Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_

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**End Semester Examination – Nov/Dec– 2018**

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| **Code** | **: 14CE2038** | **Duration :** | **3hrs** |
| **Sub. Name:** | **: INDUSTRIAL WASTEWATER TREATMENT**  **AND DISPOSAL** | **Max. marks:** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course Outcome** | **Marks** |
| 1. | a. | Describe the various effects of industrial wastes disposal in land and water? | CO3 | 10 |
| b. | Explain the physical and chemical characteristics of wastewater? | CO3 | 10 |
| (OR) | | | |  |
| 2. | a. | Explain the factors affecting self purification of rivers. | CO3 | 10 |
| b. | Explain oxygen sag curve? Describe its importance in the problems of stream pollution? | CO3 | 10 |
| 3. | a. | How will you minimize the waste volume reduction? Explain the steps to be followed in an industry for waste volume reduction? | CO1 | 10 |
| b. | Explain the importance and steps in waste auditing? | CO1 | 10 |
| (OR) | | | |  |
| 4. | a. | Explain the importance of process change and equipment modification to reduce the strength of the wastewater with an example? | CO1 | 10 |
| b. | Discuss the by product recovery of any one industry to reduce the strength of the wastewater? | CO1 | 10 |
| 5. | a. | Define equalization? Describe the types of flow equalization? | CO1 | 6 |
| b. | List its advantages and disadvantages? | CO1 | 4 |
| c. | Explain the process of neutralization and its importance in treatment of wastewater with an example? | CO1 | 10 |
| (OR) | | | |  |
| 6. | a. | Describe the principle of sedimentation and its types for treatment of wastewater? | CO1 | 10 |
| b. | Explain the process of chemical coagulation and compare the different coagulant used for treatment of wastewater? | CO1 | 10 |
| 7. | a. | Describe the chemical oxidation technique and its significance in removal of hazardous waste from an industry? | CO1 | 10 |
| b. | Explain the working principle of activated sludge process with a neat sketch? | CO1 | 10 |
| (OR) | | | |  |
| 8. | a. | Describe the classification of stabilization pond and its mechanism of purification of wastewater? | CO1 | 10 |
| b. | Sketch the flow sheet for treatment of wastewater using stabilization pond? | CO2 | 4 |
| c. | Explain the factors affecting stabilization pond reaction? | CO2 | 6 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Discuss the process of tannery industry? | CO2 | 10 |
| b. | Describe the characteristics and treatment of textile industrial wastewater? | CO2 | 10 |