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. | Elaborate the main factors that should be kept in mind of a water work engineer while designing the water works. | CO1 | 15 |
| b. | Define the term design period in designing water supply scheme. Mention any three factors that should be kept in view while fixing the design period. | CO1 | 5 |
| (OR) | | | | |
| 2. | a. | Draw the complete flow diagram of water supply scheme and explain its componenets. | CO1 | 15 |
| b. | Express the necessity of water supply scheme in the present-day community. | CO1 | 5 |
|
| 3. | a. | Discuss different methods that are used for forecasting the population. Apply arithmetical increase, geometrical increase and incremental increase method to predict the population of a town for the year 2011 with the help of the following census figures:   |  |  |  |  |  | | --- | --- | --- | --- | --- | | YEAR | 1941 | 1951 | 1961 | 1971 | | POPULATION | 11093 | 13751 | 15206 | 19723 | | CO2 | 20 |
| (OR) | | | | |
| 4. | a. | Estimate the future population of a town in2001from the census data given below. Justify the method you have used.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | YEAR | 1911 | 1921 | 1931 | 1941 | | POPULATION | 350,000 | 466,000 | 994,000 | 1,550,000 | | YEAR | 1951 | 1961 |  |  | | POPULATION | 1,623,000 | 1,839,000 |  |  | | CO2 | 10 |
|  | b. | Summarize the key points on a) pH value and its significance b) BOD c) Dissolved oxygen d) Hardness e) Turbidity. State the permissible limit of the above parameters in drinking water. | CO1 | 10 |
|  |  |  |  |  |
| 5. |  | Paraphrase the various test that is carried out under physical, chemical, biological analysis to determine the quality of water. Explain the purpose of each. | CO1 | 20 |
| (OR) | | | | |
| 6. | a. | Sketch the layout of conventional water treatment plant and discuss in short the function of each units. | CO2 | 12 |
|  | b. | Describe the necessity of using coagulants in sedimentation. Name the various coagulants that are used and the principle behind the coagulation process. | CO3 | 8 |
|  | | | | |
| 7. | a. | Tabulate 10 differences between rapid and slow sand filter. | CO3 | 10 |
|  | b. | Explain the different layouts of water distribution system with neat sketch. | CO2 | 10 |
|  |  | (OR) |  |  |
| 8. | a. | What is meant by suspended growth process? Explain the working of activated sludge process with a neat sketch. | CO3 | 7 |
|  | b. | Mention the role of RBC in sewage treatment? | CO3 | 3 |
|  | c. | Explain the process of purification of sewage by trickling filter with the help of neat sketch. | CO2 | 10 |
|  | |  |  |  |
| 9. |  | Mention the various methods available for analyzing the flow in a network of pipelines.Analyse the pipe network shown by Hardy Cross method.  30 l/s  K=3  K=1  40 l/s  K=2  50 l/s  K=3  K=3  20 l/s | CO3 | 20 |

ALL THE BEST