Course Code : 15CE1168 **R-2015** **Reg. No:** | | | | | | | | | | |

College of Engineering (Autonomous)

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING (AUTONOMOUS)

Madhurawada, Visakhapatnam

Affiliated to JNT University – K, Kakinada

B.Tech VII Semester Regular (*Readmitted*) Examinations, November-2023

Water Supply Systems

(Open Elective)

(Common to All Branches)

Date: 22-11-2023 **Time: 3 Hours** **Max. Marks: 70**

1. Answer ONE Question from each UNIT
2. All parts of a Question must be answered at one place to get valued.
3. All questions carry equal marks.

UNIT-I

1. a) Identify various demands for water supply in an urban area. Elaborate on domestic demand for water and infer the recommended minimum quantity of water to be supplied per capita per day. 7 Marks

   b) State the importance of water supply to residences in the case of conservancy and water-carriage systems of sanitation. When is dilution of wastewater recommended as a disposal option? 7 Marks

2. a) Discuss fire-demand for water. Analyse the unique aspects of this demand in terms of provisioning the same and ensuring that it is available any time and all over the serviced area. 7 Marks

   b) Define Irrigation demand for water. Give examples of modern irrigation and farming methods that help to bring down irrigation demand and increase productivity of farms and orchards. 7 Marks

UNIT-II

3. a) Explain the phenomena of water from the atmosphere. Infer their role in running the Hydrologic Cycle. 7 Marks

   b) Describe the Desalination process of water treatment and explain the circumstances under which it is chosen for supply of water to consumers. 7 Marks

4. a) Distinguish an ‘artesian aquifer’ from other types of aquifers. What advantages does an artesian aquifer have over other types of aquifers, when considering it for supply of water. 7 Marks

   b) Discuss the recycling of wastewater and the opportunities to replace surface and ground sources of raw water for meeting water demand with treated wastewater. 7 Marks

UNIT-III

5. a) Define the terms Potable water, Wholesome water, Palatable water, Safe Water, Mineral Water and Bottled water. Which kind of water do we purchase in 1 litre bottles during travel? 7 Marks

   b) How is grey-water different from other wastewaters generated in a household? Does it need special methods for treatment? Can it be disposed without treatment? 7 Marks

6. a) What are water-related vector-borne diseases? Give examples and suggest measures to curb their spread amongst human populations. 9 Marks

   b) Identify the non-potable uses of water in daily life of humans. How do they stack up against direct human consumption as water & food? Is it justified to use potable water for non-potable use? 5 Marks

UNIT-IV

7. a) Discuss the role of topography in choosing the type of distribution system for water supply. What are the challenges faced in a rolling topography? 7 Marks

   b) Define 'Service Reservoir'. What is its role in water distribution systems? 7 Marks

8. a) Differentiate between Continuous supply and Intermittent supply of potable water. Discuss their relative merits and demerits. 7 Marks

   b) Explain construction and the role of Valves, Hydrants and Meters in a water distribution system. What are the advantages of providing meters on consumer connections? 7 Marks

UNIT-V

9. a) Identify the categories of water, based on use, within Industry. List the target qualities for each specific use within industry. 7 Marks

   b) Describe the characteristics and typical treatment of agri-food industry effluent. 7 Marks

10. a) List the standards for letting out raw/treated industrial effluents of industries, into a flowing river. 9 Marks

    b) Describe the characteristics and typical treatment of oil refinery industry effluent. 5 Marks