

31084 BUILDING SERVICES (ELECTIVE THEORY II)

DETAILED SYLLABUS

Unit 1

ELECTRICAL SERVICES

Conventional symbols for electrical Installations – Main – Submain – Wiring accessories – Wire, Cable, Switches, Wall plugs, Fuses and Cutouts – H.R.C type, round type, cartridge type – Distribution boxes, circuit breaker, Junction boxes – 2 pin and 3 pin sockets, lamp holder, ceiling roses, change over switches – Various systems of wiring – wooden casing wiring, cleat wiring, CTS wiring, conduit wiring – Insulation – Earthing – Electrical meters – Use of generators, inverters, emergency lamps.

1.2 ELECTRICAL LAYOUT

Planning of Electrical Installations and distribution – Preparation of Electrical layout for a small residence, small work shop, show room, school building etc – Estimation of load.

Unit II

2.1 MECHANICAL SERVICES

Lifts – Definition – Location – Sizes – Component parts – Lift well, Travel, Pit, Hoist way, Machine, Buffer, Door Locks – Suspended rope, Lift car, Landing Door, Call Indicator, Call Push - Different types of Elevators – Freight elevators, Passengers elevators, Hospital elevators – Dumbwaiters and vertical conveyors – Escalators – Locations and Functions – Advantages of Escalators.

2.2 AIR CONDITIONING

Definition – Purpose – Principles – Temperature control, Air velocity control, Humidity control – Air Conditioning Systems – Component parts – Air pumps, Air delivery system, Air Distribution system – Cleaners – Filters, Spray washers, Electric precipitators – Types of Air Conditioners – Central type – Window Type – Split unit.

Unit III

3.1 LIGHTING

Natural and Artificial Lighting – Requirements of good lighting – Day light factors – Day light Penetration – Aims of good lighting – General Principles of openings to afford good lighting – Reflection factors – Illumination – Units of measurement –

Lux, candela, Luminous flux – Orientation of buildings – External reflected component – Internal reflected component – Necessity of artificial lighting – Arrangement of luminaries – Distribution of Illumination – Utilization factor – Temperature rise due to artificial lighting – Remedial measures.

3.2 VENTILATION

Definition - Necessity – Types – Natural / Mechanical Ventilation – wind effect – Factors to be considered in the design of Ventilation – respiration, vitiation of air, air changes, heat balance of body – General rules for Natural ventilation – Advantages and Disadvantages of Mechanical Ventilation – Methods of Mechanical Ventilation – Combined Systems.

Unit IV

4.1 FIRE PROTECTION

Causes and Effects of fire – Precautionary Measures – Factors to be considered for limiting fire spread area – Characteristics of fire resisting materials – General requirements for fire resisting buildings – Fire protection systems – Fire exits – General requirements as per NBC 2005 – maximum travel distance – Horizontal exit, roof exit / fire lifts, external stairs – Fire fighting installations.

4.2 ACOUSTICS AND SOUND INSULATIONS

Acoustics of Buildings – Characteristics of Sound – Pitch or frequency, intensity, tone – Measurement of intensity of sound - Bel & Decibel – Behavior of sound and its effects - Transmission, reflection, absorption - Echoes, reverberation – common acoustical defects - Requirements of good Acoustics – Principles and factors to be considered in acoustical designs – Sound absorbents – Types – Absorption coefficients - Sound Insulation of buildings - General factors to be considered and constructional measures to be followed for noise control in residential buildings.

Unit V

5.1 MAINTENANCE OF BUILDINGS

Introduction - Maintenance works in buildings - Painting – Flooring – sinking of floors – Doors and windows – Termite attack – Sanitary appliances – Water supply and drainage system – leakages – Cracks in concrete – Types – Cracks in walls – types - Common methods of crack repair – preventive maintenance - corrosion of steel elements - special precautions for repairs of building

5.2 DEFECTS AND REPAIR WORKS IN BUILDINGS

Defects in buildings - Prevention of defects in buildings – Major causes of defects – Treatment of toilet sunken portion – Improper laying of weathering course - Maintenance works - Specification for weathering course - Lime jelly concrete with tiles - Thermal insulation combined with water proofing for flat concrete roofs - Water proofing - Expansion joints - Repair of rain water leakage in buildings.

Reference Book: 1. National Building code of India – 2005, Bureau of Indian Standards, New Delhi 2. Building construction, P.C.Varghese, PHI Learning Pvt. Ltd, New Delhi 3. Building construction, Dr.B.C.Punmia, Laxmi Publications (p) Ltd, New Delhi 4. A text book on Building services, R.Udyakumar, Eswar Press, Chennai 5. Building repair and maintenance management, P.S.Gahlot, CBS Publishers & distributors (p) Ltd. 6. Maintenance of Buildings, A C Panchdhari, New Age International Publications, Chennai.