	ADAMAS UNIVERSITY **END-SEMESTER EXAMINATION : JANUARY 2021** (Academic Session: 2020 – 21)		
Name of the Program: (Example: B. Sc./BBA/MA/B.Tech.)	B.Tech.	**Semester:** (I/III/ V/ VII/IX)	V
Paper Title :	Environmental Science	**Paper Code:**	SGY43113
Maximum Marks :	40	**Time duration:**	3 hrs
Total No of questions:	09	**Total No of Pages:**	02
(Any other information for the student may be mentioned here)			

Answer all the Groups

Group A

(Answer all the questions)

$5 \times 2 = 10$

1. **a)** Under the climate change action plan of Government of India, which of the renewable source of energy has been identified as the priority for exploitation?
   b) Why biomass energy is considered as a sustainable source of energy?
   c) Define secondary air pollutants with examples.
   d) What is a biome? Give examples.
   e) Give one example for each.
   a. Inverted pyramid of number
   b. Inverted pyramid of biomass

Group B

(Answer any four questions)

$4X5 = 20$

2. Explain the source and adverse effects of (i) sulphur dioxide and (ii) tropospheric ozone on the environment. Mention the name of one pollutant causing photochemical smog. (4+1=5)

3. Mention the names of various methods of municipal solid waste disposal. Discuss the benefits and drawbacks of "recycling"? (2+3=5)

4. Explain why the greenhouse gases in trace amount are good for planet earth? Describe the relation between greenhouse effect and global warming and mention the names of two

natural and two artificial greenhouse gas. (2+3=5)

5. What do you mean by DO of water? How thermal pollution of water is linked to DO? A sample of sewage water has 4-day 20°C BOD value of 60% of the final. Find the rate constant per day. (1+1+3 = 5)

6. What is the importance of Terms of Reference (ToR) in the scoping stage of an EIA process? What is baseline data generation and why is it important? (3+2 = 5)

7. Write a comparative account between different modes of biodiversity conservation.

Group C

(Answer any one question)

1x10=10

8. Describe an active solar system mentioning the different components of an active solar system. What is the benefit of using flat plate panel collector in comparison to curved solar collector such as, parabolic mirror? Explain the advantages and disadvantages of solar energy? (3+2+5=10)

9. What do you mean by BOD of water? How is it different from COD? A city discharges 1.25 m^3/s of wastewater into a stream whose minimum rate of flow is 8.0 m^3/s. The velocity of the stream is about 3.0 km/h. The temperature of the wastewater is 20°C and that of the stream is 15°C. The 20°C BOD_5 of the wastewater is 250 mg/l and that of the stream is 2 mg/L. The wastewater contains no dissolved oxygen, but the stream is flowing with saturated DO concentration of 9.2 mg/L. Saturated DO at 15°C is 10.2 mg/L. At 20°C, deoxygenation constant (k_1) is estimated to be 0.3 per day and reaeration constant (k_2) is 0.7 per day. Determine the critical oxygen deficit and its location. Also estimate the 20°C BOD_5 of a sample taken at the critical point. Use the temperature coefficients of 1.135 for k_1 and 1.024 for k_2. (1+3+6 = 10)

For calculating L_0 ,use formula $Yt = L_0 (1 - e^{-kt})$