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

**Karunya University**

**(Karunya Institute of Technology and Sciences)**

(Declared as Deemed to be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – November / December - 2016**

**Subject Title : Environmental Engineering Time : 3 hours**

**Subject Code: 12BT244 Maximum Marks: 100**

#### **Answer ALL questions**

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| Qn. No | Question  **PART – A (10 x 1 = 10 MARKS)** | | | Mark | Course Outcome |
| 1. | Define water pollution. | | | 1 | CO1 |
| 2. | Mention the name of the pollutants contaminate ground water. | | | 1 | CO3 |
| 3. | Write the application of grit materials for water treatment. | | | 1 | CO1 |
| 4. | Define eutrophication. | | | 1 | CO4 |
| 5. | What is meant by Emission standards? | | | 1 | CO1 |
| 6. | Name the control devices for air pollution. | | | 1 | CO4 |
| 7. | Write “3Rs” concept. | | | 1 | CO2 |
| 8. | Define biostimulation. | | | 1 | CO2 |
| 9. | Mention the types of bioremediation. | | | 1 | CO4 |
| 10. | The organism which is capable to treat oil spill is ---------- | | | 1 | CO4 |
|  | **PART – B (5 x 3 = 15 MARKS)** | | |  |  |
| 11. | Give the comparison between Aerobic and Anaerobic wastewater Treatment. | | | 3 | CO3 |
| 12. | How might you show that a microorganism found in a degradation of organic matter? | | | 3 | CO1 |
| 13. | 1. What is meant by Emission standards and Air quality standards? | | | 3 | CO2 |
| 14. | List out the harmful effects due to disposal of industrial wastes without adequate treatment. | | | 3 | CO4 |
| 15. | Define superbug? How the oil pollutants will be treated? | | | 3 | CO1 |
|  | **PART – C (5 x 15 = 75 MARKS)** | | |  |  |
| 16. | Outline the chemical and ion exchange methods of hardness removal from groundwater. | | | 15 | CO3 |
|  |  | | (OR) |  |  |
| 17. | Explain in detail about sampling, physical, chemical and biological methods of water quality analysis. | | | 15 | CO1 |
| 18. | Illustrate the design and process of anaerobic sewage treatment for biogas production. | | | 15 | CO4 |
|  |  | | (OR) |  |  |
| 19. | What are the characteristics of wastewater? Outline the processes available for treating wastewater from dye industries. | | | 15 | CO3 |
| 20. | a | Elaborate on the effects of air pollution. | | 7 | CO1 |
| b | Brief about the legal and administrative systems for air pollution control. | | 8 | CO2 |
|  |  | (OR) | |  |  |
| 21. | How to eliminate the particulate and gaseous contaminants using air pollution control devices | | | 15 | CO4 |
| 22. | Define bioremediation? Mention the role of microorganisms in bioremediation and biodegradation in detail? | | | 15 | CO3 |
|  |  | (OR) | |  |  |
| 23. | a. | Write a detailed notes on: *In situ* Engineered bioremediation. | | 7 | CO3 |
| b. | List out the harmful effects due to disposal of industrial wastes without adequate treatment. | | 8 | CO3 |
| 24. |  | Describe how microbial populations can be promoted to degrade xenobiotic compounds. | | 15 | CO4 |
|  |  | (OR) | |  |  |
| 25. |  | Describe in detail about the possible methods for the biodegradation of hydrocarbons? | | 15 | CO4 |