



JK Lakshmipat University Jaipur

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination, May 2026

B.Tech. Semester II

Roll No.....

ES1115: Environmental Science and Sustainability

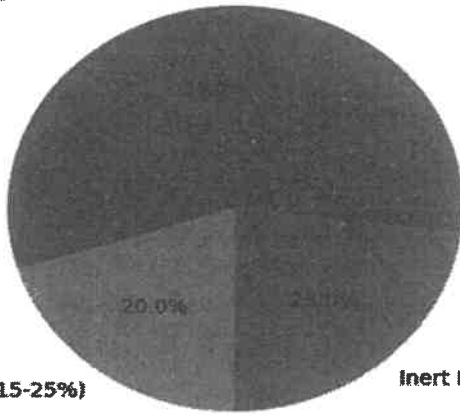
Time: 02 hours

Max. Marks: 30

Instructions to students:

1. A non-programmable Scientific calculator is allowed.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1	Short answer type questions	
	Write a short note on.	06 Marks
	A- Why a need for public awareness of the environment ?	CO 1
	B- Photochemical Oxidant PAN (with chemical reaction)	& CO 2

Q.2	Average Composition of Indian Municipal Solid Waste (MSW) Biodegradable (50-60%)  Others (2-5%) Recyclables (15-25%) Inert Material (20-30%) Question: Based on the given waste composition, critically evaluate the available methods for sustainable solid waste management. Compare different methods in terms of environmental impact, economic feasibility, and operational/technical efficiency, and justify which method or combination of methods is most suitable.	06 Marks CO1& CO4
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Q.3	Case: A cement plant produces emissions during crushing, grinding, and kiln operations. Major pollutants include dust (particulate matter), and other primary pollutants generated. These react in the atmosphere to form secondary pollutants, affecting air quality and human health. Question: (i)- Identify the primary and secondary pollutants in this case. [1] (ii)- Explain how secondary pollutants are formed with chemical reactions [3] (iii)- Suggest suitable methods to control different types of pollutants [4]	08 Marks CO1, CO3 & CO4
Q.4	Case: A freshwater lake ecosystem contains phytoplankton (producers), zooplankton (primary consumers), small fish (secondary consumers), and large fish (tertiary consumers). The total energy captured by phytoplankton is 10,000 kcal/m²/year. According to ecological observations, only about 10% of energy is transferred from one trophic level to the next. Question: (I) - Apply the Lindeman's Trophic Efficiency Model to calculate energy available at each trophic level. [1] (II) - Draw an energy pyramid based on your calculations. [1] (III) - Explain why energy decreases at higher trophic levels. [2] (IV)- Suggest how this concept helps in understanding ecosystem sustainability. [2]	06 Marks CO4, CO2
Q.5	Write a short note on. A- Methods for conservation of biodiversity & Hotspot B- How the Water Pollution Act helps conserve water sources.	04 Marks CO2, CO3 & CO4

*****All The Best*****