

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.

**PGDI Environmental Auditing
Paper- I**

ENVIRONMENTAL IMPACT ASSESSMENT

[60 Hours][4Credits][100 Marks]

Management of Environmental Assessment, cost and time to prepare EIA, sources of financing, and procurement of consultants

Environmental costs and benefits: Estimation of market value of environmental components, analysis of projects and policies with consideration of environmental cost and benefits, priority values and value function graphs, valuing the impacts in monetary terms, monetary objective decision making, issues of risk and uncertainty.

Impact assessment methodologies: choosing a methodology, categorizing methodologies, review criteria, different assessment methods with relevant examples.

Strategic Environmental Impact Assessment: Concept of SEA, application of SEA in the field, developing the SEA document, case studies of SEA in different countries.

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**PGDI Environmental Auditing
Paper- II**

SAFETY AND HAZARD MANAGEMENT

[60 Hours][4Credits][100 Marks]

Safe working conditions and their development removing the hazard from the job,

Engg consideration – safeguarding machines,

Inspections and inspection checklists.

Industrial Hygiene: Ergonomics and its parameters, occupation, occupational health, occupational environment & elaboration of operative agents namely physical, chemicals and biological,

Application of problems arising from man & man – man & man – machine relationships.

Safety Audit,

Disaster Management Plan,

Onsite – offsite Emergency Plant,

Risk Assessment,

Hazop and Hazan,

Statutory Requirements

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PGDI Environmental Auditing Paper- III

GREEN CHEMISTRY & ENVIRONMENTAL MANAGEMENT

[60 Hours][4Credits][100 Marks]

Green Chemistry:

Cleaner production concept, cleaner production in sustainable development, evolution of the concept, Mass and energy transfer balances, Unit operations as basis of CP, Energy and water conservation strategies in CP, Process management, product design, Material selection as components of CP development, Monitoring and environmental reporting, Theory of cleaner production, Effect of CP on Industrial economy. Designation of cleaner production team, Analyze process steps, generating cleaner production opportunities, selecting cleaner production solutions, Implementation, maintaining cleaner production, Good House Keeping: What is good Housekeeping? What is needed to implement good house keeping? Check lists for GHK. Energy Audit Methodology: Introduction preliminary or walk-through energy Audit, Detailed energy audit, energy management, energy planning. Case Studies

Environmental Management:

Principles of water pollution control: Reduction of strength and volumes, neutralization; equalization, proportioning; processes for removal of various parameters, suitability of control processes compatible with concentrations, environmental industrial location consideration. Air Pollution Source & their inventory, Particulate matter, carbon dioxide, carbon monoxide, sulphur oxide, effects of hydrocarbon, oxide of nitrogen, photochemical oxidants, asbestos and metals on materials and health. Control of Sulphur Oxides, introduction, thermo dynamics and kinetics of sulphure dioxide formation, general control methods, flue gas, desulphurisation processes, Control of Nitrogen oxides, Control of Particulates, particulate control mechanisms. Solid waste disposal methods, Hazardous waste handling, Transportation and disposal methods, Biomedical handling and disposal methods. Statutory Requirements

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PGDI Environmental Auditing Paper- IV

LABORATORY MANAGEMENT AND GENERAL MANAGEMENT [60 Hours][4Credits][100 Marks]

I. Introduction to laboratory management and importance:

General management : Introduction, nature, features and functions, Importance of management in laboratory, Role of manager in laboratory, General management of laboratory

II. Laboratory setup :

Laboratory setup with respect to building, surrounding and pollution aspects, Arrangement of instruments and reagents

III. Human Resource Management :

Manpower planning, concept of recruitment and selection, sources of manpower supply, selection process, selection tests, advantages and disadvantages of selection tests.

Training and Development: Concept and comparison of T&D, training methods.

Performance Appraisal : Concept, objectives of PA, methods of PA

Concept of motivation: Maslow's theory of motivation, positive and negative motivation.

IV. Purchase Organisation :

Importance of good purchasing policy, Functions, methods of purchasing, purchase requisition form, purchase process, tenders and its types, notice inviting tenders, purchase orders, Inventory

V. Store Keeping and Record keeping :

Types of stores, purpose of store keeping, duties of store keeper, methods of storing and record keeping.

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PGDI Environmental Auditing Paper- V

INSTRUMENTATION

[60 Hours][4Credits][100 Marks]

SECTION I

Introduction to Instrumentation System, Functional Elements of an instrument, Input Output Configuration of Measuring Instrument. Difference between Digital and Analog Instruments.

Static Characteristics: Resolution, Threshold, Backlash, Hysteresis, Linearity, Sensitivity, Accuracy and Precision Errors, Types of Errors & Errors limiting techniques.

Introduction to Transducers, Types of Transducers , Study of some Simple Transducers (Temp., Pressure Flow, Displacement, Force, Strain etc...)

Block Diagram of a Simple Instrumentation System, Function of each Block of the System.

SECTION II

ANALYTICAL INSTRUMENTS:

pH Meter:-

Construction and working of pH Electrode, Characteristics of Amplifier used in pH Meter. Display System of a pH Meter.

Spectrophotometer:-

Principle of operation of Spectrophotometer Electron Microscope NMR Spectrometer.

Mass Spectrometer:-

Working principle of a Static and Dynamic Mass Spectrometer.

Conductivity meter:-

Working principle of a Conductivity meter.

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PRACTICALS

[150 Hours][10Credits][250 Marks]

GENERAL:

- Reporting in an industry
- Interactions of an industry with Government
- Installation of certificates for a company especially NOC from GPCB, ISO, FDA etc.

WATER CHEMISTRY:

- Ion Exchange w.r.t. water treatment
- Effect of pH on co-agulation & flocculation

ENVIRONMENTAL AUDITING:

ENVIRONMENTAL AUDIT OF ANY ONE INDUSTRIAL PROCESS

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REFERENCES

- Environment auditing : A.K. Shrivastava, APH Publishing Corporation, Delhi.
- Environment accounting :N.Desgupta and S.Chand.
- Environmental accounting : Alok kumar Deep and reporting Deep publications, Delhi.
- An Introduction to Environmental Pollution : B K Sharma, H Kaur
- Environment : D K Asthana, Meera Asthana
- Principles and Practice of Management : L M Prasad
- Essentials of Management : Koontz and Wehrich
- Personnel Management : Edwin Flippo
- Dynamic Personnel Administration: M.N.Rudrabaswaraf
- Personnel Management : Arun Monappa & Muza S Sai yadain
- Industrial Organisation and economics Sharma : T R Banga and S C Engineering
- Biomedical Instrumentation : R S Khandpur
- Practical Biochemistry : T.H. Ummer
- Electrical Measurement & Instrumentation : A K Sawhney