ANDHRA PRADESH

RECRUITMENT OF ASSISTANT PROFESSORS IN THE UNIVERSITY
SYLLABUS FOR THE SCREENING TEST

FACILITIES AND SERVICES PLANNING
SUBJECT CODE - 74

Unit 01:

Thermodynamics: Thermodynamic systems and processes; properties of pure substances, behavior of ideal and real gases; zeroth and first laws of thermodynamics, calculation of work and heat in various processes; second law of thermodynamics; thermodynamic property charts and tables, availability and irreversibility; thermodynamic relations.

Unit 02:

Fluid Mechanics: Properties of fluids, fluid statics; Continuity, momentum and energy equations and their applications; Potential flow, Laminar and turbulent flow; Flow in pipes, pipe networks; Concept of boundary layer and its growth. Turbo Machinery: Impulse and reaction principles, velocity diagrams, Pelton-wheel, Francis and Kaplan turbines.

Unit 03:

Refrigeration and air-conditioning: Vapour and gas refrigeration and heat pump cycles; properties of moist air, psychrometric chart, basic psychrometric processes.

Unit 04:

Basics of Electrical Engineering: Fundamental principles of Electricity, Network analysis, Dc Machines & AC machines, Principles of operation & Constructional Details of Transformers, Power generation and recent trends in generation, Substation layouts, Electric layouts, Electrical load for small buildings and high-rise building.

Unit 05:

Electrical Estimation and Costing: Protection of Electric Installation against over load, short circuit and Earth fault, Earthing, General requirements of Electrical Installations, testing of installations, Indian Electricity rules, Neutral and Earth wire, Types of loads – lighting

load & power load, Systems of wiring, Service connections, Service Mains, Sub-Circuits, Location of Outlets, Control Switches, Main Board and Distribution Board, guide lines for Installation of Fittings, Load Assessment, Permissible voltage drops and sizes of wires, estimating and costing of Electrical installations. Electrical installations for residential buildings, commercial buildings, small Industries.

Unit 06:

Illumination Engineering: Introduction of Light, Measurement of Light, Design of Interior Lighting, Design of Outdoor Street Lighting, Flood Lighting, Special Features of Aesthetic Lighting, Energy Conservation codes for lighting.

Unit 07:

Surveying: Principles of surveying; Stages of survey operations; Errors and their adjustment; Maps - scale, coordinate system; Distance and angle measurement, Traversing and triangulation survey; Total station; Horizontal and vertical curves.

Unit 08:

Building Materials: Stones-classification of rocks. Bricks – manufacturing, tests on bricks. Tiles- types of tiles. Cement- classification manufacturing - Components of building, area consideration; Internal and External Fittings of a Building; Timber; surface protective materials like Paints, Enamels, Varnishes, Distempers, Emulsion.

Unit 09:

Engineering Mechanics & Solid Mechanics: System of forces, free-body diagrams, Parallelogram law, Triangle law, Lami's Theorem, polygon law, equilibrium equations; Internal forces in structures;

Stress and strain, elastic constants; shear force and bending moment diagrams; bending and shear stresses; concept of shear centre; deflection of beams; torsion of circular shafts; Euler's theory of columns; energy methods.

Unit 10:

Water supply and waste water systems: Basics of water quality standards – Physical, chemical and biological parameters; Water quality index; Unit processes and operations; Water requirement; Water distribution system; Drinking water treatment, Sewerage system

design, quantity of domestic wastewater, primary and secondary treatment. Effluent discharge standards; Sludge disposal.

Municipal Solid Wastes: Characteristics, generation, collection and transportation of solid wastes, engineered systems for solid waste management (reuse/ recycle, energy recovery, treatment and disposal).

Unit 11:

Architecture design, Construction and Management:

Basics of Architecture and Planning, Anthropometrics, Organization of Space, Circulation of horizontal and Vertical, Space Standard, universal design Building Bye laws, Courts and Standard Project Management Techniques PERT,CPM, Estimation and Specifications, Professional practice and ethics.