

51660

M. Sc. (Semester - II) Examination, 2021-22

**ENVIRONMENTAL SCIENCES (Environmental
Technology)**

Paper : MEST-203

Environmental Monitoring Technologies

Time : Three Hours]

[Full Marks : 70

*[Write your Roll No. at the top immediately on the
receipt of this question paper.]*

Note : Attempt any *five* questions. Question No. 1 is *compulsory*.

1. Very short answer type questions : $1 \times 10 = 10$
- (a) What is the random error in monitoring ? How can we reduce it ?
 - (b) What is the use of 'SODAR' in environmental monitoring ?
 - (c) Write the significance of 'flagship species' in biodiversity monitoring.
 - (d) What is 'snowball' sampling ?
 - (e) Which depth is recommended for the sampling of immobilized nutrients like P, Zn etc.?
 - (f) Write the difference between HVS and LVS.

- (g) What is the use of ADCP (Acoustic Doppler Current Profiler) ?
 - (h) Write names of protozoan pathogens that are present in contaminated drinking water.
 - (i) What are bioaerosols ?
 - (j) What is a 'Syringe' sampler in groundwater monitoring ?
2. Write short notes on any *two* : $7.5 \times 2 = 15$
- (a) Sampling types, locations and plans
 - (b) Automated measurement
 - (c) Weather station
3. What is species surveying and monitoring ? Discuss different sampling methods and field techniques for monitoring of animals. 15
4. Write short notes on any *two* : $7.5 \times 2 = 15$
- (a) Instrumental methods for the analysis of particulate pollutants
 - (b) Noise monitoring
 - (c) Monitoring techniques for microbes
5. Why soil monitoring is important ? Discuss methods for monitoring and analysis of physicochemical properties of soil. 15
6. Write short notes on any *two* : $7.5 \times 2 = 15$
- (a) Drinking Water Standards
 - (b) Indices for monitoring communities and species
 - (c) Sampling devices for groundwater monitoring

7. What is the purpose of surface water monitoring ?
Discuss different variables to be measured for quality analysis. 15
8. Write short notes on any *two* : $7.5 \times 2 = 15$
- (a) Presentation of weather data
 - (b) Water quality parameters
 - (c) Scales of observation
-

Total Printed Pages : 3]

[Roll No.

51663

M. Sc. Semester - II Examination, 2021-22
ENVIRONMENTAL SCIENCES (Environmental
Technology)

Paper : MEST-206-M

Environmental Health and Safety (Minor)

Time : Three Hours]

[Full Marks : 70

[Write your Roll No. at the top immediately on the
receipt of this question paper.]

Note : Do any five questions. Question No. 1 is
compulsory.

1. Very short answer type questions : $1 \times 10 = 10$

- (a) What is sick building syndrome ?
- (b) Minamata disease is caused due to which heavy metal ?
- (c) Name any *two* reactive oxygen species found in humans during oxidative stress.
- (d) Name any *two* water borne diseases.
- (e) What is the hardness of water ?
- (f) Pandemic of which disease started in 1961 and is still in progress ?
- (g) What is the difference between a hazard and a risk ?

P. T. O.

51663

- (h) What is the last step of potable water treatment prior to its storage and supply ?
- (i) Name any *three* criteria pollutants.
- (j) Unit for the measurement of health effects due to radiation.
2. What is radiation pollution ? Describe briefly the sources, types, and effects of radiation hazards on humans. 15
3. Write short-notes on any *two* of the following :
 $7.5 \times 2 = 15$
- (a) Nosocomial infections
- (b) Communicable diseases
- (c) Zoonotic diseases
4. What are occupational health hazards ? Describe briefly the various factors involved in it. 15
5. Write short notes on any *two* of the following :
 $7.5 \times 2 = 15$
- (a) Biological health hazards
- (b) Chemical health hazards
- (c) Physical and psychological health hazard
6. What is wastewater treatment ? Describe briefly the steps involved in water treatment and their significance. 15
7. Write short notes on any *two* of the following :
 $7.5 \times 2 = 15$
- (a) Cholera pandemic
- (b) Plague pandemic
- (c) Influenza pandemic

8. Write short notes on any *two* of the following :

$$7.5 \times 2 = 15$$

- (a) Environmental health criteria
 - (b) Solid waste management
 - (c) Oxidative stress in humans
-

Total Printed Pages : 2]

[Roll No.

51662

M. Sc. Semester - II Examination, 2021-22

ENVIRONMENTAL SCIENCES

(Environmental Technology)

Paper : MEST-205 : M

Natural Hazards and Disaster Risk Management (Minor)

Time : Three Hours]

[Full Marks : 70

*[Write your Roll No. at the top immediately on the
receipt of this question paper.]*

Note : Attempt any *five* questions. Question No. 1 is *compulsory*.

1. Answer the following questions in not more than 50 words : 1 × 10 = 10

(a) What is the difference between Hazard and Disaster ?

