EPCO INSTITUTE OF ENVIRONMENTAL STUDIES

ADMISSION NOTICE

POST GRADUATE DIPLOMA IN ENVIRONMENTAL MANAGEMENT

EPCO, working under the Urban Development and Environment Department, Govt. of M.P. is running a one year "Post Graduate Diploma in Environmental Management" (PGDEM).

Applications are invited for admission to the PGDEM Course.

<table>
<thead>
<tr>
<th>Eligibility</th>
<th>Graduate in any discipline with 50% (General Category) 40% (Reserve Category)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age Limit</td>
<td>20 - 45 Years (Fresher's)</td>
</tr>
<tr>
<td></td>
<td>Below 50 years (In-Service)</td>
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<tr>
<td>Course Fee</td>
<td>Rs.8000/- (General Category)</td>
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<td></td>
<td>Rs.6000/- (Reserve Category)</td>
</tr>
<tr>
<td>Last Date for</td>
<td>25.06.2016 (5.30 PM)</td>
</tr>
<tr>
<td>Submission of</td>
<td></td>
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<tr>
<td>Application Form</td>
<td></td>
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<tr>
<td>Application Fee</td>
<td>Rs.200/- along with Application Form</td>
</tr>
</tbody>
</table>

For further details and Application Form, visit [www.epco.in](http://www.epco.in).

Executive Director
Environmental Planning & Coordination Organization
Paryavaran Parisar, E-5, Arera Colony, Bhopal
Ph.0755-2466970, 2464318 (Ext.-122), 2426765,
email- epcoinstitute@gmail.com, sadhanahk@yahoo.co.in
EPCO-INSTITUTE OF ENVIRONMENTAL STUDIES
PROSPECTUS

Post Graduate Diploma in Environmental Management (PGDEM)

The organization

Environmental Planning & Coordination Organization (EPCO) is a registered Society established in 1981 by Government of Madhya Pradesh. EPCO is an advisory organization to the State Government on matters related to Environment. One of the important mandates of EPCO is to create environmental awareness and organize educational activities. In the last three decades EPCO has worked in almost all the sphere of Environment and has gained enormous institutional experience.

The organization has also been associated with the prestigious international projects of World Bank, JBIC, DFID and UNDP and is the Nodal agency of Government of India - Ministry of Environment & Forests for Biosphere Reserve, National Green Corps, National Environmental Awareness Campaign. Its State Knowledge Management Centre on Climate Change (SKMCCC) aspire to establish a strong connect between Climate Science, Policy Planners and development practitioners to support strategic planning of Govt. agencies as well as local community with the aim to strengthen their coping capacity to climate risks. To capitalize on this knowledge wealth and share it with people an Institute of Environmental Studies (EIES) under the aegis of EPCO has been established.

Various other short-term courses for different target groups are also conducted by EPCO Institute of Environmental Studies.

The Post Graduate Diploma in Environmental Management (PGDEM) Course has been launched by EPCO-Institute of Environmental Studies, with a view to educate people of diverse sections about various aspects of environmental problems and their management. PGDEM course is of immense use to students, citizens at every stage and at all levels of formal (technical) and non-formal professionals. It is also useful for the people employed within industries, analytical jobs, and environmental cells as well as in the treatment plants.

Objective of the program

- Enhance understanding on Environmental issues
- Enhancing skills on environmental interventions
- Sharing of experiences in environmental conservation.
- Develop environmentally sensitive and technically enlightened citizen.
- Disseminate environmental information of topical interest.

Mode of Teaching, delivery and assessment:

- Contact classes will be conducted at EPCO-Institute of Environmental Studies, Bhopal for teaching, practical and field demonstration. Classroom teaching will be of 30 days with total 150 hours in 2 contact sessions, each of 15 days. At least 70% attendance for Fresh\(^1\) candidates and 60% for In-service\(^2\) candidates is compulsory.

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\(^1\) Fresh candidate means those who are not employed
\(^2\) In-service candidate means those who are serving in Government/Semi-government/private Sector and have been working continuously for last three years
- **Project**: A Project Report has to be submitted by individual candidates under the supervision of Guide. Fresh candidates will have to undergo one month internship in an organization/industry. In-service candidate will have to do a short term project, in their own organization.

