

P.G. Diploma in Environmental Monitoring and Impact Assessment

Your Roll No.....

Annual Examination-2010

Paper No.: PGDEMIA-201

Contaminated Land and Remediation

Time: 2 ½ hours

Maximum Marks 70

This paper is divided into three sections. Attempt all questions from Section A, any six questions from Section B and any three questions from Section C.

Section A

Attempt all the questions. Each question carries one (1) mark.

1X10=10

- a. What type of information is provided by a Hydrological Map of a site?
  - i) Morphology of the site
  - ii) Main rock types of the site
  - iii) Availability and direction of groundwater flow
  - iv) Soil texture, depth and chemistry
- b. Hiller Peat Borer is used for
  - i) Sampling of soil solution
  - ii) Sampling of soil air
  - iii) Sampling of ground water
  - iv) Sampling of solid soil matter
- c. Which of the following provides an estimate of aerobic biological decomposition of soil organics by measuring the oxygen consumption of organic material that can be readily biodegraded:
  - i) Chemical Oxygen Demand(COD)
  - ii) Volatile Organic Carbon(VOC)
  - iii) Biochemical Oxygen Demand(BOD)
  - iv) Total Organic Carbon(TOC)
- d. The use of plants to transform soil metals to less toxic forms but not remove them from soil is called:
  - i) Phytovolatilization
  - ii) Phytodegradation
  - iii) Phytoextraction
  - iv) Phytostabilization
- e. The act which directs industries dealing with hazardous waste to ensure against accidents or damages caused by release of pollutants:
  - i) Public Liability Act
  - ii) Chemical Weapons Convention
  - iii) People Liability Act
  - iv) Pollution Liability Act
- f. Composting is
  - i) In-situ remediation technology
  - ii) Ex-situ remediation technology

- iii) Both In-situ and Ex-situ remediation technology
- iv) Neither In-situ nor Ex situ remediation technology
- g. A land which is not being used in accordance with its full capacity is called
  - i) Wetland
  - ii) Wasteland
  - iii) Island
  - iv) farmland
- h. Which of the following is an example of an unculturable wasteland?
  - i) Salt affected lands
  - ii) Fallows
  - iii) Surface waterlogged and marshy lands
  - iv) Snow covered or glacier area
- i. The method of sampling in which a rectilinear grid of samples is taken at equal intervals along evenly spaced lines:
  - i) Systematic grid pattern
  - ii) Random grid pattern
  - iii) Systematic block pattern
  - iv) Random grid pattern
- j. Which of the following is the unsaturated or aerated zone of the ground water?
  - i) Phreatic zone
  - ii) Water table
  - iii) Vadose zone
  - iv) Capillary fringe

#### Section B

Attempt any six questions. Each question carries 5 marks.

6X5=30

1. List four sources of soil pollution.
2. Why sampling is important? Name any two plans of sampling soil.
3. What are universal biological indicators of soil pollution and how are they different from local indicators?
4. Differentiate between chemical extraction and Chemical Oxidation/Reduction methods of treatment of contaminated soil.
5. List the factors affecting bioremediation.
6. What are hazardous wastes? List 4 characteristics of hazardous wastes.
7. Differentiate between culturable and non-culturable wastelands. What are the causes of formation of wastelands?
8. Define wetlands. Write a short note on urban wetlands.

#### Section C

Attempt any three questions. Each question carries 10 marks.

3X10=30

1. How can soil pollution be monitored?
2. Describe the various In-situ technologies for soil treatment.
3. What are the various initiatives taken by the government for hazardous waste management?
4. Write short notes on (any two)
  - a) Reclamation of acid soils
  - b) Reclamation of saline and alkali soils

c) Reclamation of Desert land

5. What are the various strategies for wetland conservation?