

GREEN BUILDING DESIGN

Teaching Scheme: Examination Scheme:
Lectures: 3Hrs/Week Theory : 100Marks

SECTION- I

Unit-1

Sustainable Site Selection Orientation, Building envelop, Building plan layout, Design of Doors and windows, Natural ventilation, Solar energy, Use of solar energy for water heating, Solar concentrators, Solar photovoltaic panels, Direct and indirect lighting, comparison of various lighting devices- electric tubes, incandescent lamps, CFL and LED lamps, Indirect lighting devices -Light Tubes, Fiber optic, Fresnel lens 10

Unit – 2

Passive and Active Architecture, Natural ventilation and air conditioning, Hybrid system of active and passive refrigeration and air conditioning. Concept of Embodied Energy, Embodied energy of various common building materials, Thermal properties of building components, Thermal storage, emissivity, reflectivity, Selection of materials and surface treatment for improvement in thermal comfort with minimum energy input. Energy audit of building, 5

Unit – 3

Green Rating of building, LEED criteria, USGBC, CIII-Godrej Green rating, CDM and Carbon trading, Environmental clearance of buildings. 5

SECTION – II

Unit – 4

Water Efficiency, Water Efficient Landscaping –Rain water harvesting, potable water and borewell recharging methods, Minimisation of water use, Dual flush, waterless urinals, smart controlled water taps, Segregation and treatment of wastewater, Various treatment technologies like septic tank, Anaerobic filter, CWTS, biogas plants advanced treatment options like carbon bed, reverse osmosis, electro dialysis, ion exchanger, recycling of treated wastewater for different non potable purpose, Domestic solid waste – Segregation, earthworm composting other options. 6

Unit – 5

Indoor Environmental Quality Low- VOC Emitting Materials - Adhesives & Sealants, Paints & Coatings, Carpet Systems, Composite Wood & Agro-fiber Products like coconut, jute, bamboo and their use as interiors. 7

Unit-6

Recycling of Building materials, Existing Walls, Floors & Roof, Interior Non-Structural Elements. Construction Waste Management, Materials Reuse, Recycled Content,, Use of fly ash, foundry sand and other inert solid wastes in buildings Life cycle analysis, Construction phase, operation phase, demolition, Impact on environment and land use.

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Term Work :

Term work submission shall consist of the following :

- 1)Green and energy audit of one building
- 2)Suggested modifications for improving green rating and energy conservation in
- building studied.