- **Continuous Evaluation**: There will be continuous evaluation through assignments, practical and written exams.

**Infrastructure:**

EPCO has adequate infrastructure in form of its own building with laboratories, library, class rooms, demonstration centers (Interpretation Center, Waste Paper Recycling Unit) etc.

**Eligibility for Admission:**

Graduate in any discipline with 50% marks (General) and 40% (Reserve) Category.

**Age Limit**: (as on 30th June 2016)

20 - 45 years (for Fresher’s)

Below 50 years (for In-service)

**Selection Procedure for Admission:**

Candidates for PGDEM course will be selected on the basis of merit. The admission criterion for preparing merit list is as follows:

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Marks</th>
<th>Calculation Pattern/Criteria</th>
</tr>
</thead>
</table>
| 1.    | 80    | **On the basis of marks obtained in graduation.**  
Candidates having Graduation with 50% marks (General) and 40% - 50% (Reserve) Category will get - 30 marks  
Candidates having Graduation marks above 50%, marks will be calculated on the basis of 1 percent is equal to 1 mark for preparation of merit list as per details given below:  
51% to 60% - 31 to 40 marks  
61% to 70% - 41 to 50 marks  
71% to 80% - 51 to 60 marks  
81% to 90% - 61 to 70 marks  
91% to 100% -71 to 80 marks  
(Note: Even decimal marks will be calculated on above basis) |
| 2.    | 20    | **Marks on the basis of higher qualification/education**  
Ph.D - 20  
M.Phil - 15  
Post Graduation - 10  
Diploma - 5 |
| Total | 100   | Merit list will be prepared on the basis of marks obtained |
First merit list of selected candidates will be issued in first week of June 2016 on the basis of applications received till 30th May 2016. The selected candidates of first list will be required to deposit course fee latest by 15th June 2016. The second merit list of selected candidates on the basis of remaining applications of 1st list and applications received till last date of submission i.e. 25th June 2016 will be released on last week of June 2016 for remaining seats. The selected candidates of second list will be required to deposit course fee latest by 10th July 2016 otherwise their candidature will be treated as cancelled and waitlisted candidates can be considered for admission. The second list will also be issued subject to the availability of seats for the course. Last date for submission of application for admission in PGDEM Course-2016-17 is 25th June 2016 and one year duration PGDEM Course can be organized from July 2016- June 2017. The candidates will have to submit self attested copy of qualification documents (mark sheet/degree) along with application form in EPCO Institute. The decision of Executive Director, EPCO will be final in any matter related to PGDEM course.

<table>
<thead>
<tr>
<th>Number of Seats</th>
<th>60</th>
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<tbody>
<tr>
<td>Course Duration</td>
<td>One Year</td>
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<tr>
<td>Last Date for submission of application</td>
<td>25.06.2016 (Upto 5.30 pm)</td>
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</tbody>
</table>

**Linkages with Industry and Prospective Employers:**

The course is sponsored by EPCO (Govt. of MP) as a part of its mandate of developing trained manpower in the field of environmental conservation and management.

**Advantage of the course:**

Environment is an interdisciplinary subject and thus there is a need of environmentally aware manpower in every section of society including educational, industrial, agricultural, defence services, Government officer’s, NGO’s, Media as well as judiciary. The course will enrich the students with thorough knowledge and understanding of all aspects of environmental management. It inculcates topics such as earth's evolution and process, natural resource management, pollution control & mitigation, environmental laws, global water supplies, effects of climate change etc. The course will also help to find ways to protect and conserve environment in daily life as well as work station. The course will facilitate development of environmental leadership among individuals who will be able to contribute in generating environmental awareness and up-gradation programs for sustainable development. The Maestros course has been developed by a team of Academicians Maestros and practicing environmental experts of reputed Government and autonomous agencies so as to impart applied knowledge.

**Fees:**

The candidate will pay application fee of Rs.200/- along with application form for applying admission in PGDEM Course.

