



MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

DEPARTMENT OF CIVIL ENGINEERING
VII SEMESTER B.TECH. (CIVIL ENGINEERING)
END SEMESTER EXAMINATIONS, DEC 2023
SUBJECT: INDUSTRIAL WASTEWATER TREATMENT (CIE 4057)

(Date:01-12-2023)

Duration: 3 hours

Max marks: 50

Instructions to Candidates:

- ❖ Answer **ALL** the questions.
- ❖ Any data not provided may be suitably assumed.

Q. NO	QUESTIONS	MARKS	CO
1A	Discuss the various sources of industrial wastewater and the effects of industrial waste water discharge into the environment.	5	CO1
1B	Classify the different methods of treating waste water.	3	CO2
1C	Explain the different Bioassay test methods.	2	CO2
2A	Mention the different strength reduction alternatives for industrial wastewater and explain any two in detail.	5	CO3
2B	Illustrate with a neat sketch the oxygen sag curve and the different zones of pollution in a stream.	3	CO4
2C	Distinguish between aerobic and anaerobic processes with suitable examples.	2	CO5
3A	Explain in brief the sources, characteristics and treatment of waste from a sugar industry.	5	CO5
3B	Explain the following unit operations: i) Adsorption ii) Floatation iii) Elutriation	3	CO3
3C	Mention any six measures that can be taken to mitigate the severity of accidents in industries.	2	CO5
4A	Illustrate with a flow chart the process of paper manufacturing in a paper and pulp industry.	5	CO5
4B	Explain digestion and methods of disposal of digested sludge.	3	CO4
4C	Classify the dyes used in textile industry.	2	CO5
5A	Explain in brief the process of electroplating and treatment of waste from an electroplating industry.	5	CO5
5B	Explain the concept of Common effluent treatment plant and zero liquid discharge.	3	CO4
5C	Explain the meaning of hazardous waste and its significant characteristics.	2	CO4