31244- BUILDING SERVICES - I

DETAIL SYLLABUS

UNIT I ELECTRICAL SERVICES

1.1 ELECTRICAL SUPPLY Generation, Transportation and Distribution of Power – Conventional Architectural Symbols for Electrical installations - Substation Transformer, bus bar, supply to building. Main, Sub- Mains - Types of Fuses - Distribution Panel

1.2 WIRING SYSTEM Types of Wiring - Wiring Material - Standard Wire Gauge – Types of Switches – Controls – Plugs –Two Pin & Three Pin Plugs – Junction Boxes – Exhaust Fan –Electrical Terms & Units – Supply and Distribution in Multi Storied Buildings – Electrical load – Meter room – Use of generators, invertors, emergency lamps

1.3 LAYOUT preparation of electrical layout for apartments and residence

UINIT II LIGHTING

2.1 TYPES OF LIGHTING Units of measurement – Lux, candela, Luminous flux - Types of lighting - Natural and Artificial Lighting – Requirements of good lighting -– Day light factors – Day light Penetration – Aims of good lighting –Principles of openings to afford good lighting.

2.2 LAMPS

Types of Lamps and their Characteristics- Level of Illumination for different functions (general)- Light fittings –Fluorescent bulbs, Mercury Vapor lamps,Energy Efficient lighting (CFL,LED)

UNIT III RENEWABLE ENERGY SOURCES

3.1 INTRODUCTION – Merits of renewable energies – Sources – Hydro power, wind power, solar power, geothermal power, biomass power – Solar power – Solar cell, solar panels, solar water heater, solar lighting, solar pumps and fountains, solar pool heater – Portable and flexible solar panels – Wind power – Wind machines (turbines) – components – Use of (wind energy) renewable energy in institutional buildings – Geo thermal power – Geo thermal heat pumps – Parts – Ground heat exchanger (system of pipes buried under ground), heat pump unit, air delivery system – Bio mass energy – Advantage over fossil fuels – Wood heating.

UNIT IV SANITATION & STORM WATER DRAIN

4.1 SANITATION Sanitation in buildings - Primary and secondary treatment Activated sludge - Intermittent and trickling sand filters - Connection of house sewers to municipal sewers, ventilation of sewers – Sewage disposal scheme for resident and apartments - Garbage disposal, incinerator, and dry disposal - Garbage disposal in multi –storied buildings, dry and wet treatment.

4.2 STORM WATER DRAIN - Site planning from drainage point of view - Storm water drains, details of construction, water entrances, gullies, open drains, gradients,

ventilation of drains, rainfall maintenance - Materials and construction details of sewers and connections – preparation of drainage layout for residential unit

UNIT V BUILDING SAFETY AND SECURITY SYSTEMS

5.1 SECURITY SYSTEMS Introduction – need for safety and security systems – security systems –access control and perimeter protection – CCTV cameras - intruder alarms– Types - Dome cameras - Wall cameras - Hidden cameras – components of CCTV cameras –uses in residential buildings.

5.2 AUTOMATION Introduction to building automation - Functions of Building Management Systems – system includes - Benefits of BMS.

REFERENCES :

1. G.M.Fair,J.C.Geyer and D.Okun,Water and Waste Water Engineering, Vol. II, John Wiley & Sons,Inc.,NewYork,

2. Manual of Water supply and Treatment, Second Editions,CPHEEO,Ministry of Works and Housing, New Delhi,

3. Manual on Sewerage and Sewage Treatment,CPHEEO,Ministry of Works and Housing, New Delhi.

4. S.C.Rangwala Water Supply and Sanitary Engineering, Charotar Publishing House, Anand 388 601