

(6 pages)

Reg. No. :

Code No. : 6624

Sub. Code : ZEVM 31

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Third Semester

Environmental Science - Core

**POLLUTION : ASSESSMENT INSTRUMENTATION
AND CONTROL TECHNOLOGIES**

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Lower Food to Micro-organism (F/M) ratio in a conventional activated treatment plant will mean
 - (a) Lower BOD removal
 - (b) Higher BOD removal
 - (c) No effect on BOD removal
 - (d) Medium BOD removal

2. Which of the following unit work in anaerobic conditions?
- (a) activate sludge treatment
 - (b) sedimentation tank
 - (c) sludge digestion tank
 - (d) trickling filter
3. Which of the following is not a Green House Gas?
- (a) Carbon dioxide (b) Methane
 - (c) Nitrogen (d) Nitrous oxide
4. Wheezing is the most relevant health effect in case of the air pollutant
- (a) Ozone (b) Carbon monoxide
 - (c) Nitrogen dioxide (d) Sulphur dioxide
5. Wildlife faces more problems than humans due to noise pollution, because animals dependent on
- (a) Noise (b) Sound
 - (c) Actions (d) Behavior
6. Recycle is _____ component of waste hierarchy.
- (a) first (b) second
 - (c) third (d) fourth

7. Plastic Pyrolysis can convert petroleum based streams such as plastic into
- (a) fuels
 - (b) carbons
 - (c) both (a) and (b)
 - (d) wax
8. Why is manifest system necessary?
- (a) To monitor journey of waste
 - (b) To track waste
 - (c) To analyse chemicals
 - (d) To export
9. The activities of hazardous waste management facility are _____
- (a) OPA
 - (b) HAS
 - (c) TSD
 - (d) SOS
10. The most common target organ of toxicity is the _____
- (a) heart
 - (b) lung
 - (c) CNS (brain and spinal cord)
 - (d) skin

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Write short notes on Trickling Filter for waste water treatment.

Or

- (b) What is the purpose of a rotating biological contactor?

12. (a) Describe the working principle of Electrostatic precipitators?

Or

- (b) What is a high volume air sampler and its uses?

13. (a) Enlist various sources of noise pollution?

Or

- (b) How does noise impact human health?

14. (a) What are the four types of hospital waste?

Or

- (b) What are the five classification of hazardous waste?

15. (a) Give a short notes on Bioassays?

Or

(b) What is biotransformation and write some examples?

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)

Each answer should not exceed 600 words.

16. (a) Explain the Grit removal process for waste water treatment? With clear diagram.

Or

(b) Secondary treatment process and what are the types in secondary treatment?

17. (a) Write a brief notes on Centrifugal collectors and Wet collectors?

Or

(b) What are methods to control gaseous pollutants?

18. (a) Discuss about effect of noise pollution? And its control?

Or

(b) What are the parameters influencing propagation of environmental noise?

19. (a) Describe the design and operation of a sanitary landfill with a neat sketch.

Or

- (b) What are the sources of hospital waste and its types?

20. (a) Explain the Mechanism of action of toxicant?

Or

- (b) What are the major routes and organs involved in the elimination of xenobiotics?
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Code No. : 6625

Sub. Code : ZEVM 32

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Third Semester

Environmental Science – Core

ENVIRONMENTAL BIOTECHNOLOGY

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. What is the monomer of nucleic acids?
 - (a) Glycerol
 - (b) Monosaccharides
 - (c) Amino acids
 - (d) Nucleotide

2. Which base is only found in RNA?
- (a) Uracil (b) Thymine
(c) Adenine (d) Guanine
3. In nature, when an embryo splits in two and goes on to develop, it is called
- (a) Twinning
(b) Cloning
(c) Duplicating
(d) Somatic cell transfer
4. The part of the cell that contains the genetic information.
- (a) Nucleus (b) Cytoplasm
(c) Mitochondria (d) Chloroplast
5. In which of the following method microorganisms do not grow on the surface of the media?
- (a) Spread plate
(b) Membrane filtration
(c) Pour plate
(d) Surface fermentation
6. Which of the following is not the shape of bacteria?
- (a) Rod (b) Square
(c) Spherical (d) Twisted

