

Prof. Yogendra K
Chairman, Board of Studies in Environmental Science
Kuvempu University, Jnanasahyadri
Shankaraghatta – 577451, Shivamogga District, Karnataka

KU/PG/ES/493/2025-26.

Date:24/03/2026

To
The Deputy Registrar,
Syndicate Section
Kuvempu University
Jnanasahyadri, Shankaraghatta – 577451
Shivamogga District, Karnataka

Subject: Submission of BoS proceedings and BoS-approved syllabus for 5th and 6th semesters of B.Sc. in Environmental Science

Dear Madam,

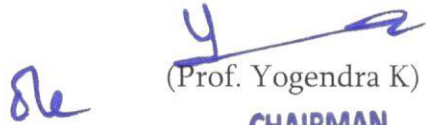
I am pleased to submit herewith the proceedings of the recent meeting of the Board of Studies in Environmental Science, along with the Board of Studies approved syllabus for the 5th and 6th semesters of the B.Sc. (Basic/Hons.) in Environmental Science, framed in accordance with the University regulations and the SEP- undergraduate curriculum framework.

The skill-based/practical-oriented course syllabus for the 4th, 5th and 6th semesters in Environmental Science has already been submitted to your office earlier for necessary action. The present submission provides the detailed theory and practical syllabus, course structure and scheme of teaching and evaluation for the 5th and 6th semesters, as approved by the Board of Studies.

I request you to kindly place the enclosed BoS proceedings and the approved syllabus before the appropriate statutory bodies and arrange for necessary notification and implementation from the academic year 2026–27.

Thanking you,

Yours faithfully,


(Prof. Yogendra K)

CHAIRMAN

BOARD OF STUDIES

P.G. DEPT. OF ENVIRONMENTAL SCIENCE

KUVEMPU UNIVERSITY

JNANASAHYADRI, SHANKARAGHATTA-577 451

Enclosures:

1. Proceedings of the BoS meeting in Environmental Science.
2. BoS-approved syllabus for 5th and 6th semesters of B.Sc. in Environmental Science.

KUVEMPU UNIVERSITY

B. Sc., ENVIRONMENTAL SCIENCE

SYLLABUS

(Semester (V to VI))

2026-27

Board of Studies in Environmental Science
Department of P.G. Studies and Research in Environmental Science
Kuvempu University
Jnanasahyadri, Shankaraghatta-577451
Shivamogga, Karnataka, INDIA.

Undergraduate Environmental Science Syllabus 2025-26

Semester (V to VI)

Paper code	Paper type	Title of the paper	Credits Assigned	Instructional hours per week
SEMESTER – V				
UGES-T-V	Theory-V	Environmental Pollution and Control	3	3
UGES-P-V	Practical-V	Air, Soil and Wastewater Analysis	2	4
UGES-T-VI	Theory-VI	Solid Waste Management	3	3
UGES-PS-II	Practical Knowledge/Skill Development course	Water and Wastewater Treatment	2	4
SEMESTER – VI				
UGES-T-VI	Theory-VII	Environmental microbiology and Biotechnology	3	3
UGES-P-VI	Practical-VI	Environmental, Microbiology, Biotechnology and EIA	2	4
UGES-T-VI	Theory-VIII	Environmental impact Assessment, risk assessment and Audit.	3	3
UGES-PS-II	Practical Knowledge/Skill Practical	Solid waste and Biomedical waste Treatment	2	4

Curriculum Structure for Undergraduate Programme (From 2024-25)

(Course Structure, Scheme of Teaching and Evaluation (From 2024-25) Curriculum Framework for UG Programmes as suggested by KSHEC, Govt. of Karnataka

(As per G.O. No.: ED 166 UNE 2023, Bengaluru, dated: 08-05-2024)

Continuous Assessment Programme/Internal Assessment/Formative Assessment

Sl. No.	Continuous Assessment Programme/Internal Assessment	Maximum Marks
01	Two Session Tests with a proper record for assessment (5+5 = 10)	10
02	Assessment of Skill Development activities/Seminars/Group Discussion/Assignment etc., with proper record	05
03	Attendance with proper record*	05
TOTAL MARKS		20

