Syllabus
for
Architecture and Planning
(SCQP04)

Note:

i. The Question Paper will have 75 questions.

ii. All questions will be based on Subject-Specific Knowledge.

iii. All questions are compulsory.

iv. The Questions will be Bilingual (English/Hindi).

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Unit 1: Architecture, Planning 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 byelaws; Codes and standards.

Principles of Art and Architecture; World History of Architecture: Egyptian, Greco-Roman classical period, Byzantine, Gothic, Renaissance, Baroque-Rococo, etc.; Recent trendsin 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.

Unit 2: Construction, Planning Techniques 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.

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.

Application of G.I.S and Remote Sensing techniques in urban and regional planning; Tools and techniques of Surveys – Physical, Topographical, Land use and Socio-economic Surveys; Urban Economics, Law of demand and supply of land and its use in planning; Graphic presentation of spatial data; Local self-governance, Panchayatiraj institutions; Planning Legislation and implementation – Land Acquisition Act, PPP etc.; Decision support system and Land Information System; Urban geography and econometrics; Management of Infrastructure Projects; Demography and equity in planning.

Unit 3: Envioronmental and Infrastructure Planning

Natural and man-made ecosystem; Ecological principles; Environmental considerations in Planning and design; Environmental pollution- types, causes, controls and abatement strategies; Sustainable development, goals and strategies; Climate change and built environment; Climate responsive design.

Process and Principles of Transportation Planning and Traffic Engineering; Road capacity and Travel demand forecasting; Traffic survey methods, Traffic flow Analysis; Traffic analyses and design considerations; Traffic and transport management and control in urban areas; Mass transportation planning; Intelligent Transportation Systems; Urban and Rural Infrastructure System Network.

Unit 4: Urban Design, Landscape and Conservation

Historical and modern examples of urban design; Elements of urban built environment – urbanform, 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 byelaws.; Urban renewal and conservation; heritage conservation; historical public spaces and gardens; Landscape design; Site planning.

Unit 5: 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.

Building Services and Utilities – Electrical, HVAC, Sanitary and Plumbing, Solid and Liquid Waste Management, (with special reference to energy efficiency, recycling and re-use), Overview of green Building Rating Systems.

Unit 6: Infrastructure and Services

Firefighting Systems; Building Safety and Security systems; Building Management Systems; Water treatment; Water supply and distribution system; Water harvesting systems; Principles, Planning and Design of storm water drainage system; Sewage disposal methods; Methods of solid waste management - collection, transportation and disposal; Recycling and Reuse of solid waste; Landuse – transportation - urban form inter-relationships; Design of roads, intersections, grade separators and parking areas; Hierarchy of roads and level of service; Para-transits and other modes of transportation, Pedestrian and slow moving traffic planning.

Unit 7: Remote Sensing and GIS in Architecture

Introduction, development of remote sensing technology, advantages; Different platforms of remote sensing; EM spectrum, solar reflection and thermal emission remote sensing, Interaction of EM radiation with atmosphere including atmospheric scattering, absorption and emission. Interaction mechanisms of EM radiation with ground, spectral response curves. Photographic techniques in aerial and spaceborne remote sensing; Spectrozonal photography using various camera, film, filter combinations; Applications and limitations. Stereo aerial photography, principle of stereoscopy, elements of photogrammetry. Principles of image interpretation, digital image processing. Multi-spectral scanners and imaging devices; Salient

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QuickBird, GeoEye sensors and their applications. Image characteristics and interpretation of different geological landforms, structures and major igneous, sedimentary and metamorphic rock types; Remote sensing as a fore-runner in all exploration programs.