7. The following crop is used in phytoremediation?
- (a) Mustard (b) Wheat
(c) Rice (d) Sugarcane
8. An organism used as a biofertilizer for raising soybean crop is
- (a) Azotobacter
(b) Azospirillum
(c) Rhizobium
(d) Nostoc
9. What is the proper way to handle acid?
- (a) Add acid to water
(b) Add H_2O_2 into 2M of HCL
(c) Pour water into acid
(d) Add 2M of H_2SO_4 into H_2O
10. Biosafety is working with biological material or organisms with potential to cause disease in?
- (a) Humans
(b) Animals
(c) Plants
(d) All the above

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Difference between DNA replication and transcription.

Or

- (b) What is polymerase chain reaction?

12. (a) What is cloning vector and its types?

Or

- (b) What are the methods of gene transfer?

13. (a) Briefly explain about the procedure of biodiesel production.

Or

- (b) What is the difference between acidophiles and alkaliphiles?

14. (a) Discover the Symbiotic Nitrogen fixation.

Or

- (b) Write about bioremediation of heavy metal contaminated soil.

15. (a) What are the principles of safety?

Or

(b) Difference between Trade Secrets and Patents.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Give an illustrated account of DNA molecular structure and functions.

Or

(b) Discuss in detail the genome and cRNA library construction.

17. (a) Explain in detailed about the Gene transfer method in plant.

Or

(b) Discuss the components and types of PCR.

18. (a) Write a detailed note on production of protease and amylase.

Or

(b) Describe the renewable energy and alternative sources of energy.

19. (a) Explain the type of bio fertilizers and its importance.

Or

(b) Describe biological nitrogen fixation.

20. (a) Give a detail idea about patents with suitable example.

Or

(b) Write a notes on:

(i) GATTT

(ii) Trademarks.

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Reg. No. :

Code No. : 6626

Sub. Code : ZEVM 33

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Third Semester

Environmental Science-Core

ENVIRONMENTAL MANAGEMENT AND IMPACT
ASSESSMENT

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. EIA is _____ tool for decision making process.
 - (a) management
 - (b) social
 - (c) essential
 - (d) systemating

2. Which are environmental attributes?
- (a) Detailed attributes
 - (b) Review level attributes
 - (c) Economic attributes
 - (d) Both a and b
3. Screening is whether project required _____ as per statutory notification.
- (a) Environmental clearance
 - (b) Environmental impact assessment
 - (c) Seia
 - (d) Eias
4. Mitigation measure may be _____ pubic awareness programme.
- (a) Lead agency
 - (b) Correction
 - (c) Preventive
 - (d) Aspect
5. EIA is evaluating and simulator quality of _____.
- (a) economic
 - (b) human and environment
 - (c) action
 - (d) proposed

6. Public involvement is effective way to reduce _____.
- (a) problems (b) information
(c) data (d) all of above
7. Objective of the public hearing are then made clear to the _____.
- (a) stake holders (b) EIS
(c) participants (d) CPCB
8. _____ can defined as systematic identification and evaluation of impact of proposed project.
- (a) EIS (b) EIA
(c) SEIA (d) None of above
9. EIA _____ both environmental and economic benefits can be achieved.
- (a) cost (b) time
(c) value (d) tool
10. _____ is concerned with human consequences of development proposal.
- (a) social impact assessment
(b) social appraisal committee
(c) physical assessment
(d) none of the above

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Discuss objectives merits and demerits of EIA?

Or

- (b) What is the main aim and need of EIA?

12. (a) What is scoping and screening in EIA?

Or

- (b) What is EIA its types and process?