*** Attendance Marks-breakup**

<75%	-00 Marks
75-80%	- 01 Mark
80-85%	- 02 Marks
85-90%	- 03 Marks
90-95%	- 04 Marks
>95%	- 05 Marks

SEMESTER-V

UGES-T-V: PAPER-V: ENVIRONMENTAL POLLUTION AND CONTROL

Course learning Objectives:

- To develop competency in understanding pollution concepts, pollutants, engineering controls, contemporary issue identification skills, and relevant acts/rules.
- To build competency in grasping core concepts of pollution and its pollutants..**
- To instill an introductory knowledge of engineering concepts for controlling the pollution.
- To motivate and inspire to acquire contemporary understanding and skills leading to issue identification.
- To develop knowledge on act and rules related to pollution.

Course Outcome:

- Demonstrate an entry level competence in understanding the environmental pollutants and their impacts.
- Demonstrate the ability to carry out air and water quality analysis in the laboratory and interpret the results.
- Ability to understand the harmful impact of pollutants on environment and human health.
- Be able to understand the existing treatment technologies and scope of developing these methods.

Unit-1:

20 Hours

Meteorology: Definition. Significance of meteorology.

Meteorological parameters: Solar radiation, Temperature, Humidity (Absolute, Specific & Relative), Wind speed & direction, Pressure and Precipitation.

Air Pollution and its control methods

Definition. Sources of air pollution (Point and non-point). Classification of air pollutants – Particulates, aerosols and gaseous air pollutants.

Meteorology of air pollution: Air shed – Concept and Scope. Atmospheric stability, Temperature inversions, Plume Behavior.

Effects of air pollution on humans, plants and materials (CO, CO₂, SO_x, NO_x, PAN, Ground level Ozone, PM_{<10μm}, PM_{<2.5μm}, PM_{<1μm}, Acid rain, Thermo-chemical – CO₂, and Photochemical reactions - O₃ & Smog in atmosphere.

Respiratory and cardiovascular diseases, neuropsychiatric complications, the eyes irritation, skin diseases and long-term chronic diseases. Pneumoconiosis.

Necrosis, Chlorosis and Senescence.

Discoloration, Stone cancer and material loss.

Automobile pollution: Definition. Sources – Petrol, Diesel, LPG, CNG, Biodiesel, Ethanol, Hydrogen and Fuel cells. Emerging fuels – Biobutanol, Dimethyl ether, Methanol and Renewable hydrocarbon biofuels. Electric Vehicles – issues and management.

Internal Combustion Engines (Two stroke and four stroke: Carburetor and Fuel Injection systems). Mild hybrid, Full hybrid and Plug-in hybrid engines.

Effects and control of automobile pollution.

Air Pollution control methods:

Monitoring and Control of Air Pollution: Scope and significance.

Air Sampling: Ambient and Indoor, Gaseous and particulates.

National Ambient Air Quality Monitoring Program (NAQMP) – Introduction. National Ambient Air Quality Standards.

Bharat Stage Emission Standards (BSES) – Introduction, Timeline of Implementation of BSES in India. Current Emissions norms.

Air Quality Indices.

Concept of Air Pollution Tolerance Index and Industrial Greenbelts.

Control of Gaseous pollutants – Absorption, Adsorption and Condensation.

Particulate – Settling Chambers, Inertial Separators, Cyclones, Filters (Baghouse), Electrostatic Precipitators and Scrubbers.

Salient features of Air Pollution (Prevention and Control) Act, 1981 and latest amendments;

National Clean Air Program-2019 and latest amendments.

Unit-2:

12 Hours

Water pollution: Definition, Sources (Point and non-point). Classification of Water Pollutants.

Heavy metal pollution: Sources/Causes, Effects and Control Measures with reference to Lead and Mercury.

