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 – April/May – 2017**

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| **Code :** | **14CE2008** | **Duration :** | **3hrs** |
| **Sub. Name :** | **WATER AND WASTEWATER ENGINEERING** | **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. | Discuss the various factors affecting the water demand of a city. | CO 2 | 5 |
| b. | The populations of 5 decades from 1960 to 2000 are given below in table. Calculate the population after one, two and three decades beyond the last known decade, by using geometric increase method. | CO 1 | 10 |
| c. | State the importance of treating water for public supply. | CO 1 | 5 |
| (OR) | | | | |
| 2 |  | Enumerate and discuss the various methods which are adopted collectively for treating public water supplies drawn from a perennial river. | CO 2 | 20 |
| 3. |  | Describe the construction details, and functions of various components of a ‘Slow Sand Filter’ with the help of a sketch. Explain in detail how it works and the operation and maintenance problems associated with it. | CO 1 | 20 |
| (OR) | | | | |
| 4. | a. | What do you understand by continuous and intermittent supply systems of water? Compare both with respect to their merits and demerits. | CO 2 | 10 |
| b. | Sketch the layout of conventional wastewater treatment plant and discuss in short the function of each units. | CO 2 | 10 |
| 5. | a. | Differentiate between ‘Sewage’ and ‘Drainage’? Discuss the rational formula for calculating the peak drainage discharge from a given catchment and reaching a particular storm water drain up to a particular point. | CO 2 | 10 |
| b. | Define coagulation? List the common coagulation used in water treatment process. | CO 1 | 5 |
|  | c. | Write short notes on racks and screens. | CO 1 | 5 |
| (OR) | | | | |
| 6. | a. | State merits and demerits of trickling filter. | CO 1 | 10 |
| b. | Clearly bring out the comparision between activated sludge process and trickling filter. | CO 2 | 10 |
| 7. | a. | What is meant by disinfection? What are the chemicals which are used as disinfectant and what are their comparative merits and demerits? | CO 2 | 10 |
|  | b. | Enumerate ‘layout of distribution networks’. | CO 1 | 10 |
| (OR) | | | | |
| 8. | a. | Summarise about ultimate disposal of sewage. | CO 2 | 5 |
| b. | Enumerate water-borne diseases and how can they be prevented? | CO 1 | 5 |
| c. | Name the various sources of water. | CO 1 | 5 |
| d. | Explain the significance of fluctuations in water demand. | CO 2 | 5 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Distinguish between slow sand gravity and rapid sand gravity filters with reference to rate of filtration, quantity of sand and size of filter, main treatment process responsible, pretreatment required, quantity of water required for cleaning, operation problems involved, maintenance required, period of cleaning and method of cleaning, loss of head, efficiency of removal of bacteria, efficiency of removal of turbidity and suitability in water supply schemes. | CO2 | 15 |
|  | b. | Write short notes on wet and dry weather flow. | CO 1 | 5 |

**ALL THE BEST**