

**DETAILED SYLLABUS FOR THE POST OF HEAD OF SECTION IN ARCHITECTURE
IN TECHNICAL EDUCATION (GOVT.POLYTECHNICS) DEPARTMENT
CAT NO: 002/2024**

TOTAL :100 MARKS

Module I: Architectural Principles, Philosophies and Theories (15 marks)

Fundamental principles of architecture, principles of composition, principles of visual design and visual perception, analyzing architecture: architectural grammar, styles and aesthetic components, creativity and meaning in design and design process, vernacular architectural forms and its cultural geography, architecture and society, modern and postmodern socio-cultural movements in architecture and related theories, works of master Architects and their philosophy.

Module II: History of Architecture and Cultural Anthropology (10 marks)

Architecture during early cultures, paleolithic and neolithic period, settlements of pre-historic civilization, river valley cultures, pre-classical civilizations, early Christian, byzantine, Romanesque and gothic architecture, renaissance architecture, Indian architecture: Buddhist and Hindu period, Dravidian and Indo-Aryan architecture, Islamic architecture: imperial, provincial and Mughal period, colonial architecture, impact of industrial revolution, arts and crafts movement, modern architecture, Chicago school, Bauhaus school and isms in architecture, International style, post modernism, deconstruction, critical regionalism, architecture in the globalized world, Kerala Architecture: vernacular and traditional domestic, religious and cultural architecture, works of renowned national and international architects.

Module III: Architectural Design and Practice (5 marks)

Basic parameters of design, anthropometric studies, built environment and space standards, architectural elements, integration of form and function, residential typologies, environment behavior and design needs, site planning and context studies, site services and circulation systems, design standards, set back rules, coverage, campus planning, barrier free design, contemporary developments in architecture design and practice, building information system.

Architect Act and Council of Architecture regulations in professional practice and Architectural education, professional charges, tenders and contracts, valuation and arbitration, laws and legislation related to Architectural practice, role of development authorities and LSGI's, current building regulations and safety standards, FAR, FSI, density, occupancy groups, parking standards, rainwater harvesting, energy conservation and green building regulations, harmonized guidelines and standards for universal accessibility.

Module IV: Building Construction and Project Management (10 marks)

Building materials and fundamentals of building construction, traditional and vernacular construction practices, construction of: foundations, super structure, door and window systems, wall and floor systems, roof systems, vertical transportation systems etc., advanced structural components and its construction technology, modular construction, BIS specifications, cost effective technology, sustainable construction practices, architectural acoustics, building estimation, specification and budgeting, valuation of properties, concept of disaster preparedness, mitigation and management, disaster resilient construction techniques.

Project management techniques (CPM, PERT), contracts and tenders, construction scheduling systems, project management information systems

Module V: Building Services and Structural Systems (5 marks)

Water supply and plumbing system, sanitation, sewerage and drainage system, liquid and solid waste management, water treatment, water harvesting, wastewater treatment, industrial and hazardous waste treatment and disposal, electrical services and illumination, ventilation and air conditioning, firefighting, building safety and security, services in high rise buildings.

Structural behavior of various building materials, types of load bearing structures, basic concepts of structural systems, stress and strain behaviors of steel and concrete, structural properties of columns and beams, cantilevered structures, design of structural elements in wood, steel and RCC,

principles of pre-stressing, construction of tall building, structural properties of retaining walls and foundations, earthquake resistant structures, advanced construction technology.

Module VI: Landscape Planning and Design (15 marks)

Landscape Architecture and its relevance, human relationship with nature and its evolution over time, contemporary attitudes to nature and natural systems, ecological and cultural resources, site planning philosophy, site development processes, elements and principles of landscape design, landscape engineering, landscape construction techniques, urban landscape and ecological planning principles and processes, landscape urbanism, contemporary developments trends in ecological urbanism.

Module VII: Climate and Environment Design (15 marks)

Climate and built form, elements of climate, micro and macro climate, climate and human comfort, thermal comfort indices, heat flow through buildings, heat transfer performances of different materials, solar systems and shading devices, natural ventilation and wind movement, day light and lighting, active and passive systems, renewable energy and its applications, climate responsive design in various tropical climates, energy modelling and energy conscious design, climate adaptation in contemporary architecture.

Fundamentals of ecology, ecological processes and principles, environment and human behavior, behavioral theories, environmental planning and environmental design principles, environmental legislation and regulations, Environment Impact Assessment (EIA), environment and climate summits, green building standards and certification systems, urban climatology, climate change and natural disasters, tropical urbanism and climate sensitive design, blue-green infrastructure and eco-cities, carbon neutral concepts and net zero cities.

Module VIII: Human Habitats and Development Theories (10 marks)

Evolution of human habitats, types of human settlements, settlement pattern, urbanism and urbanization theories, patterns and trends in Indian urbanization, urban culture and urban society, housing, housing policies and finance, slums and urban poverty, habitat conferences, rural development planning, rural-urban (r'urban) developments.

Planning history and planning theories, pre-industrial and post-industrial cities, post-colonial and postmodern cities, urban growth theories, globalization and urban development, economic development models, contemporary urban development trends, sustainable development: theories, concepts and approaches, inclusive urban development. smart urban growth strategies.

Module IX: Urban Planning and Urban Design (15 marks)

Urban planning techniques, national and local development planning institutions, planning legislation and governance mechanisms, infrastructure development, traffic and transportation planning, urban systems management, development economics, development management, institutional mechanisms for development planning and implementation, regional planning and resource development, planning for tourism, poverty alleviation and slum upgradation schemes, national policies and programs for urban development.

Principles of urban design, urban processes shaping cities, urban form and urban space theories, urban patterns, modern and post-modern urbanism theories, urban renewal and redevelopment, ecosystem services and ecological restoration, social justice in cities, neighborhood design principles, new urbanism, transit oriented development (TOD) principles, participatory design processes, national and international heritage conservation policies, urban conservation, resilient cities and healthy city concepts.

Geo-Informatics - Photogrammetry – definition, Classification and basic principles.

Global Positioning System – Differential GPD, Concept of GPS – Types, Navigation systems and application, Spatial data institution and its social implications.

Application in transporation, Planning and environmental management

Spatial analysis – Vector based and Raster based

GIS data modeling for urban infrastructure, urban site selection for urban development : Urban mapping – Urbanisation process, problems of urbanisation, Urban Sprawl and associated problems.
Network analysis – Concept, types of analysis
Application of remote sensing and GIS in Architecture.
LU/ LC analysis – Site suitability analysis for various types of buildings.
Computer application in Architecture.

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper.