



WEST BENGAL UNIVERSITY OF TECHNOLOGY

HU-401

ENVIRONMENT AND ECOLOGY

Time Allotted: 3 Hours

Full Marks: 70

*The questions are of equal value.
The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable. All symbols are of usual significance.*

GROUP A (Multiple Choice Type Questions)

1. Answer any *ten* questions. 10×1 = 10
- (i) Catalytic converter is used to reduce
(A) automobile exhaust pollution
(B) factory exhaust pollution
(C) CO₂ emission
(D) N₂ emission
- (ii) Which one of the following is the most harmful heavy metal?
(A) Pb (B) Cd (C) Hg (D) As
- (iii) The value of albedo of the earth is
(A) 0.21 (B) 0.31 (C) 0.41 (D) 0.51

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- (iv) The hottest region of the atmosphere is
(A) Troposphere (B) Mesosphere
(C) Stratosphere (D) Ionosphere
- (v) While carrying out BOD test, BOD-bottle is stoppered
(A) to avoid evaporation of water
(B) to avoid diffusion of dissolved oxygen
(C) to avoid diffusion of carbon-di-oxide
(D) to avoid photosynthesis
- (vi) Itai Itai disease is due to _____ poisoning
(A) cadmium (B) mercury
(C) arsenic (D) none of these
- (vii) Nitrogen present in clean air is
(A) 20.94% (B) 2.94% (C) 78.08% (D) 7.08%
- (viii) Increase in BOD value in waste water indicates
(A) Less polluted (B) More polluted
(C) Hard (D) Soft
- (ix) Energy flow of an ecosystem is
(A) unidirectional (B) bi-directional
(C) cyclic (D) random
- (x) The effect of cadmium on human health is
(A) kidney damage (B) lung cancer
(C) cardio vascular disease (D) brain damage
- (xi) Two noise levels, each 90 dB, are acting at a working place.
The combined loudness is
(A) 90 dB (B) 180 dB (C) 0 dB (D) 93 dB
- (xii) Incineration is a method of
(A) Water treatment (B) Solid waste disposal
(C) Air pollution control (D) Noise control

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GROUP B
(Short Answer Type Questions)

- Answer any *three* questions. 3×5 = 15
2. (i) What is solid waste? 2+3
(ii) What are the different methods of disposal of solid waste?
3. The BOD₅ of waste water is determined to be 150 mg/lit at 20°C. The *k* value is known to be 0.23 day⁻¹. What would be the BOD₈ if the test was run at 15°C? 5
4. (i) What is eutrophication? 2+3
(ii) What are the different types of eutrophication?
5. (i) State the difference between primary and secondary pollutants with examples. 3+2
(ii) Name two denitrifying bacteria in nitrogen cycle.
6. (i) State the beneficial effects of ozone layer in the stratosphere. 2+3
(ii) "Tropospheric ozone is called bad ozone" – Justify.

GROUP C
(Long Answer Type Questions)

- Answer any *three* questions. 3×15 = 45
7. (a) What do you mean by ozone layer depletion? 3
(b) Which pollutants are responsible for ozone layer depletion and how? 1+3
(c) What are control methods of ozone layer depletion? 3
(d) What is Montreal protocol? 2
(e) What are the harmful effects of acid rain? 3

8. (a) Define the term 'Ecology'. Classify food chain and give one example of each. 4
- (b) What are the components of ecosystem? 3
- (c) Explain the term Green House Effect. Name six green house gases. 2+2
- (d) Write the effects of noise pollution on Human health. How do you combat noise pollution at the source level? 2+2
9. Explain the sources, effects and control measure of NO_x pollution. 5+5+5
10. (a) Define the terms: (i) aerobic decomposition and (ii) anaerobic decomposition. 4
- (b) Discuss the reagents required in determination of COD and the function of each reagent. 4
- (c) What is activated sludge? Why is it called so? 3
- (d) In 1970, the world's population was 4 billion and growth rate was 2% per year. Steady-state population is 12 billion. When would the population reach 6 billion? What would be the projected population in 2025 using logistic model? 4
11. Write short notes on any *three* the following: 3×5
- (a) Arsenic pollution, its biochemical effects and remedial measures
- (b) Nitrogen cycle
- (c) Hydrological cycle
- (d) Trickling filter method of waste water treatment
- (e) Electrostatic precipitator.