

Syllabus for PhD Entrance Examination in Architecture

ARCHITECTURE

ARCHITECTURAL PLANNING AND DESIGN

Architectural Theory and Aesthetics: Basic concepts of design, form space, aesthetics, in architecture.

Architectural history, heritage and conservation – Architectural history of Europe and Indian sub-continent, regional architecture of India, modern movement, contemporary architecture across the world. Steps in architectural conservation.

Site Planning, Landscape and Urban design–Principles of landscape design and site planning, landscape elements and materials, environmental considerations in landscape planning. Significance of urban design, process of urban design, imageability, universal design, aesthetics, behavioral aspects.

ENVIRONMENTAL STUDIES

Man-Environment relationship–Resource depletion, pollution, resource management, bio-geochemical cycles, urban ecology, global warming, climate change, Urban environmental issues, solid waste management, water conservation., Climatic considerations, building climatology, indoor environmental quality,

Environmental Impact Assessment – Social, economic and ecological. Techniques and tools. Energy efficiency and Green Building Technology–Norms, standards, rating and evaluation.

Disaster Management – Natural and manmade disasters, disaster risk management, planning and design responses.

BUILDINGSCIENCE&TECHNOLOGY

Construction Technology & Materials—Structural design methods and techniques, seismic design considerations, long span structures, high rise construction, pre-fabricated construction, tensile construction, green building materials, properties and applications of various materials, non-conventional materials and techniques.

Building services—Drainage and water supply at site level and city level, acoustics, firefighting, natural and mechanical ventilation, lighting and illumination.

Transportation Planning – Traffic sign and signal design, theory of traffic flow, intersection design, integrated transportation planning and modal splits.

Modular coordination, construction techniques and materials, Digital Architecture concepts.

PROFESSIONAL PRACTICE AND MANAGEMENT

Nature of profession, difference between trade, business and profession.

Professional organizations COA & their membership, Scope of comprehensive architectural services as framed under Architect's Act 1972. Code of Conduct, scale of professional fees as per rules and regulations framed by the Council of Architecture. Building byelaws, national building code, architects' act.

Architects office set up and administration, correspondence, letters, reports, taking instruction from the client, its interpretation, design process and its stages, preparation of drawing, filing, standardization and documentation. Office Organization, Proprietorship, Partnership, Company etc; Registration as Firm/Company etc. Accounts systems and Taxation. Methodology of writing specifications with reference to building trades, materials, workmanship and performance of different items of work and specifications as an integral part of contract document for building projects. Building contracts and tendering procedures.

Project Management – PERT, CPM, Supply chain management, quality, control, safety issues on sites. Architectural supervision, quality control and monitoring of projects. Introduction to 'Arbitration' Intellectual Property rights and patents. Tools of IPR and patentability aspects interventions and innovations.

COMPUTER APPLICATION IN ARCHITECTURE

Advanced computer graphics and information system: Computer systems and languages. Computer organization, computer peripherals, software/Hardware concepts. Introduction to workstation. Concepts and working knowledge of application and the usage of software for word-processing, spread sheets etc.

Introduction to computer aided design (CAD) and GIS, software like, sketch up, wire frame, modeling, work things, In-design, BIM for Construction.

ARCHITECTURAL RESEARCH

Research Basic concepts: Meaning, objectives and motivation. Types of research in architecture. Role and importance of theory in research, ethics.

Research Process: Research problem, research question, Literature Survey, data review and sourcing.

Research Methods and Methodology: Qualitative and quantitative research and its application in architecture. Types of data, Data collection and processing techniques, Data analysis and interpretation of findings.

Research Design: research approaches and paradigms. Variables, Sampling,

Visual and behavioral research in architecture

Introduction to Environmental Behavioral Studies in Architecture, EBS Origins and Issues
Environmental Perception, Cognition, and Meaning, Socio-cultural Dimensions of Environment/Behavior Relationships

Reporting Research: Dissertation/thesis, Abstract, synopsis, SOP, structure, citation and referencing, Scholarly research papers.