Fertilizer pollution: Sources/Causes, Effects and Control Measures with reference to Nitrogen, Phosphorus and Potassium. Agriculture runoff and detergents as pollutants. Eutrophication.

Pesticide pollution: Sources/Causes, Effects and Control Measures with reference to Organo-chlorine and Organo-phosphate pesticides.

Thermal pollution: Sources/Causes, Effects and Control Measures.

Oil pollution: Sources/Causes, Effects and Control Measures.

Groundwater pollution: Sources/Causes, Effects and Control Measures with reference to Nitrate, Fluoride and Arsenic. Coliform contamination of water.

Unit-3:

13 Hours

Water and Wastewater treatment:

Characteristics of potable water: Physical, Chemical and Biological.

Treatment of water for potable purposes: Intake, screening, aeration, pre-chlorination, coagulation, flocculation, sedimentation, filtration (SSF and RSF), disinfection and distribution.

Characteristics of domestic and industrial wastewater: *Physical* – Colour, Odour, Turbidity, Temperature and Solids (Dissolved, Suspended, Settleable, Volatile; MLSS & MLVSS); *Chemical* – Organic, Inorganic and Volatile Organic compounds; and *Biological* – Coliforms and other organisms.

Sewage treatment: - Preliminary, Primary, secondary and tertiary treatment: Chlorination, Reverse Osmosis and Activated Carbon.

Monitoring of water pollutants: Scope and significance.

Salient features of Water Pollution (Prevention and Control) Act, 1974; Water Quality Standards – Drinking water - IS 10500 & Surface water - IS 2296.

Unit-4:

15 Hours

Noise Pollution: Definitions of sound and noise. Sources of noise – Transport, neighborhood industrial and indoor. Noise, Vibration and Harshness. Decibel scale. Metrics of noise – pressure, intensity and frequency. Sound pressure level (SPL), Sound exposure level of A-weighted sound - SEL; Percentile-derived measurements (L10, L50, L90).

Special noise environments: Infrasound, ultrasound, impulsive sound and sonic boom.

Effects of noise on human beings: Noise Induced Hearing Loss (NIHL), Sleep apnea and others; Psychoacoustics and annoyance rating schemes. Control measures - at source, transmission path and protection at the receiver end. Engineering and administrative controls.

Noise standards. The Noise Pollution (Regulation and Control) Rules.

Radioactive pollution: Radiation and their types. Wave and particle radiation. Sources; Radiation Dose; Effects on human beings; Preventive measures. Radioactive waste management. Atomic Energy (Radiation Protection) Rules.

References

- 1) J. Paul Guyer. (2021). *An Introduction to Air Pollution Control Engineering*. UNICORN Publishing Group. 1-182.
- 2) Perkins, H. C. (1974). *Air Pollution*. Mc Graw – Hill Kogakusha Ltd.
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- 4) Rao, M. N. and Rao, H. V. N. (1988). *Air Pollution*. Tata McGraw – Hill Publishing Co. Ltd.
- 5) Santra, C. S. (2001). *Environmental Science*. (1st Ed.), New Central Book Agency
- 6) Stern, A. C. (1986). *Air pollution* Vol. I – VIII. Academic Press Inc.
- 7) Anjaneyulu Yerramilli. (2019). *Air Pollution Prevention and Control Technologies*. BS Publications. 1-828.
- 8) Bhatia, S. C. (2003). *Managing Industrial Pollution*. Macmillan India Ltd.
- 9) Crites, R. and George, T. 1998). *Small and Decentralised Wastewater Management Environmental Noise Pollution and its Control*. Anmol Publications.
- 10) Garg, S.K. (1990). *Environmental Engineering Vol I & II Sewage Disposal and Air Pollution Engineering*, Khanna Publ. Delhi.

