

F-3129 A

Sub. Code

8MES1C1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

First Semester

Environmental Sciences

FUNDAMENTALS OF ECOLOGY

(CBCS – 2018 onwards)

Time : Three Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What is Ecosphere?
2. Define Ecology.
3. Define Wetlands.
4. What is Taiga?
5. Write a short note on Food web.
6. Define Ecological niche.
7. Write a short note on natality and mortality.
8. Write a short note on inter-specific and intra-specific competitions.
9. Explain in details about biological nitrogen fixation.
10. Write a short note on marine ecosystem.

Part B**(5 × 5 = 25)**

Answer **all** questions, choosing either (a) or (b).

11. (a) Write a short note on Ecosystem stability.

Or

- (b) Write a short note on evolution of biosphere.

12. (a) Explain in details about the classification of biomes.

Or

- (b) Write in detail on the characteristics of tropical rain forests.

13. (a) Write a brief note on Ecological pyramids.

Or

- (b) Write a short note on types and characteristics Ecological succession.

14. (a) Explain in details about the survivorship curves.

Or

- (b) Explain in details about the predator-prey relations.

15. (a) Write a short note on the role of microbes in agriculture.

Or

- (b) Explain in details about man-made reservoirs.

Part C

 $(3 \times 10 = 30)$

Answer any **three** questions.

16. Write an essay on the origin of life and specification.
 17. Explain in details about the classification of aquatic habitats.
 18. Write an essay on biogeochemical cycles.
 19. Elucidate the system theory and ecological modeling related to population study.
 20. Briefly explain the biology and ecology of reservoirs including their importance in current Indian scenario.
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F-3130

Sub. Code

8MES1C2

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

First Semester

Environmental Science

ENVIRONMENTAL POLLUTION

(CBCS – 2018 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. Why are hydroxyl radicals called as the 'detergent of the atmosphere?'
2. What are the health effects of hydrocarbon pollutants?
3. What are the advantages and disadvantages of bioremediation?
4. Differentiate Biosparging and Bioventing.
5. What is the principle of BOD analysis?
6. How can you differentiate point source from non-point source of pollution?
7. How light pollution affects animal health? Explain with suitable example.
8. Write short notes on open windrow composting.

9. Why did the Chernobyl disaster happen?
10. Write short notes on the impacts of Exxon Valdez Oil disaster on animals?

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Discuss in detail the source and sinks of NO_2 .

Or

- (b) Write elaborate note on ozone hole formation over Antarctica?
12. (a) Write elaborate note on causes, effects and control measures of eutrophication.

Or

- (b) Give detailed account on water pollution caused by pathogens and plant nutrients..
13. (a) Write a detailed note on sources, consequences and control of sediment pollution.

Or

- (b) Explain the principle and applications of various types of phytoremediation techniques.
14. (a) Discuss the causes, major effects and control measures of thermal pollution.

Or

- (b) Explain in detail about the physical and chemical characteristics of solid waste.

15. (a) Discuss in detail about the causes and consequences of British petroleum – Gulf of Mexico.

Or

- (b) Explain the causes and effects of Love canal disaster.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Write a detailed note on meteorological aspects of plume and stack dispersion.
17. With help of flow diagram explain the methods of treatment of industrial effluents.
18. Explain the principle, types, application, advantages and disadvantages of chemical methods of soil reclamation.
19. Give detailed account on the types, storage and disposal of radioactive wastes.
20. Give a detailed account on the facts and effects of Bhopal gas disaster.
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F-3131

Sub. Code

8MES1C3

**M.Sc. DEGREE EXAMINATION,
NOVEMBER 2019**

First Semester

Environmental Science

ENVIRONMENTAL CHEMISTRY

(CBCS – 2018 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Define stoichiometry.
2. Define chemical potential.
3. What is chemical speciation?
4. What is organic particulate matter?
5. Define Entropy.
6. What is Gibb's free energy?
7. Differentiate BOD and COD.
8. Define Coagulation.
9. Define PCBs.
10. Define macro nutrients and list them.

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain in details about radio nuclides.