Course fee will be Rs. 8000/- for General category and Rs. 6000/- for Reserve category. The fee covers class room teaching, demonstration, library, laboratories etc. Course fee will be fully reimbursed to EPCO's and Government or PSUs Employees after successful completion of course. The last date for submission of course fee is 15th June 2016 for selected candidates of first list and 10th July 2015 for selected candidates of second list. The candidates of reserve category will have to submit documentary proof of cast in EPCO Institute along with application form.
Programme Content

PAPER – I  INTRODUCTION TO ENVIRONMENT & NATURAL RESOURCE MANAGEMENT

Unit 1  Fundamentals and functions of Environment and Ecosystem Management

Unit 2  Natural Resource Conservation and Utilization

PAPER – II  DEVELOPMENT AND ENVIRONMENT

Unit 3  Climate Change and Sustainable Development

Unit 4  EIA - Introduction and Need for EIA

PAPER – III  ENVIRONMENTAL POLICY, LAWS AND APPRAISALS

Unit 5  Environmental Policy and Laws/Legislation: National and International

Unit 6  National Legislations on Environmental Protection

PAPER – IV  RESEARCH METHODOLOGY

Unit 7  Introduction to Research Methodology & Data Collection

Unit 8  Data Analysis and report writing

PAPER – V  ENVIRONMENTAL QUALITY AND MANAGEMENT

Unit 9  Environmental Disaster and Risk Management

Unit 10 Corporate Environmental Responsibility, ISO and Bio-technology

Projects

Specific topics will be given to the candidates based on their qualification and experience which will be carried out under the supervision of a Guide.

Creditization

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<td>10 Credits</td>
<td>35 Credits</td>
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Academic Calendar

<table>
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<tr>
<th>Month</th>
<th>Tasks to be completed</th>
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<tbody>
<tr>
<td>July - October</td>
<td>Classroom teaching of 30 days with total 150 hrs in two</td>
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</table>
contacts sessions each of 15 days. Project topics to be allotted in 1st contact session & one day review in each contact session.

<table>
<thead>
<tr>
<th>Month</th>
<th>Activity</th>
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<tbody>
<tr>
<td>November</td>
<td>Submission of Assignment &amp; Presentation</td>
</tr>
<tr>
<td>December - January</td>
<td>5 days special contact session for Consultation &amp; Project work / Internship with Report writing</td>
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<tr>
<td>February - March</td>
<td>Preparation and submission of Project work / Internship</td>
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<tr>
<td>March - April</td>
<td>Presentation on Project work / Internship Report</td>
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<tr>
<td>April - May</td>
<td>Final Exams</td>
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<tr>
<td>June</td>
<td>Result Tabulation, Result declaration &amp; Award of Diploma (Convocation)</td>
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Students will have to complete their project work on full-time basis under supervision and guidance of empanelled guides of the institute.

**Grading Slab**

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<tr>
<td>86 ‏– 90</td>
<td>A</td>
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<tr>
<td>76 ‏– 85</td>
<td>B+</td>
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<tr>
<td>71 ‏– 75</td>
<td>B</td>
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<tr>
<td>61 ‏– 70</td>
<td>C+</td>
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<td>56 ‏– 60</td>
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<td>46 ‏– 55</td>
<td>D+</td>
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<td>40 ‏– 45</td>
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<tr>
<td>Below 40</td>
<td>E (Fail)</td>
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POST GRADUATE DIPLOMA IN ENVIRONMENTAL MANAGEMENT (PGDEM) APPLICATION FORM

Enrolment Number (For office use only)

Name of the Candidate

Father’s Name

Mother’s Name

Date of Birth

Address for Correspondence

City __________________ State __________________ Pin Code __________

Email Id ___________________________ Mobile _______________ Landline __________________

Educational Qualification

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<th>S. No.</th>
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<td>3.</td>
<td>Graduation</td>
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<td>Post Graduation</td>
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<td>5.</td>
<td>M.Phil</td>
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<td>6.</td>
<td>Ph.D</td>
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<td>7.</td>
<td>Research Papers</td>
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Present Assignment (For In-service Candidates only)

Name of Organization

Contact Details of Employer (Address, Phone, Email)

Designation of Candidate

Date of Joining

Application Fee Details

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<th>Cash</th>
<th>Demand Draft</th>
<th>Net Banking</th>
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<td>Amount</td>
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<td>EPCO Institute of Environmental Studies</td>
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<tr>
<td>MR No.</td>
<td>No.</td>
<td>Amount</td>
<td>Rs. 200/-</td>
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<tr>
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<td>Issuing Bank &amp; Branch</td>
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<td>IFSC Code</td>
<td>PUNB0631000</td>
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<td></td>
<td></td>
<td>in favour of</td>
<td>EPCO Institute of Environmental Studies, Bhopal</td>
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</table>

DECLARATION

I hereby affirm that the above mentioned details are true to the best of my knowledge. I undertake that I will abide by the rules & regulations of the Institute.