(b) The relation between hazard and risk is

(c) How much part of India is prone to earthquakes ?

(d) Who is the Chairman of NDMA ?

(e) Primary responsibility of dealing with disasters lies with government.

(f) Which coast of India faces more frequent cyclones ?

(g) Name one dormant volcano in India.

(h) Define Vulnerability.

(i) Disaster Management Act came into force on

P. T. O.

51662

- (j) Nodal ministry dealing with Earthquake is
2. Discuss the organization and structure of disaster management in India. 15
3. Write short notes on any *two* of the following :
7.5 × 2 = 15
- (a) Disaster profile of India
 - (b) Evolution of Disaster Management in India
 - (c) Disaster Management Cycle
4. Discuss the role of different agencies in disaster management. 15
5. Write short notes on any *two* of the following :
7.5 × 2 = 15
- (a) Disaster Management Plan
 - (b) National Disaster Management Authority
 - (c) National Disaster Response Force
6. Discuss the preparedness and mitigation of disasters in detail. 15
7. Write short notes on any *two* of the following :
7.5 × 2 = 15
- (a) Emergency Operation Centre
 - (b) Application of Remote Sensing and GIS in DM
 - (c) National Institute of Disaster Management
8. Discuss the Recovery, Reconstruction and Rehabilitation in disaster management. 15

Total Printed Pages : 3]

[Roll No.

51659

M. Sc. (Semester - II) Examination, 2021-22

ENVIRONMENTAL SCIENCES (Environmental
Technology)

Paper : MEST-202

Environmental Pollution and its Management

Time : Three Hours]

[Full Marks : 70

*[Write your Roll No. at the top immediately on the
receipt of this question paper.]*

Note : Attempt any *five* questions. Question No. 1 is *compulsory*. The figures in the right hand side indicate marks.

1. Answer the following questions in not more than 50 words. 1 × 10 = 10
 - (a) Which pollutant causes cracking of rubber ?
 - (b) What is TNI ?
 - (c) Give the formula for addition sound intensity of two incoherent sound sources.
 - (d) What is nuclear fallout ?
 - (e) What is the maximum permissible noise level for 8 hour work period ?
 - (f) What is Hypothermia ?

P. T. O.

- (g) 1 Met = ... W /m² of body surface.
 - (h) What is the difference between contamination and pollution ?
 - (i) What is the effect on toxicity when SO₂ gets converted to SO₄⁻ ?
 - (j) What are Point and Non-point Source of Pollution ?
2. Discuss the effects of air pollution on inert materials, vegetation and animals. 15
3. Write short notes on any *two* of the following :
7.5 × 2 = 15
- (a) E-waste
 - (b) Air Quality Index
 - (c) Thermal comforts
4. Discuss the sources, effects and control measures of Noise pollution. 15
5. Write short notes on any *two* of the following :
7.5 × 2 = 15
- (a) Criteria pollutants
 - (b) Soil quality indicators
 - (c) Urban Heat Island effect
6. Discuss the sources and effects of radiation Pollution. 15

7. Write short notes on any *two* of the following :
7.5 × 2 = 15
- (a) Ionizing and Non-ionizing radiations
 - (b) Noise Induced hearing loss
 - (c) Marine pollution
8. Discuss the classification of solid wastes and their methods of disposal. 15
-

Total Printed Pages : 2]

[Roll No.

51374

M. Sc. Semester - II Examination, 2021-22
ENVIRONMENTAL SCIENCES (Env. Biotechnology)

Paper : ME-201

Environmental Chemistry & Toxicology (CC)

Time : Three Hours]

[Full Marks : 70

**[Write your Roll No. at the top immediately on the
receipt of this question paper.]**

**Note : Attempt five questions in all. Question No. 1 is
compulsory.**

1. Answer in not more than 50 words : $2 \times 5 = 10$

- (a) Define 'Benchmark dose'.
- (b) What is modifying factor (MF) ?
- (c) What is LOAEL ?
- (d) Represent diagrammatically the dose response curve of a toxic and an essential element.
- (e) Define aerosol.

**2. What are the major water quality parameters ?
Describe important physicochemical properties and
their significance.**

15

P. T. O.

51374

3. Write short notes on any *two* of the following :

7.5 × 2 = 15

(a) Abiotic and biotic degradation of environmental contaminants

(b) Ozone depletion

(c) Methane in the environment

4. Give a detailed account of the toxicity of nanoparticles and its mechanism. 15

5. Write a brief note on any *two* of the following :

7.5 × 2 = 15

(a) A standard method to analyze Dissolved Oxygen in water.

(b) Microbial contamination of water.

(c) Relevance of pH in understanding water quality.

6. Describe the sources, chemical composition and impact of various air pollutants present in the atmosphere. 15

7. Justify the term "dose makes the poison" with scientific reasons. 15

8. Give a detailed account of sewage treatment plant indicating primary, secondary and tertiary treatment of sewage. 15