UGES-P-V: PRACTICAL
AIR, SOIL AND WASTEWATER ANALYSIS

1. Sampling techniques of air
2. Calculate Air Quality Indices from secondary data sources
3. Sampling techniques of waste water
4. Determination of total solids in wastewater
5. Determination of free Carbon di oxide in given water sample.
6. Determination of total hardness in given water sample.
7. Determination of DO and BOD
8. Measurement of Noise.
9. Sampling techniques of Soil
10. Determination of Soil Moisture and Texture
11. Determination of Water Holding Capacity of Soil
12. Characterization of Solid Wastes
13. Determination of density of solid waste.
14. Determination of moisture of solid waste.
15. Determination of pH and Electrical Conductivity in Soil/Refuse matter
16. Determination of Organic Carbon in Soil/Refuse matter
17. Field visit: Water treatment plant, polluted waterbodies, Meteorological station, Vermicompost site, Solid waste management site.

References

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3. Firman, E. B. 1964. *Chemistry of Soils*. Oxford IBH Publishing Co.
4. Jackson, M. L. 1973. *Soil – Chemical Analysis*. Prentice Hall Publications.
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9. Sawyer, C. N. and Mc Carty, P. L. 1978. Chemistry for Environmental Engineering. McGraw Hill.
10. Stern, A. C. 1986. Air pollution Vol. I – VIII. Academic Press Inc.
11. Standard Methods for Examination of Water and Wastewater. 2012. APHA – WEF.

SEMESTER-V

UGES-T-V: PAPER-VI: SOLID WASTE MANAGEMENT

Course learning Objectives:

- To build competencies in understanding soil pollution, waste types and management skills, contemporary issue identification, and innovative entrepreneurial opportunities at the human-environment interface.
- To develop competency in understanding soil pollution.
- To instill a knowledge of types of waste and develop skill for waste management.
- To motivate and inspire to acquire contemporary understanding and skills leading to issue identification.
- To inculcate creativity and innovative spirit in the domain of human-environment interface leading to vocation/entrepreneurial opportunities.

Course Outcome:

- Demonstrate an entry level competence in understanding about the land pollution and its control measures.
- Demonstrate the ability to carry out sampling/monitoring and analysis in field conditions/laboratories and make appropriate judgements.
- Ability to understand different types of waste and their management.
- Be able to understand the demands of the society with respect to waste management.

Unit-1:

10 Hours

Solid Wastes and Management: Definition, Types, Sources and Characteristics of solid waste - *Density, Moisture content, Size of Waste constituents, Calorific Value, Field capacity, Permeability of compacted wastes and Compressibility*. Impacts of Solid Waste on Environment - *Infectious diseases, land and water pollution, obstruction of drains, loss of biodiversity and implications on climate*. Solid Waste Management Rules, 2016 and amendments.

Urban Solid Waste Management (USWM): Definition, Classification of solid wastes (source and type based), Elements of USWM - onsite storage, processing and handling, collection, transfer and transport, resource recovery, and final disposal. Case study of USWM of Bengaluru/local town.

Unit-2:

10 Hours

E-Wastes and management: Definition, sources and composition. Effects of E-waste on human health and Environment. E-waste disposal - *Domestic, Commercial and Industrial*. Steps in E-waste management - *Collection, Sorting, Repair, Refurbishing and Dismantling of disused Electrical and Electronic products*. Recovery of valuable metals. Life Cycle Assessment (LCA) of E-waste. E-Waste (Management) Rules- 2016, 2022, E-Waste Amendment-2025.

Unit-3:

20 Hours

Hazardous wastes and management: Definition, Sources, Classification and Characteristics of Hazardous Waste - *Ignitability, Corrosivity, Reactivity and Toxicity*. Hazardous Waste Management - Waste Minimization; Waste exchange, recycling and recovery. Treatment

Technologies: Chemical treatment – *Stabilization, solidification*, neutralization, precipitation, ion exchange, reduction or oxidation. Thermal treatment – Incineration. Biological treatment – *Land farming, Bioreactors and Anaerobic decomposition*; and Physical treatment – *Solidification, flotation, sedimentation, evaporation or filtration*. Disposal of Hazardous Waste - *Sanitary landfill and Underground disposal*. Treatment, Storage and Disposal Facilities (TSDF). Hazardous Waste Management Rules, 2016, Amendment rules, 2025.

