2301101017

Shiv Nadar University Chennai

End Semester Examinations, 2023-2024

Question Paper

Name of the Programme: Common to B.Tech. AI & DS and B.Tech. CSE (IoT)		Semester: I
Course Code & Name: BS1001 ENVIRONMENTAL SCIENCE AND ENGINEERING		
Regulation 2021		
Time: 3 Hours	Question 1 is compulsory. Answer any Eight questions from the remaining Ten Questions	Maximum Marks: 100

Q. No		Questions	Marks	CO#	KL#
1	a.	Differentiate between the following: 1. Water logging and Salinity 2. Riverine and Fallow land 3. Gully erosion and Sheet erosion 4. Alley and shelter belt cropping 5. Sea wall and dikes	10	CO2 and CO3	KL1
	b.	Define the following terms: 1. Biomagnification 2. Rockfall 3. Crude Birth Rate 4. Vitrification	04	CO2 and CO3	KL1
	c.	Give the reasons for any two of the following: 1. For a pond ecosystem, the pyramid of productivity is inverted. 2. Landslides are considered as consecutive disasters. 3. Soil pollution is linked to water pollution.	06	CO1 and CO2	KL2
2.	a.	Discuss in detail the advantages and disadvantages of modern agricultural techniques with respect to food resources.	04	CO4	KL1
	b.	Discuss the pros and cons of dams on the environment. How do we tackle the hazards caused by the building of dams on various natural and human capital?	06	CO3	KL2
3.	a.	Explain in detail the energy pyramids, services, and effects of anthropogenic activities on the grassland ecosystems.	06	CO1	KL1
	b.	Explain the key provision of the Water Pollution Act 1971 and its amendments.	04	CO4	KL1
4.	a.	It has been predicted that the carbon dioxide level in the atmosphere can increase to 700 ppm by 2050. If no intervention is made, what will be the possible implications of this increase in carbon dioxide level on the carbon cycle in marine and coastal ecosystems?	04	CO1 and CO4	KL2
	b.	What are the key principles of circular economy? Does circularity always ensure sustainability? Explain with an example.	06	CO4	KL2
5.	a.	With a neat sketch, explain various types of population pyramids with examples.	04	CO5	KL3
	b.	What are the differences between coastal floods and flash floods? Discuss how the measure for disaster management will be different for a coastal flood than for a flash flood.	06	CO2	KL2
6.	a.	What is the role of information technology in governing sustainable development?	04	CO5	KL2
	b.	Describe in detail the formation of ozone holes over the Antarctic region. Why is the ozone hole formation not so prominent over the Arctic?	06	CO4	KL2

7.	a.	What are the major techniques through which energy can be recovered from biomass?	04	CO3	KL1
	b.	What is the role of watershed management in conserving ecosystems? State any five objectives of Rainwater Harvesting.	06	CO4	KL1
8.	a.	To tackle the water demand in the city, the Karnataka Pollution Control Board has decided that all housing societies with residents greater than 200 should have an in-house wastewater treatment plant. Describe the design of a wastewater treatment plant that should be constructed for a) non-potable water reuse and b) potable water reuse.	06	CO2	KL2
	b.	Explain the transmission, stage, and treatment methods for HIV infection.	04	CO5	KL1
9.	a.	The annual population growth rate of a country is 0.32. What will be the population doubling time? For the same population, calculate the amount of rainwater that can be harvested, considering that an individual consumes 135 liters (about 35.66 gal) of water per day and annual rainfall is 1423 mm. The watershed area allocated by the government is 380 square meters, and the soil permeability coefficient is 0.56.	04	CO4	KL4
	b.	Underground mining is commonly used for the extraction of uranium. However, large amount of tailing can adversely impact the surroundings. Describe the fate and management of uranium tailing waste with a neat sketch. What modifications will you suggest in the mining process to reduce uranium tailing?	06	CO2 and CO3	KL3
10	a.	What are the natural ways by which oil can be dispersed into the environment after oil spillage?	05	CO2	KL2
	b.	How does the role of individuals govern the equitable use of resources?	05	CO3	KL2
11	a.	In the month of December- January, heavy smog is noticed both in colder regions (like Delhi) and in warmer regions (like Chennai). What are the possible reasons for this smog? What are the measures that can be taken to tackle this smog problem?	05	CO2	KL3
	b.	What are the different ways by which ocean energy can be recovered? Justify why these types of energy are considered renewable but not green energy sources.	05	CO3	KL1

KL# – Bloom's Taxonomy Levels
(KL1: Remembering, KL2: Understanding, KL3: Applying, KL4: Analyzing, KL5: Evaluating, KL6: Creating)
CO# – Course Outcomes
CO1: To understand the structure and functions of the ecosystems and biodiversity among life forms within an ecosystem.
CO2: To address the various environmental issues related to various types of pollution and disasters.
CO3: To realize the importance of various natural resources and their sustainable use.
CO4: To address various social issues and the role of various environmental machinery to ensure proper environmental regulations.
CO5: To understand the influence of the human population on environmental issues and the role of IT as a tool to minimize environmental problems.