Bahubali, yaksha-yakshi with special reference to Chakresvari, Ambika, Padmavati and Sarasvati
8	**Paper – VIII Architecture**		1. Protohistoric architecture with emphasis on Harappan town planning
			2. Development of architecture from early historical times to 12th century A.D. with special reference to stupas, viharas, chaityas and rock-cut caves
			3. Development of temple architecture and its regional variations with special reference to Deogarh, Bhitargaon, Martand, Nalanda, Osian, Khajuraho, Bhubaneswar ,Aihole, Kanchipuram, Thanjavur, Halebidu, Dilwara, Madurai , Hampi
			4. Indo-Islamic architecture: Delhi Sultanate, Mughal period, provincial styles with special reference to Deccani states and medieval water architecture. Layout of gardens in India through the ages (Dholpur, Humayun's Tomb, Akbar's Tomb, Shalimar, TajMahal, Nishat)
			5. Fort architecture with special reference to Rajgir, Sirkap, Sishupalgarh, Ujjain , Mathura , Pauni, QilaRaipithora, Hampi, Daulatabad, Chittorgarh, Jaisalmer
			6. Elements of Colonial architecture
9	**Paper -IX Museology**	1	**I. Introduction to Museology** (a) Definition of museology and museography (b) History of development of museums in the world with special reference to India (c) Types of museums, their scope and functions
		2	**II. Collection, Documentation and Preservation** (a) Collection policies, ethics and procedures (b) Collection: field exploration, excavation, purchase, gift and bequests, loans and deposits, exchanges, treasure trove, confiscation and others (c) Documentation: accessioning, indexing, cataloguing, digital documentation and de-accessioning (d) Preservation: curatorial care, preventive conservation, chemical preservation and restoration
		3	**III. Museum Presentation / Exhibition** (a) Types of exhibits and exhibitions, exhibition designing, planning, fabrication, installation and related issues (b) Principles of display for permanent exhibition and reserve collection (c) Objectives and communication goals, target audience, concept

			development, story line, designing and layout of exhibits, gallery development, space, showcases and structural installations, colour scheme, lighting, labels & scripts, evaluation (d) Temporary, travelling, mobile and exhibitions abroad
		4	**IV. Museum Education and Communication** (a) In house educational programmes and activities, outreach programmes (b) Educational activities like lectures, seminars, workshops, museum camps, special celebrations (c) Use of multimedia in museums
		5	**V. Museum Research and Publications** (a) Research based on museum collections, research publications, catalogue (b) Popular publications such as guide books, brochures, worksheets, pamphlets, posters, picture postcards (c) Museological research, visitor surveys and exhibit evaluation studies
		6	**VI. Museum management** (a) Museum management and administration: security, public safety, insurance, budgeting and human resources (b) Museum architecture, adaptation and use of old buildings (c) Forgeries, copies, replicas, reproductions (d) Museum marketing (e) ICOM code of professional ethics and statutes (f) National and international organisations related to museums (g) Relevant laws on antiquities and art treasures (h) Guidelines for loans
		7	**PRACTICAL WORK** Students shall undertake practical work and assignments related to the topics of study
10	**Paper -X Structural Conservation of Monuments**	1	**HISTORY AND PRINCIPLES OF CONSERVATION** 1. History of archaeological conservation 2. General principles and guidelines for conservation and preservation of (a) monuments / sites and excavated remains in India (b) historic gardens 3. Guiding principles for conservation / preservation of monuments as per international conventions 4. Role of Archaeological Survey of India in the preservation of monuments in India and abroad 5. Salvaging and transplantation of monuments 6. Reconstruction and restoration of monuments 7. Projects execution of conservation of important monuments 8. Preservation and environmental development 9. Importance of knowledge of archaeology, civil engineering, art and architecture for conservation of monuments 10. Exposure to indigenous practices / techniques and treatises (eg.manasara, agamas, etc)

