**DMI ENGINEERING COLLEGE**

**DEPARTMENT OF CIVIL ENGINEEGING**

**IV- YEAR (VII-SEMESTER)**

**CE2040- ECOLOGICAL ENGINEERING**

 **PART- A**

 **UNIT I PRINCIPLES AND CONCEPTS**

1.What is ecological engineering?

2.Define climax community in ecosystem.

3.Define branches of ecology.

4.Define lotic and lentic ecosystem.

5.What is Autoecology?

6.Define Biome ecosystem.

7.What are the types of consumers?

8.What is Natality?

9.What is Mortality?

10.Define total fertility rates.

11.Define aquatic ecosystem ?

12. Define Population density?

13.What is community?

14.What is meant by omnivores?

15.What is pioneer community?

16.Write short notes scope and applications of ecological engineering?

17.Write the principles and concepts pertaining to population and community of ecological engineering.

18.What are the types of ecological pyramid?

19What is population?

20.Define Immigration& Emigration.

 **PART-B**

1.Describe scope and applications of ecological engineering.

2.Explain the development and evolution of ecosystems.

3.Describe the principles of ecological engineering.

4.Explain the ecology of population.

5.Explain the ecology of community.

6.Explain the types of ecological succession.

7.Explain the ecological pyramids.

8.Explain the structural and functional attributes of an ecosystem.

 **UNIT II ECOSYSTEM FUNCTIONS**

 **PART -A**

1.Define food chain.

2.Define food web.

3.State concept of energy in ecological engineering.

4.Explain boigeochemical cycling of carbon dioxide.

5.Classify the ecosystem according to habitat.

6.What is biological magnification?

7.Explain the various zones in marine ecosystem.

8.Explain the biogeochemical cycling of sulphur.

9.Define estuary ecosystem.

10.What is meant by biodiversity?

11What is benthos?

12.What is biosphere?

13.What are the types of estuarine.

14.Explain the species diversity.

15.What is meant by plankton?

16.What is meant by nekton.

17.Define terrestrial ecosystem.

18.What is macrophytes.

19.Define new zealand’s estuaries.

20.Define Profundal zone.

 **PART-B**

1.Explain the energy flow in ecosystem.

2.Describe in detail about biochemical cycling of material in an ecosystem.

3.Explain the food chain &food webs.

4. Describe in detail about biological magnification.

5.Explain the fresh water ecosystems.

6.Explain the classification based on geomorphology.

7.Describe in detail about ecosystem diversity.

8.Explain the classifications of estuarine system.

 **UNIT III ECOLOGICAL ENGINEERING METHODS**

 **PART -A**

1.Salient features of root zone treatment.

2.Define the term biomonitoring.

3.What is rehabilitation of ecosystem?

4.Define biomonitoring of aquatic ecosystem.

5.Explain the term ecotechnology.

6.What is integrated ecological engineering method?

7.Define ecological balance.

8.What is meant by bioluminescence?

9.What is ecological niche?

10.What are the types of fresh water ecosystem?

11.What is meant by total lake rehabilitation package?

12.Define Restoration ecology.

13.What are the types of wetlands?

14.Define Beneficial microbes.

15. What is ecological niche?

16.Define pond ecosystem.

17.Define causes of pollution.

18.What is meant by toxic elements?

19.Define sewage treatment.

20.What is meant by root zone treatment?

 **PART-B**

1.Explain in detail about development of root zone treatment rechnology.

2.Describe bio-monitoring techniques.

3.Explain the restoration of ecosystem.

4.Explain the the types of wetlands.

5.Explain the rehabilitation of ecosystems.

6.Describe in detail about the evaluation of aquatic ecosystem.

7.Explain the reuse of treated wastewater.

8.Describe fresh water ecosystem with neat sketch.

 **UNIT IV ECOLOGICAL EFFECTS OF INDUSTRAIALISATION**

 **PART -A**

1.What are the ecological effects of soil exploration?

2.Write down the steps involved in ecological effects of extraction.

3.Define Ecological effects of industrialization.

4.Distinguish between exploration and extraction.

5.Explain how produced formation water (PFW)affects the marine ecosystem?

6.Explain effects of Deforestation?

7.How fresh water ecosystem affected by manufacturing?

8.Define cop rotation?

9.Mention some of the productions that are induced the ecological effects?

10.What is edge species?

11.What are the effects of manufacturing process from an industry?

12.Define effects on aquatic organisms.

13.Ecological effects due to exploration.

14.Define acids drainage.

15.What are the causes and effects of eutrophication of lakes?

16.Define fossil fuel power plants.

17.What are the effects on wildlife?

18.What are the methods of meat?

19.What are the ecological effects of dredging?

20.Define erosion & sedimentation.

 **PART-B**

1.Explain the various effects of industrialization based on ecology.

2.Explain ecological effects of Manufacture and Transport.

3.Explain ecological effect of mining.

4.Explain ecological effect of coffee production.

5.Explain the effect of Dredging under water.

6.Explain the effect of livestock production.

7.Describe in detail about the ecological effects of industrial exploration,extraction and processing.

8.Describe in detail about the ecological effects of industrial effluents on water bodies.

 **UNIT V** **CASE STUDIES**

 **PART -A**

1.Mention the techniques available for integration of ecological systems?

2.What are the benefits of systems analysis?

3.Define range of tolerance.

4.Distinguish between macro system and micro system approach?

5.What is self organization in ecological economics?

6.Define ecological balance.

7. What are the effects of radioactive pollution?

8.What is secchi disk?

9.Define Phosphourous loads.

10.What are the applications of methodology?

11.Define water quality.

12.Define water clarity.

13.Define solid waste management.

14.What are the types of Urban solid waste.

15.Define thermal process.

16.What are the effects urban waste?

17. What is meant by zone aeration?

18. Define lake bed aeration.

19.What are the effects of thermal pollution?

20.What are the causes of effects of eutrophication?

 **PART –B**

1.What is Aeration ?Explain the methods and devices for Aeration Process?

2.Explain the various elements of integrated ecological engineering system.

3.Explain the case study of integrated biogas system.

4.Explain the case study for water quality improvement.

5.Explain the restoration of urban lakes through aeration.

6.Explain a typical case study of integrated marine habitat ecological engineering system.

7.Explain ecological based waste purification methods.

8.Describe the bio-wind screen method thro ecological principles.

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 **CE2040- ECOLOGICAL ENGINEERING**

 **PART- A**

1. What is ecological engineering?
2. Define climax community in ecosystem.
3. Write short notes on scope and applications of ecological engineering.
4. Write the principles and concepts pertaining to population and community of ecological engineering.
5. Define Natality & Mortality.
6. What is biological magnification?
7. What is biosphere?
8. Explain the biogeochemical cycling of sulphur.
9. Define the term food web.
10. State concept of energy in ecological engineering.

 PART –B

 11.(a)Describe scope and applications of ecological engineering.

  **Or**

 (b)Explain the structure and function of an ecosystem.

 12.(a)Explain the development and evolution of ecosystems.

 **Or**

(b)Define community and described its structure,stratifications and components.

 13.(a)What are the types of Ecological pyramids?Explain.

 **Or**

(b)Write down the energy flow and nutrient cycling diagrams with suitable examples.

 14.(a)Describe in detail about biochemical cycling of material in an ecosystem.

 **Or**

(b)Comment briefly on species diversity and state the factors influencing it.

 15.(a)Define the habitat ecology of Terrestrial and Estuarine ecosystems with suitable diagrams.

 **Or**

 (b)What is food chain?Describe in detail different types of food chains with typical example.Also distinguish between food chain and a food web.