

GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEM-IV Examination-Nov/Dec-2011

Subject code: 141304**Date: 02/12/2011**

Subject Name: Water Pollution & Control

Time: 02.30 pm -5.00 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 is 'Wholesome Water'? Explain various sources contaminating water. (2+4) **06**
- (b) Discuss impacts of following pollutants: **08**
- (1) Hardness (02)
 - (2) Turbidity (02)
 - (3) Fluorides (02)
 - (4) Temperature (02)

- Q.2** (a) Draw a neat sketch of conventional Wastewater Treatment Plant and state function/s of each unit. (2+5) **07**
- (b) Difference between **07**
- (1) Unit operations and unit Processes (01)
 - (2) Primary treatment and Secondary Treatment (03)
 - (3) Fine Screens and Coarse Screens (03)

OR

- (b) Design a flash mixer for a flow of 100 m³/s assuming following data : **07**
- (1) Detention time = 30 S
 - (2) $G = 100/S$
 - (3) Temperature of water = 15⁰ C
 - (4) Dynamic Viscosity = 1.139×10^{-3} NS/m²

- Q.3** (a) Bring out the characteristics of colloids and explain alum as a coagulant. (3+4) **07**
- (b) Draw a circular sedimentation basin showing clearly its functional zones. Explain function of each zone. **07**

OR

- Q.3** (a) Briefly explain Jar test used for simulating coagulation / flocculation process. (3+4) **07**
- (b) Explain with neat diagram construction and working of Rapid sand filter. **07**

- Q.4** (a) Differentiate between **07**
- (1) Aerobic and Anaerobic treatment (02)
 - (2) Suspended and attached growth process (02)
 - (3) Standard rate digestion and high rate digestion (03)

- (b) Explain the principle and working of rotating biological contactor reactor with neat sketch. **07**
(2+3+2)

OR

- Q.4** (a) What is 'equalization'? Explain its significance in waste water treatment. **07**
(b) Define 'Absorption'. Explain factors affecting absorption used in waste water treatment. **07**

- Q.5** (a) Define 'Thermal Pollution' and bring out the adverse effects of thermal pollution on environment. **07**
(2+5)
(b) List the sources of oil pollution and discuss its consequences. **07**
(3+4)

OR

- Q.5** (a) Discuss how can we ensure prevention and control thermal pollution. **07**
(b) What is water softening? Explain softening by chemical precipitation. **07**
(2+5)