Or

- (b) Write a short note on hydrocarbons.

12. (a) Write a brief note on ions and radicals in the atmosphere.

Or

- (b) Explain the thermochemical reactions in the atmosphere.

13. (a) Write a short note on adiabatic transformations.

Or

- (b) Explain in details about the Carnot's cycle.

14. (a) Write a short note on the chemistry of water.

Or

- (b) Write a short note on redox potential.

15. (a) Write a brief note on chemical composition of soil.

Or

- (b) Write a short note on physical properties of soil.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain in details on the acid base reactions.

17. Write a short account on the classification of elements.

18. What are the laws of thermodynamics? Explain in details.
 19. Explain in details about the different processes involved in water treatment.
 20. Write in detail on the chemical properties of soil.
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F-3132

Sub. Code

8MES1C4

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

First Semester

Environmental Science

ENVIRONMENTAL MICROBIOLOGY

(CBCS – 2018 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. Why Antony Von Leeuwenhoek called as 'Father of Microbiology'?
2. *Define the term - Oxidative phosphorylation*
3. List any three ways of preventing the spread of airborne diseases
4. Differentiate barophile from barotolerant
5. What is rhizosphere?
6. Define the term commensalism with suitable example
7. Define the term - zoonoses with suitable example
8. Differentiate decontamination from disinfection
9. Comment on Community physiological profiling
10. Define the term - shotgun metagenomic sequencing?

Part B**(5 × 5 = 25)**

Answer **all** the questions, choosing either (a) or (b).

11. (a) How to classify microorganisms on the basis of modes of nutrition

Or

- (b) What is binary fission? Discuss in detail about various growth phases of bacteria.

12. (a) Write detailed notes about the factors affecting microbial survival in air

Or

- (b) How can microorganisms influence the fertility of soil?

13. (a) Explain in detail about the mechanisms involved in the fixation of atmospheric nitrogen by root nodule bacteria

Or

- (b) Explain in detail about the ecological impacts of microbes

14. (a) With help of suitable example, classify the antimicrobial agents based on their mode of action.

Or

- (b) Give a detailed account on bioindicator organisms of soil pollution.

15. (a) Describe the principle, potential and limitations of BIOLOG method in ecological studies

Or

- (b) Write detailed note on the principle, advantages and disadvantages of ARDRA

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Write an essay on the role of microorganisms in human life and environment
 17. Discuss some of the physico-chemical parameters of the aquatic environment in terms of their effects upon microbial growth and survival.
 18. Discuss in detail about the positive and negative interactions between soil microbes and plants with suitable example.
 19. Give a detailed account on bioindicator organisms of surface and ground water ecosystems.
 20. Describe the principle, advantages and disadvantages of *in situ* hybridization technique in ecological studies.
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Sub. Code

8MES1E1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

First Semester

Environmental Science

Elective — DISASTER MANAGEMENT

(CBCS – 2018 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. What is beach protection?
2. What is CRZ?
3. Write few standard water quality parameters?
4. What are cyclones with few examples?
5. Define disaster management cycle.
6. What is RCO?
7. Define CBO.
8. What is disaster preparedness?
9. Write few emerging trends in DM?
10. Define disaster tolerance?

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) How human response to hazards and state a case study?

Or

- (b) Explain the changes in coastal zone and reason.

12. (a) Explain tsunami and its impacts.

Or

- (b) Discuss the disaster profile in India.

13. (a) Explain the regulations and protection measures during the disaster.

Or

- (b) Write a short note on ICT in management plan.

14. (a) Discuss the role of education in disaster preparedness and training.

Or

- (b) Explain the roles of various forces in training.

15. (a) Write a note on UN draft resolution.

Or

- (b) Write brief note on policy for disaster reduction.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Write elaborately on the benefits and importance of disaster management.
 17. Explain the impact on environment forecasting and warning systems.
 18. Write an essay on the applications of GPS, Remote Sensing and GIS in disaster management planning.
 19. Describe the roles and responsibilities of different national and international agencies and government in disaster management.
 20. Explain in detail on IDNDR.
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