

GUJARAT TECHNOLOGICAL UNIVERSITY**M.E Sem-I Regular Examination January / February 2011****Subject code: 711701N****Subject Name: Principles of Water Treatment****Date: 31 /01 /2011****Time: 02.30 pm – 05.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q.1 (a) What are the factors affecting consumption of water? Briefly discuss about variation in water demand. **07**

(b) Define MPN. Why they are considered as indicator organisms? Are they pathogenic? Explain the precautions to be taken for MPN test. Find MPN if a sample tested in laboratory has following results; **07**

Sample amount	No. of Tubes	No. of Tubes with bubbles
10 ml	3	1
1 ml	3	0
0.1 ml	3	0

Q.2 (a) Discuss quality criteria of water used for agriculture and fish culture. **07**

(b) Discuss sources and health effects of (i) Turbidity (ii) mercury (iii) chromium **07**

OR

(b) What are three major chemical processes that may alternately aid or obstruct natural purification processes of water systems? **07**

Q.3 (a) What are the objectives of aeration? Discuss various types of aeration devices in detail. **07**

(b) Name and discuss the four mechanisms thought to occur during coagulation. **07**

OR

Q.3 (a) Write note on gravitational rapid mixing and slow mixing devices. **07**

(b) What is type -1 and type -2 suspension? Name and discuss three types of settling basins employed for solids removal in water treatment plants. **07**

Q.4 (a) Discuss filtration as means of water treatment. Enumerate dominant mechanism of filtration and explain them in detail. **07**

(b) Enumerate various free chlorination practices. Explain in detail break point chlorination and its significance. **07**

OR

Q.4 (a) Give neat sketch and size of under drainage system needed to handle water required for a town population of 125000. **07**

(b) Enumerate various disinfection processes? Discuss ozonation in detail. **07**

Q.5 (a) Define adsorption. Briefly discuss about various adsorption isotherms. **07**

(b) Discuss various applications of ion exchange in field of water supply. **07**

OR

Q.5 (a) Discuss in detail various methods for removal of taste and odour from water. **07**

(b) What do you mean by defluoridation of water? Explain any one method of defluoridation in detail. **07**