Biomedical Waste Management: Definition, Sources, Generation, Classification, Storage, Transportation and Disposal. Impacts of biomedical wastes. Biomedical Waste Treatment: *Disinfection, Irradiation and Incineration*. Biomedical Waste Management Rules, 2016.

Plastic (Polymer) Waste Management: Definition, Sources and Types of plastics (Recyclability). Impact of Plastics on terrestrial and aquatic biota. Plastic wastes: Generation, Classification, Storage, Transportation and Disposal. Microplastics. Bioplastics. Alternatives to plastics. Plastic Waste Management Rules, 2022.

Battery Waste Management: Definition, Sources and Types of battery wastes. Impact of Batteries/battery waste on Environment. Battery wastes: Generation, Collection, Segregation, Recycling, Treatment and Disposal. Battery Waste Management Rules, 2022.

Construction and Demolition (C&D) Waste Management: Definition, Sources and Types of C&D wastes. Impact of C&D on the Environment. Recycling of C&D waste - sorting, crushing and sieving of aggregates. Construction and Demolition Waste Management Rules, 2016.

Unit-4:

10 Hours

Soil Pollution: Soil Characteristics - Physical, Chemical and Biological characteristics; Soil profile, Macronutrients, Micronutrients and Organic matter; Cation exchange capacity.

Sources and Classification of Soil Pollutants. Water logging and soil salinity. Reclamation of saline and alkaline soils. Synthetic Fertilizer and Pesticide Pollution - Causes, effects and control; Effects of industrial and urban wastes (solid and liquid) on soil. Soil erosion-Definition, classification and control measures.

Methods of Soil Management: Farm Yard Manure (FYM), Biopesticides, Integrated Pest Management (IPM), Phytoremediation technology.

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2. B. B. Hosetti. (2006). Prospects and Perspective of Solid Waste Management. New Age International (P) Limited. 1-216.
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24. Vasudevan Rajaram., Faisal Zia Siddiqui., Sanjeev Agarwal and Mohammed Emran Khan.2022. Solid and Liquid Waste Management. *Waste to Wealth*. Asoke K. Ghosh, PHI Learning Pvt.Ltd., New Delhi.

SEMESTER-VI

UGES-T-VII: PAPER-VII: ENVIRONMENTAL MICROBIOLOGY AND BIOTECHNOLOGY

Course learning Objectives:

- To develop competency in understanding the microbes of Environment.
- To develop competency in understanding the application of biotechnology in bioremediation
- To instill a knowledge about roles of microbes in the Environment.
- To motivate and inspire to acquire contemporary understanding and using the knowledge for remediation.
- To inculcate creativity and innovative spirit in identifying appropriate measures for recycling and conservation.

Course Outcome:

- Demonstrate competence in understanding the microbes of Environment.
- Demonstrate competency in understanding the biotechnology in Environmental conservation
- Demonstrate competence in understanding the microbes in water and their impact on human health.
- Ability to understand the role of various techniques of biotechnology in bioremediation, biofertilizers.

Unit-1:

15 Hours

Environmental Microbiology: Definition, scope and significance. History of microbiology
Environmental determinants: Definition. Influence of pH, Temperature, Radiation, Pressure and Salinity on microorganisms. Extremophiles; Bioluminescent microbes.
Air Microbiology: Definition. Airborne infections – Causative microbes – Control measures; Droplet infection; Sick Building Syndrome.

Unit-2:

15 Hours

Aquatic Microbiology: Definition. Water related diseases - Bradley's classification - *water-borne diseases, water-washed diseases, water-based diseases and water-related diseases*. Infection, pathogens, symptoms, treatment and preventive measures – Disinfection of water for potable purposes. Coliforms – *Citrobacter, Enterobacter, Escherichia* and *Klebsiella*. Total and Faecal coliforms.
Role of microbes in wastewater treatment: Activated Sludge Process and Trickling Filter; Septic tank and Biomethanisation.