SYLLABUS FOR PhD ENTRANCE EXAMINATION

Section (A):

(i) Planning Principles and Techniques

Concepts, theories and principles of urban and regional planning; Rational Planning Approaches and Models; Recent and contemporary contributions to the changing planning paradigms; Types of plans – Master Plan, City Development Plan, Structure Plan, Zonal Plan, Action Area Plan, Town Planning Scheme, Regional Plan, Metropolitan Plan;

(ii) Urban Planning

Urban Planning process; Land use Planning – Zonal/sub-city level; Urban Land Economics; Emerging concepts of cities – Eco-City, Smart City, Transit Oriented Development (TOD), SEZ, SRZ etc.; Law of demand and supply of land and its use in planning; Metropolitan Area Planning; Urban renewal and conservation; Site planning; Planning & Management of Informal Sector.

(iii) Regional Planning

Regions, city region; Regional Economics; Techniques of delineation of regions; Regional Analysis; Models of regional development; Intra-urban and inter-urban inequalities; Metropolises and its Region; Rural Planning; Approaches to rural development in India; Five year Plans and rural development; Sustainable rural development.

(iv) Environmental Planning

Ecosystem- natural and man-made ecosystem; Ecological principles; Concepts of Environmental Impact Analysis; Environmental considerations in planning and design; Water sensitive Urban Development; Environmental pollution- types, causes, controls and abatement strategies; Planning for Disaster Management; Ecological zoning, Ecologically sensitive areas, Coastal Zone Regulations; Principles of Sustainable Development.

(v) Housing

Housing; Concepts, principles and examples of neighbourhood; Housing typologies; Slums; Affordable Housing; Housing for special areas and needs; Residential densities; Standards for housing and community facilities; National Housing Policies, Programs and Schemes; Real Estate Planning & Management.

(vi) Transportation Planning

Process and Principles of Transportation Planning; Road capacity; Traffic survey methods; Traffic flow characteristics; Traffic analyses and design considerations; Travel demand forecasting; Land-use-transportation-urban form inter-relationships; Design of roads, intersections, grade separators and parking areas; Hierarchy of roads and level of service; Traffic and transport management and control in urban areas; Mass transportation planning; Para-transit and other modes of transportation, Pedestrian and slow moving traffic planning; Intelligent Transportation Systems.

(vii) Infrastructure Planning

Physical Infrastructure: Water Supply, Sewerage, Drainage, Solid Waste Management, Electricity and Communications; Principles of water supply and sanitation systems; water treatment; Water supply and distribution system; Water harvesting systems; Principles, Planning of storm water drainage system; Sewage disposal methods; Methods of solid waste management – collection, transportation and disposal; Recycling and Reuse of solid waste; Power Supply and Communication Systems, network, and guidelines.

Social Infrastructure including Health, Education, Recreation facilities, Civic Amenities, Distributional services, etc.; Economic Infrastructure; Spatial data as infrastructure; Impact of technology on infrastructure.

(viii) Planning Legislation and Public Policy

Planning Legislation and implementation – including development control and zoning regulations; laws relating to land acquisition.; Local self-governance; urban land ceiling; land management techniques; planning and municipal administration; disaster mitigation management; 73rd & 74th Constitutional amendments; Development guidelines such as URDPFI; public participation and role of NGO & CBO; Institutional networking & capacity building.

(ix) Project Formulation & Implementation

Planning Project formulation; Projects and planning issues; Approaches of appraisal; Techniques of financial appraisal; Project management; Project implementation, monitoring and evaluation; Management of Infrastructure Projects; Social, Economical and environmental cost benefit analysis.

(x) Arithmetic & Analytical Ability

Logical Reasoning; Aptitude; Basic calculations using visual and numerical problems pertaining to urban and regional planning.