Signature of Candidate

Date
SYLLABUS
Post Graduate Diploma in Environmental Management (PGDEM) 2016-17
EPCO Institute of Environmental Studies (EIES)
ENVIRONMENTAL PLANNING AND COORDINATION ORGANIZATION (EPCO)
SYLLABUS
Post Graduate Diploma in Environmental Management (PGDEM) 2016-17

ABSTRACT

PAPER – I  INTRODUCTION TO ENVIRONMENT & NATURAL RESOURCE MANAGEMENT
Unit ĭ 1  Fundamentals and functions of Environment and Ecosystem Management
Unit ĭ 2  Natural Resource Conservation and Utilization

PAPER – II  DEVELOPMENT AND ENVIRONMENT
Unit ĭ 3  Climate Change and Sustainable Development
Unit ĭ 4  EIA - Introduction and Need for EIA

PAPER – III  ENVIRONMENTAL POLICY, LAWS AND APPRAISALS
Unit ĭ 5  Environmental Policy and Laws/Legislation: National and International
Unit ĭ 6  National Legislations on Environmental Protection

PAPER – IV  RESEARCH METHODOLOGY
Unit ĭ 7  Introduction to Research Methodology & Data Collection
Unit ĭ 8  Data Analysis and report writing

PAPER – V  ENVIRONMENTAL QUALITY AND MANAGEMENT
Unit ĭ 9  Environmental Disaster and Risk Management
Unit ĭ 10  Corporate Environmental Responsibility, ISO and Biotechnology
INTRODUCTION TO ENVIRONMENT & NATURAL RESOURCE MANAGEMENT

Unit – 1

1. Environment ñ Introduction and its components ñ biotic & abiotic
   1.1 Atmosphere ñ Introduction, Layers ñ its evolution, composition & stratification
   1.2 Hydrosphere ñ Hydrological cycle, Characteristics of lentic and lotic freshwater and marine system
   1.3 Lithosphere ñ Rock formations, soil characteristics and soil biota, type of soil

2. Ecological principles ñ Biosphere and its organizational levels as population, community and ecosystem
   2.1 The Habitat and Niche
   2.2 Ecosystems ñ Terrestrial, Aquatic, Grassland, Arboreal
   2.3 Ecological balance and succession ñ Natural Vs Man made Environment
   2.4 Ecological footprint
   2.5 Energy in ecosystem

3. Biodiversity and Protected areas: Definition, classification, species diversity, ecosystem diversity & genetic diversity
   3.1 Food chain and food web
   3.2 Ecological pyramids (Ambast 1986) ñ flow of energy
   3.3 Bioaccumulation and biomagnifications
   3.4 Concept of biomass productivity

4. Biogeochemical cycles
   4.1 Carbon sequestration
   4.2 Sedimentary cycles
   4.3 Carbon, Nitrogen and water cycles
   4.4 Recycle Pathways

5. Biotic Relations (relationship among organism)
   5.1 Ecological adaptations, Climax, Biomass, Homeostasis

6. Political, economic and environmental concerns
   6.1 Modern as well as Pristine life style and environment
   6.2 Environmental concerns in religions and sustainable living

7. Human impact on Natural Environment (Climate, Atmosphere, Vegetation, Animal, Soil, Water etc)
   7.1 Impact of human agencies in geomorphology

8. Natural History ñ Details and Definition
   8.1 Nature ñ Earth, Life, Evidence of Life on Earth
   8.2 Evolution History ñ Earliest earth origin and evolution of life

9. Emergence of multicultural organisms and Microbial Habitat
   9.1 Sexual Reproduction

10. Natural Science ñ Branches of Natural science and interdisciplinary studies
   10.1 Natural Environment ñ its composition

11. Geological Activities and Challenges
SYLLABUS
Post Graduate Diploma in Environmental Management (PGDEM) 2016-17

11.1 Biogeography - Introduction and Distribution of Space and Time
11.2 Biogeography Realms
11.3 History of Biogeography - Wallace Line, Theory of Island Biogeography
11.4 Types of Biogeography - Paleo-biogeography, Historical, Ecological, Conservation
11.5 Biogeography and Ecosystem - Ecology, Ecosystem, Biomes, Habitat, Macro-Habitat, Micro-Habitat

12. Restoration of Fauna and Flora
12.1 Biogeography zone of India - Introduction, Methods - GIS Data, Phyto-geography, Zoo-geography
12.2 Land Bridge, Corridors, Centre of Origin, Endemic, Vicariance, Dispersal, Continental Drift theory, Cladogram.

