

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI (NEW) - EXAMINATION – SUMMER 2016

Subject Code:2161306

Date:13/05/2016

Subject Name: Design of Water Treatment Units

Time: 10:30 AM to 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) Enlist the flow measuring devices. Explain any one in detail. **07**
(b) Explain in detail the selection criteria for surface water treatment **07**
- Q.2** (a) Draw a neat sketch of water treatment scheme suitable for ground water **07**
(b) 50 mg/L of alum is added to 50,000 m³/day of raw water containing 60 mg/L of suspended solids. Assuming that sufficient natural alkalinity is present, how many kilograms sludge is produced per day? Assuming that the specific gravity of sludge is 1.04, how many cubic meters of sludge is produced per day? Assume the settling basin removal efficiency as 65%. **07**
- OR**
- (b) Explain with a neat sketch different types of screens **07**
- Q.3** (a) Define the term: Rapid mix. Draw neat sketches of basic types of impellers **07**
(b) Enlist the design criteria for Clariflocculator **07**
- OR**
- Q.3** (a) Explain in detail: Types of sedimentation **07**
(b) Explain the design steps for tube settler **07**
- Q.4** (a) Explain the methodology involved in design of Rapid sand filter **07**
(b) Write a short note: layout and hydraulic profile of water treatment plant **07**
- OR**
- Q.4** (a) Design a chlorine contact tank for peak wastewater flow of 24 MLD. **07**
(b) Design a screen to treat maximum flow of 0.15 m³/s **07**
- Q.5** (a) Describe water softening calculations in detail. **07**
(b) Explain with a neat sketch Chlorination system. **07**
- OR**
- Q.5** (a) Explain iron and manganese removal. **07**
(b) Write a short note: Water treatment plant residuals **07**
