	ADAMAS UNIVERSITY **END SEMESTER EXAMINATION** (Academic Session: 2020 – 21)		
Name of the Program:	B.Tech.	**Semester:**	IInd
Paper Title:	Environmental Science	**Paper Code:**	EVS11107
Maximum Marks:	**50**	**Time Duration:**	**3 Hrs**
Total No. of Questions:	**29**	**Total No of Pages:**	**3**
(Any other information for the student may be mentioned here)	**1.** At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam. **2.** All parts of a Question should be answered consecutively. Each Answer should start from a fresh page. **3.** Assumptions made if any, should be stated clearly at the beginning of your answer.		

Group A **Answer All the Questions (5 x 1 = 5)**			
		Knowledge Level	
1	What are the two forms of oxygen found in the atmosphere?	**U**	**CO5**
2	Who introduced the concept of Biodiversity hotspot?	**R**	**CO2**
3	Define a species.	**R**	**CO1**
4	"Ozone acts a pollutant is the troposphere and as a policeman in the stratosphere"- explain.	**An**	**CO2**
5	Mention disadvantages of geothermal energy?	**U**	**CO3**
Group B **Answer Allthe Questions (5 x 2 = 10)**			
6 a)	How do greenhouse gases cause global warming?	**E**	**CO3**
(OR)			
6 b)	What is incineration? Discuss the advantages and limitations of incineration. (1+4=5)	**R**	
7 a)	How seed bank can support biodiversity?	**An**	**CO6**
(OR)			
7 b)	Discuss the difference in the abiotic components of a forest ecosystem and a grassland ecosystem.	**C**	**CO1**
8 a)	How are clouds formed?	**U**	**CO2**
(OR)			
8 b)	Why continental shelf is important for the marine community diversity?	**An**	**CO1**
9 a)	What do you mean by point and diffused sources of water pollution?	**U**	**CO2**
(OR)			
9 b)	What is hazardous waste?	**U**	**CO3**
10 a)	How can you reduce single use plastic from your everyday life?		**CO1**
(OR)			
10 b)	Differentiate between attached growth and suspended growth processes.	**U**	**CO4**

Group C Answer All the Questions (7 x 5 = 35)			
11 a)	i) Explain the Lindeman's trophic efficiency rule in food chains. ii) How does this rule explain the difference between the biodiversity richness of a tropical rain forest and a taiga forest ecosystem? 2+3	**R** **Ap**	**CO1**
(OR)			
11 b)	i) What is genetic diversity? Give proper example. ii) Which species have shown the highest genetic diversity in India? iii) Discuss how religious ideology helped to protect the biodiversity? 2+1+2	**R** **R** **C**	**CO2**
12 a)	i) What is the key difference in policies adopted in the Montreal protocol and the Kyoto protocol? ii) Which institution has been designated for identification of biodiversity hotspots? iii) Discuss the aspect of food security as a direct value of Biodiversity. 1+1+3	**U** **R** **C**	**CO6**
(OR)			
12 b)	i) Presently what threats are influencing the Indian biodiversity? ii) How rain water harvesting can actually be a sustainable water management practice? 3+2	**E** **An**	**CO6**
13 a)	What is "photochemical smog"? What are the major pollutants responsible for photochemical smog formation? Describe the chemical reactions for formation of PAN. (1+2+2=5)	**E**	**CO3**
(OR)			
13 b)	What are the fundamental steps involved in an EIA? Draw a simple flowchart describing the steps that are followed in an EIA process in India. (2+3=5)	**Ap**	**CO2**
14 a)	Why CFC has been phased out? What is the alternative of CFC being used as coolant? Is there any problem with the alternative coolant? (3+1+1=5)	**U**	**CO4**
(OR)			
14 b)	The BOD in a stream is 3 mg/L and the DO is 9 mg/L . Stream flow is 15 MLD. A treated sewage effluent with BOD 50 mg/L is discharged into the stream at a rate of 5 MLD. The DO of the sewage effluent is 2 mg/L. Assume the deoxygenation and reaeration constants as 0.2/day and 0.5/day respectively and the saturated DO level is 11 mg/L, determine the minimum DO level in the stream. If stream velocity is 1.5 m/s, where does the minimum DO occur.	**An**	**CO1**
15 a)	How does wind power get produced in wind turbine? What is the most important criteria for site selection for installation of wind turbine. (4+1=5)	**Ap**	**CO4**
(OR)			
15 b)	Write a short note on sources and long-time effects of soil pollution.	**U**	**CO2**
16 a)	Explain Preliminary, Primary and Secondary Treatment.	**U**	**CO5**

(OR)			
16 b)	What is biomass energy? Why is biomass energy called stored form of solar energy? Discuss the limitations of biomass energy. (1+2+2=5)	**Ap**	**CO1**
17 a)	Why is arsenic (As) a serious groundwater pollutant in the state of West Bengal?	**Ap**	**CO5**
(OR)			
17 b)	How thermal pollution of water is linked to DO? 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.	**An**	**CO2**