13. Exercises/Questions

Unit-2 Natural Resource Conservation and Utilization
1. Air Resources - Earth atmospheric, weather, climate, monsoon, winds, cyclone, El Nino - La Nino
2. Land resources - Arable land, forest land, wetland, forest land, wasteland, deserts
3. Water resources - surface water, ground water, snow, ice caps, methods of quantification
4. Food resources - Agri-products, fishery, dairy, meat, egg etc.
5. Forests and tree cover - forest classification and products, tree resource outside forests, ecosystem services of forest and Agroforestry
6. Wildlife - Need of wild life and its conservation, In-situ and Ex-situ conservation
7. Biosphere Reserves, National Parks & Wide Life Sanctuaries
8. Management and conservation of wild life in India
9. Mineral resources - Metallic minerals, non-metallic minerals, coal and oil. Ore beneficiation and Mining
10. Marine resources - Marine ecology and geology
11. Energy resource - Requirement and utilization, energy trend
12. Renewable energy: solar energy, wind energy, geothermal energy, bio-energy (wood, cellulose, biogas, bio-oil), hydral energy, ocean, thermal, tidal and wave energy
13. Optimization of resource utilization
14. Integrated water resource management
14.1 Water use sectors and water requirement for Environment, Irrigation, Drinking, Industry, Transport and Aquaculture
14.2 Virtual water and water footprint
14.3 Watershed development and management
14.4 River valley projects
14.5 Participatory Irrigation Management and irrigation transfer
15. Integrated land use development and management
15.1 Land capability assessment and arable land management
15.2 Sustainable forest development and management
15.3 Social forestry, urban and farm forestry
15.4 Wetland development
15.5 Mined out area development
15.6. Desert area development
16. Waste management
16.1 Scraps and used metals
16.2. Solid waste management
16.3. Grey water management and waste water recycling
17. Exercises/Questions

PAPER – II DEVELOPMENT AND ENVIRONMENT

Unit – 3 Climate Change and Sustainable Development
1. Climatology and climate change, vulnerability
   1.1 Climate change and global warming
   1.2 Green house effect, Green House Gases (GHGs) and their global warming potential
   1.3 Contribution of developed and developing countries in global emission
   1.4 Climate system and climate variability
   1.5 Climate change scenario
   1.6 Climate prediction and projection
2. Kyoto Protocol, COP/MOP
   2.1 IPCC (Inter-governmental Panel on Climate Change) and assessment reports
   2.2 UNFCCC, Copenhagen Accord
3. National Action Plan of India on Climate Change
   3.1 National Missions for Climate Change
   3.2 Impact of climate change on Resources
4. Impact of climate change on developmental activities
   4.1 Sustainability and sustainable development, issues and constraints
5. Concepts and strategic actions in sustainable development: Demography specific population
   and Development pyramids, energy, transport and building
6. Environmental values and ethics
   6.1 Criteria and Indicators for sustainable development
   6.2 Sustainable development initiatives- Clean Development Mechanism (CDM), Reducing
   Emission from Deforestation and Forest Degradation (REDFD), Green trade, Energy efficiency
   rating, Renewable Energy Purchase Obligation
   6.3 Economics of sustainability and sustainable development
   6.4 Social dimensions of sustainable development
   6.5 International cooperation for sustainable development
   6.6 Millennium developmental goal

