

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV • EXAMINATION – WINTER • 2014****Subject Code: 141304****Date: 02-01-2015****Subject Name: Water Pollution and Control****Time: 02:30 pm - 05:30 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) Differentiate the following. **07**
a) Conventional waste water treatment and advanced waste water treatment.
b) Aerobic and anaerobic treatment processes
- (b) What is thermal pollution? Explain in detail the sources of thermal pollution? What are the abatement strategies for thermal pollution? **07**
- Q.2** (a) What is Disinfection? What are the characteristics of a good disinfectant? Explain their Applications on Water pollution **07**
(b) Write a short note on Surface water pollution. **07**
- OR**
- (b) What objectives are achieved by aeration of water? Sketch and discuss different types of aerators. **07**
- Q.3** (a) What are the impacts of oil pollution? What measures are taken to control oil pollution? **07**
(b) Explain about the slow sand filter. What are its disadvantages over rapid sand filter? **07**
- OR**
- Q.3** (a) List out the various coagulant & explain its chemistry in wastewater treatment. **07**
(b) What are the various types of settling? Explain them. **07**
- Q.4** (a) What is plain sedimentation? What are the factors that influence the process? **07**
What are the advantages of plain sedimentation process?
(b) Draw the layout of a water treatment plant. Explain function of each unit. **07**
- OR**
- Q.4** (a) What is the purpose of Biological treatment of waste water? Differentiate between suspended and attached growth process. **07**
(b) Explain the types of Hardness and enlist the methods of water softening. Explain any one in detail with diagram. **07**
- Q.5** (a) Explain the construction and working of Rotating Biological Contractor along with a neat sketch. **07**
(b) A grit chamber has a waste water depth of 0.8 m. Calculate the time required by a 0.4 mm sand particle to settle at the bottom. Also compute the length of the grit chamber if the flow through velocity is 0.3m/s. **07**
- OR**
- Q.5** (a) What are the potential sources of groundwater pollution? What are the negative effects of groundwater depletion? **07**
(b) Determine the built up of head loss through a bar screen when 25% of flow area is blocked off due to accumulation of coarse solids. Assume the following conditions: **07**
Approach velocity = 0.5m/s
Velocity through clear bar = 0.8 m/s
Open area for flow through clear bar screen = 0.19 m²
Head loss coefficient for clear bar = 0.7
