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

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

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| **Code :** | **14CE2008** | **Duration :** | **3hrs** |
| **Sub. Name :** | **WATER AND WASTE WATER 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. | Layout the water supply scheme with neat diagram. | CO1 | 5 |
| b. | The populations of 5 decades from 1960 to 2000 are given below in table. Find out the population at 2030 and 2040 by using arithmetic and geometric increase method. | CO2 | 15 |
| (OR) | | | | |
| 2. | a. | Discuss the various factors affecting the design water demand of a city. | CO1 | 10 |
| b. | Enumerate the various treatment methods for treating the surface water and ground water for drinking purpose. | CO2 | 10 |
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| 3. | 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. | What are water-borne diseases and how can they is presented? | CO1 | 5 |
| (OR) | | | | |
| 4. |  | Describe the construction details, and functions of various components of a ‘Rapid 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 |
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| 5. | a. | What do you understand by gravity and pumping systems of water supply? Compare both with respect to their merits and demerits. | CO2 | 10 |
| b. | What do you understand about the distribution system of water supply? Explain different modes of supply. | CO2 | 10 |
| (OR) | | | | |
| 6. | a. | 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. | CO2 | 10 |
| b. | What is coagulation? List the common coagulation used in water treatment process. | CO1 | 5 |
| c. | Write short notes on racks and screens. | CO1 | 5 |
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| 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. | Explain about different characteristics of water? | CO1 | 10 |
| (OR) | | | | |
| 8. | 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 |
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|  | | **Compulsory**: |  |  |
| 9. | a. | Describe in brief various population forecasting methods for estimation of water quantity. | CO1 | 10 |
| b. | Write about layout of distribution networks. | CO1 | 10 |