Unit-3:

15 Hours

Soil Microbiology: Definition. Rhizosphere and Rhizoplane Microflora –Biodegradation of DDT, PCBs and Plastics; Bioleaching of Heavy Metals – Copper, Iron and Uranium; Role of microbes in Biogeochemical Cycles: Nitrogen and Phosphorus.
Role of microbes in soil fertility – Rhizobium and Mycorrhiza.

Role of microbes in organic solid waste management: Composting – anaerobic and aerobic (Windrow method, Bangalore method, accelerated composting, Bio-mechanical composting machines). Role of inoculum in composting. Vermicomposting.

Composting as a method of household solid waste management – case studies.

Unit-4:

15 Hours

Environmental Biotechnology and its application:

Introduction, scope and importance of Biotechnology in Environmental science

Bioremediation - Definition, types and Xenobiotic pollutants, bioremediation methods for contaminated soils and aquifers, marine oil slick and air pollutants. Biosensors and their applications.

Bio fertilizers and biopesticide: Introduction, scope and importance, Biofertilizer- *Rhizobium*, *azotobacter*, *azospirillum*, Blue green algae, *azolla*, *mycorrhizae*. Phosphate solubilizing microorganisms, advantages and disadvantages. Bio-control agents- Bio insecticide, bio herbicide, disease control, advantages and disadvantages.

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UGES-P-VI: PRACTICAL-VI
ENVIRONMENTAL MICROBIOLOGY, BIOTECHNOLOGY AND EIA

1. Microscopy – Study of Simple and Compound microscopes
2. Sterilization techniques and preparation of culture media – Broth and Solid media
3. Isolation of Bacteria from Water/Wastewater – Serial dilution technique
4. Identification of Bacteria – Colony characteristics
5. Study of simple staining technique (positive and Negative staining)
6. Identification of Bacteria by gram staining technique
7. Identification of Fungi – Lactophenol cotton blue staining
8. Study of Root Nodule Bacteria – Gram staining
9. Study of recent EIA notification and guidelines
10. Baseline data collection and analysis
11. Study of impact identification methods – Checklists
12. Study of impact identification methods - Matrices
13. Study of cost-benefit analysis of development project
14. Study of Environmental Risk Assessment – Data sheet method
15. Study of Environmental audit methods - Water audit
16. Study of Environmental audit methods - Energy audit – Electricity
17. Case Study: Socio-economic and Health impacts - Questionnaire method

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SEMESTER-VI

UGES-T-VIII: PAPER-VIII: ENVIRONMENTAL IMPACT ASSESSMENT, RISK ASSESSMENT AND AUDIT

Course learning Objectives:

- To develop proficiency in understanding Environmental Impact Assessment (EIA) processes and methodologies, contemporary skills for issue identification and conservation, and innovative selection of assessment tools.
- To develop competency in understanding the process of assessing the Environmental Impact.
- To instill a knowledge on methodologies used for assessing Environmental Impact.
- To motivate and inspire to acquire contemporary understanding and skills leading to issue identification and conservation.
- To inculcate creativity and innovative spirit in identifying appropriate assessment tools.

Course Outcome:

- Demonstrate competence in understanding the reports of Environmental Impact assessment of a project.
- Demonstrate the ability to carry out data collection procedures and analysis in field conditions/laboratories and make appropriate interpretations required for EIA.
- Ability to understand the procedure to conduct an audit.
- Demonstrate the ability to carry out risk analysis adhering to the laws.

15 Hours

Unit-1:

Environmental Impact Assessment (EIA): Definition, principle, process and importance of an EIA. Salient features of EIA. Utilities of EIA. EIA Notification, 2006 and subsequent amendments. Project or Activities requiring Environmental Clearance (MoEF&CC Notification, 2017).

