## INTER DISCIPLINARY PAPER (ID)

### SCHEME OF INSTRUCTION AND EXAMINATION (REVISED 2013) FOR THE BATCH ADMITTED IN

ACADEMIC YEAR 2013-2014

(APPROVED BY THE BOARD OF STUDIES IN CHEMISTRY 2013)

**SEMESTER-III**

<table>
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<th>Sub. code</th>
<th>Subject</th>
<th>Instruction Hrs/week</th>
<th>Max Marks Semester Exams</th>
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<td>CH-305</td>
<td>Environmental chemistry and natural resources &amp; biofuels</td>
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M. Sc. CHEMISTRY REVISED SYLLABUS
INTER DISCIPLINARY PAPER (ID)
(To be implemented for the batch admitted in 2013-2014)
(Approved by the Board of Studies in Chemistry)

SEMMESTER-III

The syllabus embedded in this paper is meant for the students who are studying post graduate other than chemistry.

Paper V CH-305 (ENVIRONMENTAL CHEMISTRY AND NATURAL RESOURCES & BIOFUELS)

Unit CB 01: Ecosystem and Global environmental problems
Unit CB 02: Environmental pollution and control
Unit CB 03: Natural resources
Unit CB 04: Biofuels

Teaching hours/week-4 Marks-100

Unit CB 01: Ecosystem and Global environmental problems
Flow of energy, Biogeochemical cycles, Homeostasis/cybernetics, Food chain concentration, Biomagnification, ecosystems value, services and carrying capacity.
Green house effect, Green House Gases(GHG), Global Warming, sea level rise, Climate change and their impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification.
International conventions/Protocols: Earth summit, Kyoto protocol and Montreal Protocol

Unit CB 02: Environmental pollution and control
Definition and classification of pollution and pollutants, causes, effects and control technologies.
Air Pollution: Primary and secondary pollutants, Automobile and industrial pollution, Ambient air quality standards.
Water Pollution: Point and non-point sources of pollution, Major pollutant of water and their sources. Drinking water quality standards. Waste water treatment methods: effluent treatment plants (ETP), Sewage treatment plants, common and combined effluent treatment plants (CETP).
Soil Pollution: Soil as sink for pollutants, Impact of modern agriculture on soil, degradation of soil.
Marine Pollution: Misuse of international water for dumping of hazardous waste, coastal pollution to sewage and marine disposal of industrial effluents.

Noise Pollution: Sources, industrial noise-Occupational Health hazards, standards, Methods of control of Noise.

Thermal pollution: Thermal comforts, Heat Island effect, Radiation effects.


Unit CB 03: Natural resources

Importance and Classification of Resources. Living and Non-living resources, Renewable and non-renewable resources.

Water resources: use and over utilization of surface and ground water, floods droughts.

Dams: benefits and problems.

Mineral resources: use and exploitation, environmental effects of extractions and using mineral resources-case studies.

Energy resources: growing energy needs, renewable and non-renewable energy, sources use of alternate energy sources-case studies.

Role of an individual in conservation of natural resources.

Unit CB 04: Bio-fuels


Bio-fuels prodution, use and sustainability, use and over exploitation of energy sources and associated problems. Equitable use resources for sustainable lifestyles. Use of biological techniques in controlling air pollution; Removal of chlorinated hydrocarbons from air. Overview of transportation fuels, trends and needs, changes in biofuels.

Reference Books

1. Environmental Studies, Erach Bharucha.
2. Environmental Studies, Kaushik & Kaushik.
5. A Text Book of Biotechnology, R.C.Dubey, S.Chand & Company Ltd.