

CLASS-XI

SUBJECT : ENVIRONMENTAL SCIENCE (EVSC)

SEMESTER-II

FULL MARKS:35

CONTACT HOURS : 80 HOURS

COURSE CODE : THEORY

Chapter	Subtopics	Contact Hours	Marks
4. Environment and sustainability	<p>4.1 Sustainable Development</p> <ul style="list-style-type: none"> Definition and origin of sustainable development. Relationship between environment and development. Importance for present and future quality of life. Brief overview of the Brundtland Commission Report. <p>4.2 Science of Sustainability</p> <ul style="list-style-type: none"> Concepts: Sustainability, carrying capacity, deep and shallow ecology, sustainability index. Population growth vs. resource availability. Sustainable consumption. <p>4.3 Sustainable Agriculture</p> <ul style="list-style-type: none"> Concept, need, and action plan for sustainable agriculture. Green Revolution: Impact of fertilizers, pesticides, mechanization. New practices: Animal husbandry, livestock management, aquaculture. <p>4.4 Urban Environmental Challenges and Sustainability</p> <ul style="list-style-type: none"> Urban Heat Island (UHI) and its impact on city climates. Urban Stress and its effects on human health and quality of life. Mitigation strategies for urban environmental issues. <p>4.5 Global Sustainability Challenges and Solutions</p> <ul style="list-style-type: none"> SDGs and global sustainability efforts Circular economy and sustainable waste practices Water management and governance Fossil fuels vs. renewable energy 	30	13

	<ul style="list-style-type: none"> Technological innovations for sustainability Life cycle assessment and eco-labelling 		
5. Environmental Physics	<p>5.1. Basic Concepts of Light and Matter</p> <ul style="list-style-type: none"> Spectroscopy: Absorption and emission spectra, Beer-Lambert law, light transmission, and scattering. Laws of thermodynamics: Entropy, enthalpy, and free energy. Heat transfer: Conduction, convection, and radiation. <p>5.2 Atmospheric Physics</p> <ul style="list-style-type: none"> Albedo, solar constant, and Earth's heat budget. Radiation and subsidence inversion, mixing depth, and pollutant dispersal. <p>5.3 Physics of Climate</p> <ul style="list-style-type: none"> Temperature, humidity (absolute, relative, specific), dew point, pressure, wind, and precipitation. Climatological norms, Earth's conveyor belt, ocean circulation, and ocean-atmosphere interactions. Cyclone and anticyclone formation, climate classification. 	25	10
6. Environmental Chemistry	<p>6.1 Introduction to Environmental Chemistry</p> <ul style="list-style-type: none"> Definition & Scope: Overview of environmental chemistry and its importance. Applications of Environmental Chemistry <p>6.2 Air Chemistry</p> <ul style="list-style-type: none"> Atmosphere composition and stratification. Photochemical reactions: NO_x, SO_x, O₃, O₂, CO₂, CO, ions, and radicals. Issues: Acid rain, ozone depletion, particulate matter, aerosols. <p>6.3 Water Chemistry</p> <ul style="list-style-type: none"> Physical and chemical properties of water. Dissolved gases (O₂, CO₂) and Henry's Law. Heavy metals (As, Hg, Pb), acidity, alkalinity, and water hardness. <p>6.4 Soil Chemistry</p> <ul style="list-style-type: none"> Soil composition: Inorganic and organic components. Cation/anion exchange, and key nutrients (N, P, K) in soil. 	25	12