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



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **17CE2008** | **Duration :** | **3hrs** |
| **Sub. Name :** | **WATER SUPPLY 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. | Population of a town as obtained from the census reports is as follows:   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Year | 1970 | 1980 | 1990 | 2000 | 2010 | 2020 | | Population | 25423 | 27263 | 38284 | 49909 | 67105 | 79875 |   Estimate the population expected by 2030 by Incremental Increase method. | CO1 | 10 |
| b. | Describe in brief the various tests conducted for physical examination of water. | CO1 | 10 |
| **(OR)** | | | | |
| 2. | a. | Explain in brief any 5 important methods used for prediction of future population of a city. | CO1 | 15 |
| b. | Explain in brief the various factors that affect population growth. | CO1 | 5 |
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| 3. | a. | Describe in brief the various types of screens used for screening water. | CO2 | 8 |
| b. | Write short notes on plain sedimentation and describe the design principles of a settling tank. | CO2 | 12 |
| **(OR)** | | | | |
| 4. | a. | Define the following terms.  i) Detention Period.  ii) Flow through period.  iii) Displacement efficiency.  iv) Surface loadings. | CO2 | 4 |
| b. | Classify various types of filters. Differentiate between slow sand filter and rapid sand filter. | CO2 | 16 |
|  |  |  |  |  |
| 5. | a. | Write short notes on the following:  i) Gate Valve.  ii) Pressure relief valve.  iii) Air relief valve.  iv) Reflux valve.  v) Tyton valve. | CO3 | 15 |
| b. | Describe measures that are commonly adopted to minimize pipe corrosion. | CO3 | 5 |
| **(OR)** | | | | |
| 6. | a. | Discuss the various methods of laying out the distribution system with the help of diagrams. | CO3 | 14 |
| b. | A 1m diameter smooth concrete pipe carries a discharge of 0.9 cumecs at an average temperature of 20oC. Compute the hydraulic gradient using i) Darcy-weisbachformula ii) Mannings formula. | CO3 | 6 |
|  |  |  |  |  |
| 7. | a. | Explain the legal requirements and standards regarding treatment of sewage. | CO4 | 10 |
| b. | Explain in detail the physical characteristics of sewage. | CO6 | 10 |
| **(OR)** | | | | |
| 8. | a. | Explain laying, jointing, testing of sewer pipes. What are the steps involved in laying of sewer pipes? | CO4 | 15 |
| b. | “A sewer has to be designed considering both minimum and maximum velocity of flows” - State true or false and justify your answer. | CO6 | 5 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Explain the construction and working of trickling filter with a neat sketch. | CO5 | 14 |
| b. | Give three important methods of disposal of sludge . What are the methods adopted for sludge drying? | CO5 | 6 |