			11. Distribution of monuments in different geographical / seismic zones and their conservation problem
		2	**MATERIALS AND TECHNIQUES** 1. Stone: classification, quarries, selection, specifications, defects, types of masonry, techniques of jointing and pointing 2. Brick: types, kilns, material composition, techniques of manufacturing, characteristics, specifications, bonding and laying, coloured tiles and ceramics 3. Wood: structure of timber, seasoning, defects and treatment, use in buildings, causes of decay and remedies 4. Metals and alloys: definition of terms, iron ores, manufacture of iron, different types of iron steel and their use in building, protection of metals against corrosion 5. Non-ferrous metals: copper, lead, zinc, tin and gun metal 6. Concrete: Lime and cement concrete, their composition and use in building, reinforced cement concrete, water proofing, deterioration of concrete and repairs, surface treatment with concrete, shot concrete (guniting) 7. Mortar: definition of mortar, types of ancient mortar and concrete, lime mortar, its composition and specifications, cement mortar, its composition and specifications, lime-cement (compo) mortar, mud mortar, special mortar for inlay and marble work, synthetic mortars, resins and their uses as adhesives and consolidants
		3	**SCAFFOLDING** 1. Types of scaffolding, temporary supports, propping and strutting, centering, shoring, timbering of deep trenches, providing of chutes, safety measures
		4	**FOUNDATIONS** 1. Definition of foundation and footing 2. Foundations in ancient buildings 3. Types of foundation 4. Typical failures of foundation 5. Consolidating and strengthening of foundations 6. Water proofing
		5	**INSPECTION OF MONUMENTS** 1. The purpose of periodical inspection 2. Studying the problems of conservation and preservation and drawing of conservation notes 3. Study of crack patterns 4. General assessment, such as administrative problems and security measures
		6	**INSPECTION OF MONUMENTS** 1. The purpose of periodical inspection 2. Studying the problems of conservation and preservation and drawing of conservation notes 3. Study of crack patterns 4. General assessment, such as administrative problems and security measures

		7	**CONSTRUCTIONAL MEMBERS (PILLARS, BEAMS, ARCHES, DOMES AND VAULTS)** 1. Grouting by pressure and gravity 2. Pointing, types of pointing 3. Underpinning 4. Rock bolting, filleting and edging 5. Inlay work 6. Stucco work 7. Tile work 8. Glass work / mirror work / stained glass work 9. Monitoring of cracks (tell-tales and strain gauges) 10. Plastering (walls and ceilings), lathing, packing with lime concrete and surface treatment, water tightening the tops, purity of water 11. Conservation of excavated remains 12. Use of dowels 13. Rising damp / penetrating damp / water drainage
		8	**ESTIMATING AND COSTING** 1. Special repairs estimate 2. Annual repairs estimate 3. Original works estimate 4. Supplementary and revised estimates 5. Schedule of rates and analysis of rates 6. Engineering appreciations 7. Conservation policy and planning 8. Administrative problems and logistics
		9	**CASE STUDY OF MONUMENTS** **ARCHAEOLOGICAL WORKS CODE AND CONSERVATION MANUAL** **PRACTICAL** 1. Preparation of conservation notes (history, architecture, building materials, problems, remedial measures to be adopted) 2. Practical training in (i) testing of building materials in the field and laboratory (ii) quarrying and selection of raw material (iii) preparation of mortars (iv) construction of stone and brick masonry (v) chiselling and dressing of stones (vi) laying of concrete (vii)plastering (viii) underpinning (ix) pointing (x) filleting (xi) edging (xii) grouting (xiii) guniting (xiv) inlay work
11	**Paper -XI**	1	

	Chemical Preservation of Monuments and Antiquities		**INTRODUCTION** 1. Ethics of conservation, restoration and preservation and its history
		2	**BASIC CHEMISTRY** 1. Inorganic and organic chemistry 2. Elements and compounds 3. Metals (Silver, Gold, Copper, Iron, Lead) and non-metals 4. Alloys 5. Acids, bases and salts 6. pH, ionic and non-ionic solutions 7. Solubility, solvents and insolubility 8. Micro-climate
		3	**CAUSES OF DECAY** 1. Physical, chemical and biological deteriorating agencies 2. Air pollution – monitoring and control 3. Environmental parameters – monitoring 4. Preventive and curative methods of control
		4	**DOCUMENTATION** 1. Preparation of history chart, status report 2. Photography, Ultraviolet, Infrared and Radiography 3. Fakes and forgeries with case studies
		5	**METALLIC ANTIQUITIES (GOLD, SILVER, COPPER, BRONZE, LEAD, IRON)** 1. Ores, source of origin and metallurgy 2. Causes of decay and corrosion 3.Consolidation and treatment in the field 4.Laboratory treatment, preservation and general maintenance
		6	**ORGANIC ANTIQUITIES (IVORY, BONE, HORN, LEATHER, PARCHMENT, FURS, PAPER, BIRCH BARK, PALM LEAF, WOOD AND TEXTILE)** 1. Material and its composition 2. Causes of decay 3. Treatment in field and laboratory 4. Fumigation, bleeding, strengthening, drying and lamination 5. Consolidation, repairs and general maintenance
		7	**SILICEOUS, CALCAREOUS AND ARGILLACEOUS ANTIQUITIES (STONE, SEMI-PRECIOUS STONE, MINERAL, MUD, TERRACOTTA, POTTERY, GLASS, GLAZE, FAIENCE, STUCCO)** 1. Chemical composition 2. Causes of decay 3. Treatment in field and laboratory 4. Consolidation and repair
		8	**MONUMENTS** 1. Building materials – problems of stones, bricks, mortars and lime 2. Causes of decay