Unit – 4 EIA – Introduction and Need for EIA
1. EIA i Definition, History and Objective
2. Reasons for using EIA
3. Misconception about EIA and counter arguments
4. Core Values of EIA ii Comprehensive study, sustainability integrity and utility
5. Guiding Principles of EIA and its applications
6. Benefits and flaws of EIA
7. Responsible Authority for conducting EIA and when it should be conducted
8. Environment impact and its nature: Magnitude, Extent/Location, Timing and Duration
9. Significance of Impact
10. Key elements of EIA: Screening, scoping identifying and evaluating impacts, mitigations and issuing environmental statements
11. Proposal Identification and Need for EIA
12. Indian Policies requiring EIA: Requirement of Prior Environmental Clearance (EC), State Level Environment Impact Assessment Authority
13. Categorization of projects and activities
14. Screening, Scoping and Appraisal Committees
15. Stages in the prior Environmental Clearance (EC), Process for New Projects: Screening, scoping, public consultation
16. Detailed Procedure for conducts of public hearing
   16.1 The Process
   16.2 Notice of Public Hearing
   16.3 Supervision and presiding over the hearing
   16.4 Videography
   16.5 Proceedings
   16.6 Time period for completion of public hearing
17. Appraisal
   17.1 Grant or Rejection of Prior Environmental Clearance
   17.2 Validity of Environmental Clearance
   17.3 Post Environmental Clearance Monitoring
   17.4 Transferability of Environmental Clearance
18. Infrastructure projects and EIA in India
   18.1 Air Environment
   18.2 Noise Environment
   18.3 Water Environment
   18.4 Biological Environment
   18.5 Land Environment
   18.6 Social-Economic and Health Environment
   18.7 Risk Assessment
18.8 Environment Management Plan
   18.8.1 Environment Impact Assessment (EIA)/ Environmental Impact Statement (EIS)
   18.8.2 Environmental Auditing (EA) : Qualities of Environmental Auditors, Contents of EA Reports, Environmental Audit Terminology, Environmental Management System Audit
   18.8.3 Life Cycle Assessment and Management (LCA)
   18.8.4 Environment Management System: Continuing with quality
19. Exercises/Questions
SYLLABUS
Post Graduate Diploma in Environmental Management (PGDEM) 2016-17

PAPER – III  ENVIRONMENTAL POLICY, LAWS AND APPRAISALS

Unit – 5  Environmental Policy and Laws/Legislation: National and International
1. Environment: Definition and Explanation of objectives
2. Environmental Pollution
3. Environmental Challenges
4. Ancient ethics and environmental protection
5. Introduction and State Obligation to Protect & Improve Environment
6. The Fundamental Duty of Citizens to protect environment
7. The Right to Wholesome Environment
8. Right to constitutional remedies and environment
9. Other relevant provisions
10. Convections on Chemicals and Hazardous Waste
11. Convention on Ozone Depletion
12. International Principles and Doctrines
   12.1 Intergenerational equity
   12.2 The Public Trust Doctrine
   12.3 Precautionary Principle
   12.4 Polluter Pays Principle
   12.5 Preventive Principle
13. Exercises/Questions

Unit – 6  National Legislations on Environmental Protection
2. The Air Act, 1981
4. The Environment (Protect) Act, 1986
   4.2. The manufacture, storage and import of Hazardous Chemical Rules, 1989
   4.3. The Manufacture, use, import, export and storage of hazardous microorganisms / genetically engineered organisms for Cells Rules 1989
   4.7. E-Waste Management
   4.8. Noise Pollution (Regulation and Control) Rules, 2000
   4.9. Ozone Depleting Substances (Regulation and Control) Rules, 2000
   4.10. Important Notifications
5. Issues in Enforcement: Problems and Perspective
6. Case studies and important judgments
SYLLABUS
Post Graduate Diploma in Environmental Management (PGDEM) 2016-17

6.1. Silent Valley Movement
6.2. Narmada Bachao Andolan
6.3. Bhopal Gas Disaster
6.4. Oleum Gas Leak Case (Sriram Chemicals)
6.5. Ganga Action Plan Case
6.6. Green Benches

7. Institutional Arrangement: The CPCB, PCB and its functions

8. Exercises/Questions

PAPER – IV Research Methodology

Unit – 7 Introduction to Research Methodology & Data Collection

1. Introduction to Research
   1.1 Importance of Research
   1.2 Meaning and Characteristics of Scientific Research
   1.3 Types of Research
   1.4 Steps in Research
   1.5 Ethical Problems in Research
   1.6 Selecting a Problem and Formulating Hypotheses
   1.7 Meaning and Characteristics of a Problem Formulating and Hypothesis

