Syllabus for Entrance Examination – Doctoral Programme

(Academic Year 2025-26)

Department of Architecture

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)

Ph.D in Architecture
Ph.D in Design
Ph.D in Architecture:- (Building Engineering and Management & Civil Engineering Background)

Syllabus for Entrance Examination – Doctoral Programme (Academic Year 2025)

PhD in Architecture

Department of 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
(Academic Year 2025-26)

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 modeling, 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)

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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.

- 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.

SECTION B (20 Marks)

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PhD in Architecture
Building Engineering and Management
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.

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