13. (a) Describe the environmental auditing procedure.

Or

- (b) What is the difference between EIA and EIS?

14. (a) Describe the EIA of river valley projects?

Or

- (b) What are the six basic petrochemicals?

15. (a) Define biological impact assessment?

Or

- (b) What are the methods for predicting the characteristics of impacts?

PART C — (5 × 8 = 40 marks)

Answer ALL the questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) Explain baseline information and what is impact prediction in EIA? Why baseline information is important?

Or

- (b) Explain EIA tool? And what is the importance of EIA process in environment?

17. (a) Explain the role of public participation in EIA and write a short note on overlay and matrix method of impact assessment.

Or

- (b) Explain generic structure of environment impact assessment document and what are the main parts of an EIA?

18. (a) State the environmental auditing. And describe methodology for an environmental audit?

Or

- (b) Explain Environmental Impact Assessment in India?

19. (a) What is EIA aspect of thermal power plant?

Or

(b) What are the environmental impacts of transportation?

20. (a) Explain the basic steps for Prediction and Assessment of impact on water?

Or

(b) What is socio-economic impact in EIA?

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M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Third Semester

Environmental Science - Core

RESEARCH METHODOLOGY

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Mean, Median and Mode are
 - (a) Measures of deviation
 - (b) Ways of sampling
 - (c) Measures of control tendency
 - (d) None of these

2. Which test is applied to analysis of variance (ANOVA)?
- (a) t test (b) z test
(c) X² test (d) F test
3. A research process starts with
- (a) Hypothesis
(b) Experiment to test hypothesis
(c) Observation
(d) None of the above
4. Research is basically
- (a) A methodology of enquiry
(b) Search of truth
(c) A systematic exploration of facts
(d) All the above
5. A hypothesis is a
- (a) Tentative statement whose validity is still to be tested
(b) Supposition which is based on the past experiences.
(c) Statement of fact
(d) All of the above

6. Which is the design of sampling?
- (a) Probability selection
 - (b) Purposive methods
 - (c) Mixed sample
 - (d) All of the above
7. The preparation of a synopsis is
- (a) An art
 - (b) A science
 - (c) Both 'A' and 'B'
 - (d) None of these
8. Action research is a type of
- (a) Applied research
 - (b) Quality research
 - (c) Working research
 - (d) Survey research
9. Which of the following has a great impact mind of the researcher?
- (a) References
 - (b) Finance
 - (c) Journals
 - (d) Library

10. A belief becomes a scientific truth when it is
- (a) Established experimentally
 - (b) Arrived logically
 - (c) Both 'A' and 'B'
 - (d) None of the above

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Write short notes on characteristics of central tendency.

Or

- (b) Explain the necessity and purpose of sampling.

12. (a) Distinguish between random and non-random sampling.

Or

- (b) Write short notes on probability sampling and mentions its salient features.

13. (a) Write about the objectives and significance of research?

Or

- (b) Bring out the importance of review of literature as a source of research problem.

14. (a) Briefly explain about the importance of revisions and references.

Or

- (b) What are the criteria of a good research?

15. (a) Briefly explain about the qualities of good abstract.

Or

- (b) Write short note on linear regression.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) Describe various types of random sampling citing their strengths and weaknesses and explain how to select a sample using each method.

Or

- (b) Discuss the various tools and techniques of data collection used in research.

17. (a) Multiple correlation – Explain in detail.

Or

- (b) Statistical analysis and modelling plays a vital role in research - justify.

18. (a) Research design is the planned sequence of the entire process involved in conducting a research study. Discuss.

Or

- (b) Explain the over all outline and structure of the manuscript in detail.

19. (a) Explain plagiarism in detail and list its various consequences.

Or

- (b) Describe in detail about the various writing style of research paper.

20. (a) Explain in detail about computer application in environmental modelling.

Or

- (b) Describe in detail about computer-based modelling for population and population studies.
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