

Reg. No.									
----------	--	--	--	--	--	--	--	--	--



MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent institution of MAHE, Manipal)

II SEMESTER M.TECH. (ENVIRONMENTAL ENGINEERING)

END SEMESTER EXAMINATIONS, MAY/ JUNE 2018

SUBJECT: INDUSTRIAL WASTEWATERTREATMENT [CIE 5222]

REVISED CREDIT SYSTEM

(19/ 04/ 2018)

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ❖ Answer ALL the questions.
- ❖ Write the neat flowcharts/ sketches wherever it is necessary.

1A.	What is meant by conservative and non-conservative pollutants? Discuss their impact on the aquatic environment	4
1B.	Discuss the significance of Industrial waste survey. How mass balancing concept will help in the design of wastewater treatment plant in any industry?	3
1C.	What is meant by Common Effluent Treatment Plant (CETP)? What are the benefits and drawbacks of the CETP?	3
2A.	List out the various preliminary treatment methods available for industrial wastewater treatment. Explain in detail any two of them with appropriate examples.	6
2B.	Give four significant characteristics of effluents from a Pharmaceutical industry. Mention any two different methods available for the management of its waste?	4
3A.	Describe the pollution potential of Distillery wastewater and the remedial measures for the same.	5
3B.	Discuss the wastewater generation units, treatment and any two resource recovery options applicable in tannery industry.	5
4A.	Write in detail about the wastewater treatment technologies and effluent standards that a textile industry needs to follow or maintain during the manufacturing process	6
4B.	List and explain any four techniques to remove organic solids from industrial wastewater	4
5A.	Explain the manufacturing process of sugar and discuss the wastewater generation units. Also explain the treatment options available for treating the wastewater generated.	6
5B.	Write in detail on: a) Pollution load allocation b) Bioremediation of industrial wastewater	4