2. Measurement of scale & Data collection
   2.1 Types of data
   2.2 Introduction to Measurement
   2.3 General Problems of Measurement
   2.4 Questionnaire design
   2.5 Variables
   2.6 Data coding
   2.7 Data organization
   2.8 Meaning and Types of Item and construct
   2.9 Validity, Types of Validity
   2.10 Reliability
   2.11 Relation between Validity and Reliability
   2.12 Primary and secondary data collection
   2.13 Content analysis

3. Sampling Techniques
   3.1 Types of Sampling
      3.1.1 Requisites of Good Sampling Method
      3.1.2 Errors in sampling
      3.1.3 Simple and stratified sampling
      3.1.4 Systematic sampling (concepts)
      3.1.5 Sampling size calculation

Unit – 8 Data Analysis and report writing
SYLLABUS
Post Graduate Diploma in Environmental Management (PGDEM) 2016-17

1. Descriptive statistics – Mean, Median, Mode
2. Standard deviation (concepts) Normal Curve
3. Testing of hypothesis - Null and Alternative hypothesis
4. Type I & Type-II errors
5. Level of significance
6. Concepts of Parametric and Non-Parametric Statistical Tests
7. Testing significance of single mean and difference between means (up to two samples) concepts only
8. Project report writing: General Purpose of Writing a Research Report
   8.1 Structure and Format of a Research Report
   8.2 Table & diagram presentation and interpretation
   8.3 Executive summary
   8.4 Literature review
   8.5 Referencing
   8.6 Bibliography etc

PAPER – V ENVIRONMENTAL QUALITY AND MANAGEMENT

Unit – 9 Environmental Disaster and Risk Management
1. Introduction to Environment Management: an interdisciplinary approach
2. Significance of environment and its management
3. Assessing the status of environment by ecosystem indicators, remote sensing, GIS
4. Setting the management and conservation priorities
5. Environment conservation and management in human-modified world: challenges and measures to meet them: overcoming the obstacles
6. Social and political responsibilities for environmental conservation and protection-environmental education, significant political and social movements
7. Environmental Quality Matters
8. Measuring and monitoring the environmental quality: Parameters and standards – Air, Water, Soil, Noise, Radiation
9. Tools for managing the environmental quality
   9.1 Understanding Natural Disaster: vulnerability, hazard, risk, catastrophe
   9.2 Geo-physical disaster, meteorological disaster and man-made disaster
   9.3 Disaster preparedness
   9.4 Disaster response
10. Disaster medicine
   10.1 Rehabilitation, Reconstruction and Recovery
   10.2 Assignments and presentation

Unit – 10 Corporate Environmental Responsibility, ISO and Bio-technology
1. Building Blocks of CSR/Sustainability
   1.1 Overview of CSR/Sustainability
   1.2 The Triple Bottom Line Approach
   1.3 Philanthropy – Conventional and Strategic
1.4. Environmental and Social Issues
1.5. Labour and Related Issues
1.6. Ethical and Governance Issues
1.7. Human Rights – UN Charter

2. All ISO Standards and Codes (Overview)
2.1 Eco marks and eco labeling: Assuring the quality
2.2 Eco-friendly Technologies and its applications
2.3 All ISO Standards and Codes (Overview)
  2.3.1 ISO 14001
  2.3.2 OHSAS 18001
  2.3.3 SAS 8000
  2.3.4 OECD Guidelines of Municipal Companies
  2.3.5 Global Compact
  2.3.6 AA- 1000
  2.3.7 BS/ISO Guideline on CSR Management (ISO 26000)

3. Biotechnology
3.1 The Living Modified Organism (LMO), LMO Products
3.2 Bio safety and need for an International Bio Safety Agreement
3.3 Potential benefits and risks of Biotechnology
3.4 Bio piracy
3.5 History and development of GM crops in India – issues of Bt cotton and Bt Brinjal
3.6 Review of Indian Authorities about genetically engineered agricultural products
3.7 The Apex National Body for issues related to use of GMOs: Genetic Engineering Approved Committee (GEAC)
3.8 Adoption of Recommendation of Task Force on r-Pharma
3.9 Exercises/Questions