Components of EIA – Air, Water, Noise, Land, Biological environment, Socio-economic and Health Environment. Participants of an EIA.

Steps in an EIA – Screening, Scoping & consideration of alternatives, Baseline data collection, Impact prediction, Assessment of alternatives, Delineation of mitigation measures, preparation of environmental impact statement, Public hearing, Environment Management Plan, Decision making and monitoring the clearance conditions.

15 Hours

Unit-2:

EIA Methodologies: Rapid and Comprehensive EIA. Characteristics of methods of Impact Identification. Criteria for the selection of EIA methodology – General, impact identification, impact measurement, impact interpretation and evaluation and impact communication. Methods of Impact Identification - Adhoc methods, Checklist methods, Matrices methods, Networks methods and Overlay methods. Environmental index using factor analysis, Cost-benefit analysis, Predictive or Simulation methods.

15 Hours

Unit-3:

Curriculum Framework for UG Programmes as suggested by KSHCE, Govt. of Karnataka (As per G.O. No.: ED 166 UNE 2023, Bengaluru, dated: 08-05-2024) Approved in the Board of Studies meeting held on 26th January 2026

Environmental Audit: Concept, Aims and Objectives; Elements of Environmental audit - Internal and External audit.

Types of Environmental Audit: Environmental Compliance Audits, Environmental Management Audits and Functional Environmental Audits.

Water audit, Energy audit, Health & Safety audit and Waste & Waste Minimisation audit.

Audit procedure: Pre-audit activities, On-site activities and post-audit activities.

Evaluation of Audit data and Preparation of audit report.

Auditor profile.

Environmental Audit Notifications (with latest amendments)

ISO 14010 - EA- General Principles of Environmental Auditing

ISO 14011 - EA- Auditing of Environmental Management Systems

ISO 14012 - EA- Qualification Criteria for Environmental Auditors

ISO 14013 - Management of Environmental Audit Program

Unit-4:

15 Hours

Environmental Risk Assessment

Hazard identification and risk assessment - Quantitative and Qualitative risk assessment.

Quantitative - Hazard Identification and Risk Analysis (HIRA).

Qualitative - Hazard and Operability Analysis (HAZOP), Job Safety Analysis (JSA), Fault Tree Analysis (FTA) and Event Tree Analysis (ETA).

Disaster management plan - Off-site emergency plan and On-site emergency plan

Occupation, Health and Safety Management Plan, PPEs, Fire Safety,

Chemical and Biological Hazards. Safety Management and Laws - Factories Act; Manufacture,

Storage and Import Hazardous Chemical Rules. OSHAS.

References

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5. Rao, P. S. B. and Rao, P. M. (Eds). 2001. Environment Management and Audit. Deep and Deep Publications Pvt. Ltd.
6. Rau, J. G. and Wooten, D. C. 1980. Environmental Impact Analysis Handbook. McGraw Hill.
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(MODEL QUESTION PAPER)
ENVIRONMENTAL SCIENCE
(MAX MARKS: 100 (C₁:10 + C₂:10 + C₃:80))

Time: 3 hrs

Max. Marks: 80

Note: 1. Answer all questions
Draw neat-labeled diagrams and give examples wherever necessary

SECTION A

Answer all the questions

10X 1=10 marks

1. Answer in one word or a sentence

- a.
- b.
- c.
- d.
- e.
- f.
- g.
- h.
- i.
- j.

SECTION B

Write short notes on any FIVE of the following:

5 X 6 = 30 Marks

- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

SECTION C

Answer any FOUR of the following:

4 x10 = 40 Marks

- 9.
- 10.
- 11.
- 12.
- 13.
- 14.

Scheme for Practical Examination

MAX MARKS: 50 (C₁:05 +C₂:05C₃:40)

Time: 3hours		Max Marks: 40
I. Major Experiment		20 Marks
(Preparation, Identification/ Estimation/Quantification)		
II. Writing a Comments/Procedur		10 Marks
III. Record / project write up		05 Marks
IV. Viva voce examination		05 Marks


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