

GURU NANAK INSTITUTE OF TECHNOLOGY
An Autonomous Institute under MAKAUT
2020-2021
ENVIRONMENTAL SCIENCE (Backlog)
HU 501

TIME ALLOTTED: 3 Hours

FULL MARKS: 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

Answer any *ten* from the following, choosing the correct alternative of each question: **10×1=10**

		Marks	CO No
1.	(i) Identify the prime component of London smog a) water b) sulphur dioxide c) carbon dioxide d) carbon monoxide	1	CO3
	(ii) Which of the following is not biodegradable? a) polythene b) cotton c) vegetable waste d) wood	1	CO2
	(iii) Greenhouse effect is due to a) Over cultivation of land b) Testing nuclear weapons c) Some atmospheric gases like CO ₂ , H ₂ O vapour and some manmade gases d) None of these	1	CO4
	(iv) Example of second trophic level organism is a) Plant b) Small fish c) Tiger d) None of these	1	CO2
	(v) The decomposers could be a) amoeba b) fungi c) earthworm d) all of these	1	CO2
	(vi) The value of earth's albedo is a) 0.21 b) 0.031 c) 0.021 d) 0.31	1	CO4

B. TECH/AEIE/EE/ECE/ODD/SEM-V/HU501/R16/2020-2021

(vii)	Ozone is a pollutant when present in a) stratosphere b) troposphere c) mesosphere d) ionosphere	1	CO3
(viii)	Which of the following is an example of <i>in situ</i> conservation? a) Deer park b) Seed bank c) Wildlife sanctuary d) Aquarium	1	CO2
(ix)	Temporary hardness of water is due to a) NO_3^- b) Cl^- c) HCO_3^- d) SO_4^{2-}	1	CO3
(x)	The saturated value of DO is approximately a) 9 mg/L b) 20 mg/L c) 6 mg/L d) 5 mg/L	1	CO4
(xi)	Blue baby syndrome is related to a) Nitrate b) Sulphate c) Phosphate d) Carbonate	1	CO3
(xii)	Which pyramid is always an upright one? a) pyramid of energy b) pyramid of numbers c) pyramid of biomass d) pyramid of numbers and biomass	1	CO2

GROUP – B

(Short Answer Type Questions)

Answer any *three* from the following: **3×5=15**

		Marks	CO No
2.	Define “Energy Flow” in eco system. In an eco system, although the inorganic nutrients are recycled, the flow of energy is not. Justify.	5	CO1
3.	Prove that $\text{BOD}_t = C_0(1 - e^{-kt})$, where symbols have their usual meaning.	5	CO2
4.	(a) What is atmosphere?	1	CO4
	(b) What are the major regions of atmosphere?	4	CO4
5.	Prove that $r = 1/t * \ln[K/N_0 - 1]$, where symbols have their usual meaning.	5	CO1

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|----|-----|-------------------------------|---|-----|
| 6. | (a) | What is biogeochemical cycle? | 2 | CO2 |
| | (b) | Discuss one of them briefly. | 3 | CO2 |

GROUP – C

(Long Answer Type Questions)

Answer any *three* from the following: **3×15=45**

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|-----|-----|---|--------|-------|
| 7. | (a) | Calculate doubling time for an exponential growth, where the exponential growth rate constant is given 2% per year. Calculate the half life time also for same given model. | 5 | CO1 |
| | (b) | What is the importance of atmospheric stability? How can we describe atmospheric stability with ALR and ELR? | 5 | CO4 |
| | (c) | What is maximum mixing depth and ventilation coefficient? How does atmospheric stability depend on them? | 5 | CO4 |
| 8. | (a) | Write short notes on ecological pyramids. | 5 | CO2 |
| | (b) | Explain bio-magnifications. What is its significance in food chain? | 5 | CO1 |
| | (c) | Discuss the importance of in situ and ex situ conservation. | 5 | CO2 |
| 9. | | Write short notes on (any three) | 3×5=15 | |
| | (a) | Importance of biodiversity | 5 | CO2 |
| | (b) | Biochemical effect of cadmium and mercury | 5 | CO3 |
| | (c) | Sustainable development | 5 | CO1 |
| | (d) | Environmental Protocols | 5 | CO4 |
| | (e) | Solid waste management | 5 | CO3 |
| 10. | (a) | Write the differences between BOD and COD. How 5 day BOD is conventionally measured in the laboratory? | 5 | CO4 |
| | (b) | What will the ratio of BOD ₅ at 20 °C, to that of BOD _{2.5} at 35 °C? What is hydraulic gradient? | 5 | CO4 |
| | (c) | What is doubling time (t_d) and half life ($t_{1/2}$) time for population? Find out the condition when $t_d = t_{1/2}$ | 5 | CO1 |
| 11. | (a) | What is atmosphere? What are the major regions of atmosphere? | 3 | CO4 |
| | (b) | State the respective altitude and temperature ranges of the different regions of atmosphere. What are the important chemical species in each region? | 12 | CO4 |