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

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

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| **Code :** | **17CE3054** | **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 design water demand of a city. | CO2 | 10 |
| b. | The populations of 5 decades from 1960 to 2000 are given below in table. Find out the population at 2020 and 2040 by using geometric increase method. | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Describe in brief various population forecasting methods for estimation of water quantity. | CO1 | 10 |
| b. | Enumerate and discuss the various methods which are adopted collectively for treating public water supplies drawn from a lake. | CO2 | 10 |
|  |  |  |  |  |
| 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. Also explain its design principles. | CO1 | 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. | CO2 | 10 |
| b. | What do you understand coagulation? Explain the mechanism in the coagulation process. | CO2 | 10 |
|  |  |  |  |  |
| 5. | a. | Enumerate about wastewater characteristics and their importance. | CO2 | 10 |
| b. | List the common coagulation used in water treatment process. Explain atleast one reaction. | CO1 | 5 |
|  | c. | Write short notes on grit chamber. | CO1 | 5 |
| (OR) | | | | |
| 6. | a. | State merits and demerits of trickling filter. | CO1 | 10 |
| b. | Clearly bring out the comparison between activated sludge process and trickling filter. | CO2 | 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? | CO2 | 10 |
|  | b. | Write about layout of distribution networks. | CO1 | 10 |
| (OR) | | | | |
| 8. | a. | Write about ultimate disposal of sewage. | CO2 | 5 |
| b. | What are water-borne diseases and how can they is presented? | CO1 | 5 |
| c. | Name the various sources of water. | CO1 | 5 |
| d. | Explain the types of water characteristics. | CO2 | 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 water demand. | CO1 | 5 |