SYLLABUS FOR RECRUITMENT OF ASSISTANT ARCHITECT UNDER PUBLIC WORKS DEPARTMENT

COMPULSORY SUBJECT

(Essay Type & Objective Type)

1. *General English ..... 100 Marks*

OPTIONAL SUBJECT

(Objective Type)

1. *Architecture - I ..... 150 Marks*
   Architecture - II ..... 150 Marks

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GENERAL ENGLISH

(a) Essay Writing (Conventional)..... 15 Marks

(b) Precis Writing (Conventional) ..... 10 Marks

(c) Letter Writing (Conventional) ..... 10 Marks

(d) Idioms & Phrases (Conventional)..... 10 Marks

(e) Expansion of passages (Conventional) ..... 10 Marks

(f) Comprehension of given passages (Conventional)..... 10 Marks

(g) Grammar : (Objective type) ..... 10 Marks
Parts of Speech : Nouns, Adjective, Verb, Adverb, Preposition etc.

(h) Composition (Objective type)..... 15 Marks

i) Analysis of Complex and compound sentences

ii) Transformation of Sentences

iii) Synthetics of sentences

(i) Correct usage and vocabularies (Objecttive type) ..... 10 Marks

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ARCHITECTURE

PAPER -I

ARCHITECTURAL DESIGN

Principles of Visual perception, the grammar of visual language, principles of composition and relationship between the human activities and anthropometrics; Understanding user circulation and space requirements; Taking up design of small spaces using the ideal-design methodology; Exploration of various methods of presentation; Volumetric study of built forms, various building materials & their application in architectural design; critical appraisal of both internal and external spaces, evaluation of contemporary architectural works; Analysis of form from the point of view of well known architectural principles and critical study of climatic elements and their influence on design development. Basic and standard dimensions for buildings- residential, commercial, public and official buildings. Solar architecture- passive and active solar architecture; sun angles and orientation.

Design for handicapped- basic and standard dimensions and types of access required.

National Building Code norms

PLANNING

Complex and Town and satellite planning, Transport and circulation analysis, hierarchy of access and pedestrian circulation, vehicular circulation and road systems regarding urban and town planning.

LANDSCAPE DESIGN

Components of landscape design – principles of landscape design – study of landscape design aspects such as site, orientation, plant materials – site analysis and site planning – hard and soft landscapes – water features in the landscape – various types of landscape design – landscape as a means to shape the outdoor; norms; plant materials, influence of landscape design on our physical, visual environment – as a tool to utilize the site resources – site analysis for larger developments.

Introduction to urban landscape design – elements of urban landscape – park system – play ground – recreational spaces – water landscapes. Introduction to ecology and landscape design – means to mitigate the human impacts – way to rejuvenate our natural resources like water, air, and microclimate – method to protect us from natural forces such as erosion, flood, landslide and cyclone.

Mughal gardens, Persian Gardens, English Garden– design principles and symbolisms.

HISTORY OF ARCHITECTURE

The study of noted buildings such as temple, palaces, residences and civic buildings; Indus valley civilization; development of the city of Mohenjodaro, Harappa and various other river valley civilizations the world over; The advent of Gothic Architecture and the influences on its development; Birth of Renaissance Architecture and its characteristics; Bahaus movement; the rise of historic development of Mughal architecture in Delhi and tracing the evolution of style; Study on architectural proportion of noted monuments, fort planning principles; Study of palaces, garden development and civic planning.

CLIMATOLOGY

Influence of various factors at regional and local scales – micro climate. Study of parameters that influence human thermal comfort, comfort scales; Understanding the thermal environment and design as a means of furthering thermal comfort. Passive and low energy approaches to the achievement of thermal comfort. The visual environment – study of day lighting as a means of providing light within built spaces; "Green" Architecture – its elements.

MODERN ARCHITECTURE

Studies of various buildings belonging to the renaissance style; The Industrial revolution – Development of cities, evolution of bridges, railway stations, exhibition buildings, civic buildings; Development of skyscrapers – the Chicago school; Development of architectural theories – cubism, De Stijl, Ecole-beaux-des-Arts, brutalism, structuralism, futurism, constructivism, Art Noveau, Arts and Crafts expressionism. Works of Architects like Le-Corbusier, Mies van der Rohe, Frank Lloyd Wright, Alvar Alto; Works of other Architects of the same period.

POST MODERN ARCHITECTURE

Development of vernacular architect in India in the last 150 years. Post independence Architecture-works of Le-corbuzier and Louis Kahn in India. The works of Modern Indian Masters like Charles Correa, J.A. Stien, B.V. Doshi, Ananth Raje, Kanvinde, etc. Works of other contemporary Architects in India.

