Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

II SEMESTER M.TECH. (ENVIRONMENTAL ENGINEERING)

END SEMESTER EXAMINATIONS, 2022-23

SUBJECT: INDUSTRIAL WASTEWATER TREATMENT **[CIE – 5285]**

REVISED CREDIT SYSTEM

(24 /05 /2023)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data, if any, may be suitably assumed.

Q No		Marks	CO	BT
1A	Illustrate the objectives and the employed methodology for conducting the industrial wastewater survey.	05	CO1	L4
1B	Examine the effect of discharging industrial waste on receiving streams.	05	CO1	L3
2A	List various waste strength reduction techniques used in the management of industrial wastewater. Explain any two in detail.	05	CO2	L4
2B	Differentiate between composite and integrated sampling. Write a note on sample preservation.	05	CO3	L4
3A	Illustrate the process of production of cheese and milk powder.	05	CO3	L4
3B	Distinguish between vegetable and chrome tanning process.	05	CO3	L4
4A	Illustrate with a flow chart the treatment of cotton textile mill effluents.	05	CO4	L3
4B	Discuss the process of sugar production using a flow chart.	05	CO3	L3
5A	Describe in detail any two types of Environmental Auditing.	05	CO5	L3
5B	Design a high-rate trickling filter for the following data. Effluent flow from a textile industry is 0.5 MLD. Assume recirculation ration as 1.5, BOD as 800 mg/l, BOD removal in primary clarifier is 35%, Organic loading rate is 11000 kg BOD/ ha-m.d. Hydraulic loading rate is 10 $m^3/m^2/d$.	05	CO5	L6