

GUJARAT TECHNOLOGICAL UNIVERSITY**B.E. Sem-IV Remedial Examination Nov/ Dec. 2010****Subject code: 141304****Subject Name: Water Pollution & Control****Date: 08 / 12 / 2010****Time: 03.00 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)** Define the terms: **10**
 (i) Hydraulic Retention Time (ii) Settling Velocity (iii) Weir Loading Rate
 (iv) Mean cell residence time (v) Organic Loading Rate
- (b)** Give the detailed classification of filtration processes & explain depth filtration **04**
- Q.2 (a)** Explain conventional water treatment diagram with sketch **07**
(b) Differentiate between: **07**
 (i) Primary Treatment and tertiary treatment
 (ii) Zone settling and Compression settling
- OR**
- (b)** (i) Write the applications of sedimentation. **07**
 (ii) Give the classification of Grit Chamber and explain any one.
- Q.3 (a)** (i) 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 = 0.6m/s
 • Velocity through clear bar = 0.9 m/s
 • Open area for flow through clear bar screen = 0.19 m²
 • Head loss coefficient for clear bar = 0.7
 (ii) For a circular clarifier of 20.0 m diameter determine the weir loading for a waste water flow rate of 10 MLD.
- (b)** (i) Give the difference between High Rate Trickling Filter & Standard Rate Trickling Filter. **07**
 (ii) Explain the phenomena of sloughing in a Trickling Filter.
- OR**
- Q.3 (a)** Explain the sources and effects of following parameters in water and waste water: **06**
 (1) Colour (2) Solids (3) Organic matter
- (b)** (i) Explain the mechanism of removal of organic matter in a Trickling Filter. **08**
 (ii) Draw a neat sketch of conventional Activated sludge process and explain its different components.
- Q.4 (a)** Explain the construction and working of a Rapid Sand Filter with the help of a neat sketch. **07**
(b) Prepare a list of chemicals used for coagulation and explain the chemical reactions for alum. **07**
- OR**
- Q.4 (a)** What is the Equalization? What is its importance in wastewater treatment? **07**
(b) Describe the Jar test method to determine the optimum dose of coagulant. **07**
- Q.5 (a)** Differentiate between aerobic and anaerobic treatment processes. **07**
(b) What is disinfection? Explain chlorination as a method of disinfection. **07**
- OR**
- Q.5 (a)** How can thermal pollution be prevented and controlled? **07**
(b) Explain the sources and consequences of oil pollution. **07**
