Department of Architecture

Question Paper Pattern and Syllabus for Entrance Examination – Doctoral Programme (Academic Year 2026-27)

Ph.D in Architecture
Ph.D in Building Engineering and Management ➢ Architecture Background ➢ Civil Engineering Background
Ph.D in Design

Question Paper Pattern	
Total : 50 Marks	
Section A: (30 Marks)	30 MCQs with no choice
Section B: (20 Marks)	Two or Four subjective questions (preferably with choice)

Syllabus for Entrance Examination – Doctoral Programme-

PhD in Architecture

SECTION A (30 Marks)

- **Sustainable Architecture (Inclusive of Building Science and Climate Responsive Architecture)**

  Solar architecture; Thermal, visual and acoustic comfort in built environments; Natural ventilation in buildings; Sustainable building strategies;Climate responsive design; Energy-Efficient architecture. Building Performance Simulation and Evaluation; Intelligent Buildings, Green Building Rating Systems, Healthy Building, Energy-Audit, Energy-Audit.

- **Landscape Architecture**

  Man and Nature; Landscape traditions; historical public spaces and gardens; Elements and principles of landscape design; Aspects of outdoor design and site planning in enhancing and improving the quality of building environs, functionally and aesthetically; Site structure relationship; Analytic, artistic and technical aspects of designing open spaces at different scales; Role of Landscape design in sustainability; Overview of ecological balance; Impacts of human activities and the need for environmental protection and landscape conservation.

- **Urban Design and Heritage Conservation**

  Historical and modern examples of urban design; Elements of urban built

environment – urban form, spaces, structure, pattern, fabric, texture, grain etc.; Concepts and theories of urban design; Principles, tools and techniques of urban design; Public spaces, character, spatial qualities and Sense of Place; Urban design interventions for sustainable development and transportation; Development controls – FAR, densities and building bye-laws. ; Urban renewal and conservation; heritage conservation; historical public spaces.

- **History and Contemporary Architecture**

  Principles of Art and Architecture; World History of Architecture: Egyptian, Greco-Roman classical period, Byzantine, Gothic, Renaissance, Baroque-Rococo, etc.; Recent trends in Contemporary Architecture: Art Nouveau, Art Deco, Eclecticism, International styles, Post Modernism, Deconstruction in architecture, etc.; Influence of Modern art and Design in Architecture; Indian vernacular and traditional Architecture: Islamic, Buddhist and Hindu Periods, Oriental Architecture ; Works of renowned national and international architects.

- **Building Services**

  Mechanical ventilation in buildings; Air-Conditioning systems; Water supply; Sewerage and drainage systems; Sanitary fittings and fixtures; Plumbing systems; Principles of internal and external drainage system; Principles of electrification of buildings;Firefighting Systems; Building Safety and Security systems; Building Management Systems, Elevators and Escalators - standards and uses; Methods of solid waste management - collection, transportation and disposal; Recycling and Reuse of solid waste.

- **Building Materials, Building Construction and Structural Systems**

  Primary and Secondary Building Materials, Building construction techniques, methods and details; Building systems and prefabrication of building elements; Principles of Modular Coordination; Construction planning and equipment; Building material characteristics and applications; Alternative building materials; Foundations; Design of structural elements with different materials;Structural systems; Principles of Pre-stressing / Post-Tensioning,etc; High Rise and Long Span structures.

- **Estimation-Costing, Professional Practice**

  Project management techniques e.g. PERT, CPM etc. ; Estimation and Specification; Professional practice and ethics; Form and Structure; Principles and design of disaster resistant structures; Temporary structures for rehabilitation.

- **Housing and Town Planning Basics**

  Housing typologies; Concepts, principles and examples of neighbourhood; Affordable Housing; Real estate valuation, Concepts of Land-Use, Ancient Indian Town Planning Concepts, Ekistics, Garden-City Concept.

- **Architecture, Graphics and Design**

  Architectural Graphics; Visual composition in 2D and 3D; Computer application in Architecture and Planning; Anthropometrics; Organization of space; Circulation- horizontal and vertical; Space Standards; Universal design; Building bye-laws; Codes and standards.

SECTION B (20 Marks)

- **Knowledge of Research-Methods and Technical Writing:**

  Introduction, definition, objectives and characteristic of research; Meaning of PhD, need, significance of PhD; Scientific method in research and basic postulates of scientific method; Types of research, descriptive vs analytical, applied vs fundamental, quantitative vs qualitative, conceptual vs empirical; Articulating enquiry and framing research questions in research; Research process, problem formulation, literature survey, preparation of research design, determination of sample, data collection and analysis, generalisation and interpretation. Preparation of Report/Thesis prefatory part, main body, supplementary part, referencing and bibliography.

Syllabus for Entrance Examination – Doctoral Programme-

PhD in Architecture- Building Engineering and Management

Architecture (Background)

SECTION A (30 Marks)

- History and Contemporary Architecture Principles of Art and Architecture; World History of Architecture: Egyptian, Greco-Roman classical period, Byzantine, Gothic, Renaissance, Baroque-Rococo, etc.; Recent trends in Contemporary Architecture: Art nouveau, Art Deco, Eclecticism, International styles, Post Modernism, Deconstruction in architecture, etc.; Influence of Modern art and Design in Architecture; Indian vernacular and traditional Architecture, Oriental Architecture ; Works of renowned national and international architects.

- Building Construction and Structural systems Building construction techniques, methods and details; Building systems and prefabrication of building elements; Principles of Modular Coordination; Construction planning and equipment; Building material characteristics and applications; Principles of strength of materials; Alternative building materials; Foundations; Design of structural elements with different materials; Elastic and Limit State design; Structural systems; Principles of Pre-stressing; High Rise and Long Span structures, gravity and lateral load resisting systems.

