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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

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

**End Semester Examination – Nov/Dec – 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **16CE3001** | **Duration :** | **3hrs** |
| **Sub. Name :** | **Applied Environmental Chemistry and Microbiology** | **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. | List the physical properties of elements that can be used as the basis for an instrumental measurement. | CO1 | **2** |
| b. | What are the basic components of a chromatographic system? | CO1 | **2** |
| c. | What is the difference between turbidimetry and nephelometry? | CO2 | **4** |
| d. | Write down about electro kinetic properties of Hydrophobic colloids. | CO2 | **6** |
| e. | What properties of Colloidal dispersions? Explain. | CO1 | **6** |
| **(OR)** | | | | |
| 2. | a. | Who is the father of microbiology? | CO2 | **1** |
| b. | Write about algae classification. | CO2 | **1** |
| c. | What are the elements which causing death of microorganisms. | CO1 | **2** |
| d. | Write down classification of microorganisms. Explain. | CO1 | **8** |
| e. | How experimentally you can measure specific growth rate of microbes | CO2 | **8** |
| 3. | a. | What is equilibrium of a reaction? And explain with help of example? | CO2 | **4** |
|  | b. | What is Ionization, Ion product of water, Solubility product? | CO1 | **4** |
|  | c. | Explain about Le-chatelier principle. | CO1 | **4** |
|  | d. | Explain about Amphoteric Hydroxides. | CO2 | **4** |
|  | e. | Write about colloids dispersed in Air. | CO2 | **4** |
| **(OR)** | | | | |
| 4. | a. | Write the classification of bacteria. | CO1 | **2** |
|  | b. | What are the microorganisms which are useful in wastewater treatment | CO2 | **2** |
|  | c. | Explain about the growth pattern of microorganisms with help of graph. | CO1 | **4** |
|  | d. | How mathematically you can measure specific growth rate of microbes | CO1 | **6** |
|  | e. | Write down factors influencing the growth of microorganisms. | CO2 | **6** |
| 5. | a. | What gives stability to hydropholic colloids in water? | CO2 | **4** |
|  | b. | What factors affect the primary charge on a colloid? | CO1 | **4** |
|  | c. | What is the zeta potential? Explain how it can be used to assess the effectiveness of various coagulation strategies. | CO1 | **4** |
|  | d. | List out and explain mechanism for 1) boiling 2) freezing | CO2 | **4** |
|  | e. | Explain about environmental significance of colloids. | CO1 | **4** |
| **(OR)** | | | | |
| 6. | a. | What is mean by aerosols? | CO1 | **1** |
|  | b. | What facilities are required for volumetric analysis? | CO1 | **1** |
|  | c. | What role do enzymes play in living organisms? | CO1 | **2** |
|  | d. | Explain methods Destabilization of colloids. | CO2 | **8** |
|  | e. | Incoming water contains 2.5 mg/L as a substance of natural alkanity (HCO3-). The rate of flow is 9.5 MLD   1. What is the feed rate required if the alum dose is 7 mg/L 2. b) How much lime in the form of Ca(OH)2 is required to react completely with the alum? | CO2 | **8** |
| 7. | a. | Write down classification of microorganisms. | CO1 | **2** |
|  | b. | Write about significance of environmental chemistry in environmental engineering. | CO1 | **2** |
|  | c. | Explain the Microbial diversity in terms of Prokaryotes | CO2 | **4** |
|  | d. | What are the Gas Laws? State them and explain. | CO1 | **6** |
|  | e. | Expain the importance of microorganisms in the environmrntal enginnering. | CO2 | **6** |
| **(OR)** | | | | |
| 8. | a. | Explain about Lamberts and Beers law. | CO2 | **4** |
|  | b. | Explain about ozone reactions occurred in the atmosphere. | CO2 | **4** |
|  | c. | What is mean aerosols? Explain types of aerosols and effects of aerosols on environment | CO1 | **4** |
|  | d. | What is atmospheric chemistry? Explain about reactions occurred in Atmosphere. | CO2 | **4** |
|  | e. | What are the properties of saline soils? Explain the remedial measure for saline soils. | CO1 | **4** |
|  | | **Compulsory:** |  |  |
| 9. | a. | What is Avagadro’s Number? | CO1 | **1** |
|  | b. | What is Buffer Index? | CO2 | **1** |
|  | c. | Explain about Activity and Activity Coefficient? | CO1 | **2** |
|  | d. | What different areas of application environmental chemistry in environmental engineering? | CO2 | **8** |
|  | e. | Write down about a) liquid-in –liquid system b) Gas- in- Liquid system. | CO2 | **8** |

ALL THE BEST