PAPER -II

BUILDING CONSTRUCTION

Building components and their pictorial representations; brick & stone masonry in walls, arches, brick masonry bonds – English, Flemish, decorative bonds, Rat trap bond; learning about stone masonry – coursed, random rubble, ashlar, etc brick and stone arches; construction methods – lintels, Simple foundations in masonry, plastering, pointing,

Roofs, classification, pitched roof, types of pitched roofs, roof coverings for pitched roofs, ventilators in pitched roofs. Trusses in timber, AC sheet for roof covering; Type of steel trusses – tubular/angle iron truss with roof covering of AC/GI sheets; Roof finishes (over concrete slabs) with weather proofing details; Provision of skylights in timber and steel roof; Carpentry and joinery details for roofs, construction methods of timber, metal/RCC/masonry

Doors and Windows: Technical terms, types of doors, types of windows, ventilators, doors and windows in timber fixtures; steel windows door detailing, PVC doors and windows; Pile foundation- types and methods of construction, concrete flooring, skirting, dadoing with various finishes;

Concrete paving, form-work for RCC columns, beams, slabs, walls and stairs; Simple foundation (masonry), spread footing. Deep Foundation – Pile foundation – types – methods of construction and bearing – friction – sheet piles; Construction practices/detailing of RCC elements, light partition – wood, metal. Doors fully glazed sliding and sliding folding, collapsible shutters, rolling shutter, fire resistance steel doors. Materials of sound insulation, thermo insulation, weather proofing, damp proofing for basements and water retaining structures; curtain wall systems, their applications and fixing details; various types of wall claddings like stone veneers, cement concrete, tiles and mosaics and their respective construction details; specialized roofing systems like shell roof, folded plates, and space frames and their construction details.

RCC Construction practices – detailing; Framed structures – characteristics – components – advantages study of column grid. Light partition – wood – metal – glass; Special doors – sliding – folding – collapsible – rolling shutters fire resistant steel doors.

Stair – components, geometrical planning, Types

Materials : Study of basic building materials like brick, stone, lime, cement, sand, tile and other products – their properties, manufacturing, various quality tests; specification of mortars including cement, lime, etc. glass as a building material-various types, properties and uses; Concrete: Introduction, classification, constituent materials, preparation, curing, compaction, water cement ratio, strength, workability, durability, defects, physical properties, proportioning, admixtures, reinforced cement concrete; Tar, bitumen, asphalt, gypsum; Paints, types, application, properties. Materials and methods for file proofing – thermal insulation, sound insulation – damp properties of basement and water retaining structure.

STRUCTURES

Introduction to fundamentals of structures for Buildings; Classification; Natural structures; Building loads; Effects on Buildings; Forces Systems, Conditions for Equilibrium; Elementary Analysis of Structural Response; Study of Geometric Properties of Structural Sections, Study of stress and strain in building materials – structural behavior of beams, shear force, bending moment – theory of simple bending, elementary stress analysis for bending and shear, concept of flitched beam and analysis of deflections in beam. Design of axial loaded column and concentrated load beam sections.

BUILDINGS SERVICES

Study of water supply and sanitation systems; Study of fire fighting services. Water supply: Domestic water supply systems, sump, overhead tank, pipe sizes, pipe fittings – their technical names; Cold water and hot water supply for multistoried buildings, types of taps, types of valves, etc. provision for fire fighting and code requirements.

Sanitation: Importance, refuse, types of collection and disposal; Basic principles of sanitation and disposal of waste water from buildings, urban and rural drainage and sanitation, different collection and disposal fittings. Brief on sewage treatment, septic tanks, oxidation ponds, soak pits, manholes, inspection chambers, intercepting chambers, cast iron manholes, self-learning velocity, drains on sloping sites, sub-soil drainage, garbage drainage and lay-out of simple drainage systems and testing of drains. Sewers, materials, workmanship, laying and testing of sewers, clearing of sewers, surface drains, ventilation of sewers, storm water drainage system, recycling of water; Water treatment plant; Air-conditioning- Definition and classification, Vertical Transportation system-Concept, study of lifts and escalators.

BUILDING SPECIFICATIONS

Definition, types, importance of detailed specification in construction practice, method of writing specifications. Detailed specification writing for materials and works: Brick, stone, sand, lime, timber, cement, AC sheets, GI sheets, steel reinforcement, paints and varnishes, floor, glass, tiles, ceramic and terrazzo; materials for partition framing and cladding, plywood, hardboard, false ceiling, PVC sheeting, steel structures. Earth work in different soils, masonry work, flooring, roofing, concrete structures, water proofing works (basement, roofs), false ceiling, carpentry works, painting and finishing. Specification for works designed for special situation like non conventional use of conventional materials, etc.

PROFESSIONAL PRACTICE

Understanding the basic concepts and terminology in architectural practice. The difference between architectural profession and other professional discipline; A clear knowledge of code of conducts and ethics in profession. The knowledge of apex monitoring body to protect the interest of the

profession; Role of an architect in conceptualizing, design proposal until the execution procedures; The relationship between the architect and other executive agencies; The legal dimension of professional practice, architect's role as an arbitrator; Laws and regulations that affect architecture as well as building.

ENERGY AND ENVIRONMENTAL CONCERNS IN DESIGN

Importance of environmental conservation, environmental impact assessment, Energy conservation techniques – non conventional energy sources like, solar power – wind power – etc.

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