- Building Services and Sustainability Solar architecture; Thermal, visual and acoustic comfort in built environments; Natural and Mechanical ventilation in buildings; Air- Conditioning systems; Sustainable building strategies; Building Performance Simulation and Evaluation; Intelligent Buildings; Water supply; Sewerage and drainage systems; Sanitary fittings and fixtures; Plumbing systems; Principles of internal and external drainage system; Principles of electrification of buildings; Elevators and Escalators - standards and uses.

- Construction and Management Project management techniques e.g. PERT, CPM etc. ; Estimation and Specification; Professional practice and ethics; Form and Structure; Principles and design of disaster resistant structures; Temporary structures for rehabilitation.

SECTION B (20 Marks)

- Research and Types of research: Meaning of Research- Objectives of Research- Motivation in Research. Research methods vs Methodology. Types of research – Descriptive vs. Analytical, Applied vs. Fundamental, Quantitative vs. Qualitative, Conceptual vs. Empirical. Research Process. Criteria of good Research. Research Formulation – Defining and formulating the research problem - Selecting the problem - Necessity of defining the problem - Importance of literature review in defining a problem – Literature review – Primary and secondary sources – reviews, treatise, monographs-patents – web as a source – searching the web - Critical literature review –Identifying gap areas from literature review - Development of working hypothesis. Data Collection and analysis: Execution of the research. Observation and Collection of data - Methods of data collection – Modeling, Mathematical Models for research, Sampling Methods- Data processing and Analysis strategies. Data Analysis with Statistical Packages – Hypothesis-testing, Generalization- and Interpretation.

- Construction and Management Project management techniques e.g. PERT, CPM etc. ; Estimation and Specification; Professional practice and ethics; Form and Structure; Principles and design of disaster resistant structures; Temporary structures for rehabilitation.

Civil Engineering (Background)

SECTION A (30 Marks)

- Principles of surveying; Errors and their adjustment; Maps - scale, coordinate system; Distance and angle measurement - Levelling and trigonometric levelling; Traversing and triangulation survey; Total station; Horizontal and vertical curves. Photogrammetry and Remote Sensing - Scale, flying height; Basics of remote sensing and GIS.

- Building Construction and Structural systems Building construction techniques, methods and details; Building systems and prefabrication of building elements; Principles of Modular Coordination; Construction planning and equipment; Building material characteristics and applications; Principles of strength of materials; Alternative building materials; Foundations; Design of structural elements with different materials; Elastic and Limit State design; Structural systems; Principles of Pre-stressing; High Rise and Long Span structures, gravity and lateral load resisting systems.

- Building Services and Sustainability Solar architecture; Thermal, visual and acoustic comfort in built environments; Natural and Mechanical ventilation in buildings; Air- Conditioning systems; Sustainable building strategies; Building Performance Simulation and Evaluation; Intelligent Buildings; Water supply; Sewerage and drainage systems; Sanitary fittings and fixtures; Plumbing systems; Principles of internal and external

drainage system; Principles of electrification of buildings; Elevators and Escalators - standards and uses.

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- Construction and Management Project management techniques e.g. PERT, CPM etc. ; Estimation and Specification; Professional practice and ethics; Form and Structure; Principles and design of disaster resistant structures; Temporary structures for rehabilitation.

Syllabus for Entrance Examination – Doctoral Programme-

PhD in Design Program

SECTION A (30 Marks)

Drawing and Sketching Skills

Drawing, **Freehand drawing, Perspective drawing, still life, Human figure drawing**, understanding of anatomy and movement and ergonomic design.

Methods and techniques of **painting, sculpture and print making**

Painting techniques with oil, water colour, acrylic, etc., **Sculpture** methods like modelling, casting, and assembling using materials like clay, stone, metal, and wood. **Printmaking** includes relief (woodcut), intaglio (etching, engraving), planographic (lithography), and screen printing, allowing for image reproduction with distinct artistic qualities.

Understanding Colour Schemes and Application

Colour schemes (complementary, analogous, monochromatic, etc.) enhancing visual harmony and emotional impact. **Colour mixing** enabling the creation of new hues, tints, and tones, while proper **application** helps in reinforcing mood, focus, and spatial relationships within a design.

Design Fundamentals

Core **elements** such as line, shape, form, texture, space, and colour, and **principles** like balance, contrast, rhythm, unity, and proportion, are crucial for crafting visually effective compositions.

Materials and Manufacturing Techniques

Understanding materials like **wood, metal, plastic, and glass**, along with their properties. **Manufacturing processes** such as moulding, casting, welding, CNC, and 3D.

Creativity and Innovation

Creativity, generating ideas and exploring new approaches, ideas to solve real-world problems.

Design History and Culture

History of design, evolution of styles, technologies, and ideologies, **cultural awareness**, traditions, beliefs, and user needs. Design thinking and contextual relevant solutions.

Visualization and Presentation

Visualization: visual formats sketches, models, renderings for exploration and communication. **Presentation**: organizing and delivering these visuals with clarity and impact using verbal, visual, and storytelling skills, essential for engaging clients and stakeholders.

SECTION B (20 Marks)

Knowledge of Research-Methods and Technical Writing

Introduction, definition, objectives and characteristic of research; Meaning of PhD, need, significance of PhD; Scientific method in research and basic postulates of scientific method; Types of research, descriptive vs analytical, applied vs fundamental, quantitative vs qualitative, conceptual vs empirical; Articulating enquiry and framing research questions in research; Research process, problem formulation, literature survey, preparation of research design, determination of sample, data collection and analysis, generalisation and interpretation. Preparation of Report/Thesis prefatory part, main body, supplementary part, referencing and bibliography.