			3. Cleaning, consolidation and preservation 4. Techniques – chemical wash, sand blast, paper pulp, clay pack, mist and jelly techniques
		9	**PAINTINGS** 1. Factors – material structure and pigments 2. Causes of decay 3. Treatment 4. Consolidation, restoration, repair and general maintenance (a) Mural Paintings i Types – fresco, secco and tempera ii. Composition of ground support, etc ii Factors – ground, binding medium and pigment iv. Transplantation (mounting, packing and transportation) (b) Oil Paintings i Historical background, origin in Europe and India ii Factors – carrier, ground, pigment, binding medium, resins, oil and gums iii Chemical alteration of pigment and varnish iv Mechanical disintegration of canvas and paint layers (c) Miniature paper paintings and manuscripts i Factors – paper, paints, pigments, dyes, medium ii. Determination of pH of paper, its folding endurance, tensile strength, percentage of cellulose (d) Paintings on cloth, glass, wood, ivory and leather i Factors – material, pigment, dyes
		10	**CASE STUDY OF MONUMENTS AND ANTIQUARIAN REMAINS** **AUTHENTICATION OF ANTIQUITIES BY SCIENTIFIC AIDS** **ESTABLISHMENT OF FIELD LABORATORY (NECESSARY INSTRUMENTS, TOOLS, EQUIPMENTS AND CHEMICALS)** **PRACTICAL** 1. Treatment and cleaning of metal antiquities 2. Treatment, cleaning and strengthening of mural paintings 3. Treatment of canvas and miniature paintings 4. Cleaning and treatment of stones, marble, plaster, etc 5. Laboratory procedures and determination of pH, etc
12	**Paper -XII Antiquarian Laws**	1	**INTRODUCTION** 1. History of antiquarian laws in India 2. Problems and implementation
		2	**IMPORTANT LEGISLATIONS** 1. The Indian Treasure Trove Act, 1878 2. The Ancient Monuments Preservation Act, 1904 3. The Ancient Monuments and Archaeological Sites and Remains Act, 1958 4. The Ancient Monuments and Archaeological Sites and Remains Rules, 1959 5.The Antiquities and Art Treasures Act, 1972 6. The Antiquities and Art Treasures Rules, 1973

		3	**RELATED ACT AND RULES** 1. Land Acquisition Act, 1894 2. Public Premises (Eviction of unauthorised occupants) Act, 1971 3. Public Premises (Eviction of unauthorised occupants) Rules
		4	**INTERNATIONAL CONVENTIONS** 1. The Athens Charter for the Restoration of Historic Monuments, 1931 2. UNESCO Convention for the protection of cultural property in the event of war and conflict (Hague), 1954 3. The Venice Charter, 1964 4. Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property, 1970 5. Convention concerning the protection of the World Cultural and Natural Heritage, 1972 6. UNESCO Recommendation for the protection of movable cultural property, 1978 7. The Burra Charter, 1979 8. Historic Gardens – The Florence Charter, 1981 9. Charter for the Protection and Management of the Archaeological Heritage, 1990 10. Guidelines on Education and Training in the Conservation of Monuments, Ensembles and Sites, 1993 11. Nara Document on Authenticity, 1994 12. Charter on the Protection and Management of Underwater Cultural Heritage, 1996 13. Principles for the Recording of Monuments, Groups of Buildings and Sites, 1996 14. International Cultural Tourism Charter, 1999 15. Charter on Built Vernacular Heritage, 1999 16. Principles for the Preservation and Conservation / Restoration of Wall Paintings, 2003 17. Principles for the Analysis, Conservation and Structural Restoration of Architectural Heritage, 2003

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