

GUJARAT TECHNOLOGICAL UNIVERSITY
M. E. - SEMESTER – I • EXAMINATION – WINTER • 2013

Subject code: 711701N**Date: 23-12-2013****Subject Name: Principles of Water Treatment****Time: 10.30 am – 01.00 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 various purposes for which water is required? Analyze and discuss them. **07**
- (b) What do mean by variation in rate of demand? What are the effects of variations on design of various units of water supply scheme? **07**
- Q.2** (a) What are the reasons for analysis of water? Mention the precautions which are to be taken while collecting the sample of water to be analyzed. **07**
- (b) Discuss quality criteria of water used for industries. **07**
- OR
- (b) What do you understand by the biological examination of water? Why it is necessary and how it is done? **07**
- Q.3** (a) Give the sequence of units to be installed for a typical water supply project. Write the function of each unit. **07**
- (b) Discuss sources and health effects of (i) pH(ii) Total solids(iii) Fluoride **07**
- OR
- Q.3** (a) Write detail note on design and working of a continuous flow type sedimentation tank. What reduction in turbidity do you expect in a properly working tank? **07**
- (b) Enumerate various coagulants used in water treatment processes. How does the application of the coagulant help in purification of water? **07**
- Q.4** (a) Design a clarifloculator to cater 3mld of water flow. **07**
- (b) Design a RSF to cater 5mld of water flow. **07**
- OR
- Q.4** (a) Describe the methods of aeration in treatment of water. **07**
- (b) Draw a neat sketch showing the general layout of a rapid sand filter (gravity type) and explain its working. How is the washing done of such a filter? **07**
- Q.5** (a) What troubles occur during operation of rapid sand filters? What are their remedies? **07**
- (b) Why is disinfection necessary? What are the requirements of a good disinfectant? **07**
- OR
- Q.5** (a) How are iron and manganese removed from water? **07**
- (b) Write short not on adsorption processes employed for treatment of water. **07**
