

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code:2150603

Date:09/05/2016

Subject Name:Environmental Engineering

Time:02:30 PM to 05:00 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) Define environment. Give the classification of the microorganisms. **07**
(b) In a town, it has been decided to provide 200 litres per head per day. **07**
Estimate the domestic water requirements of this town in the year AD 2051 by projecting the population of the town by the (i) Arithmetical increase method, (ii) Geometrical increase method, (iii) Incremental increase method, from the data given below:

Year	1971	1981	1991	2001	2011
Population	2,50,000	4,80,500	5,50,300	6,38,000	6,95,200

- Q.2** (a) Enlist the different Physical and chemical parameters for wastewater. Explain any one chemical parameter in detail. **07**
(b) The BOD₅ of a waste has been measured as 460mg/lit. If $K=0.23/\text{day}$ (base e), what is the ultimate BOD_u of the waste. What proportion of the BOD_u would remain unoxidized after 20 days? **07**

OR

- (b) A city discharges 130 cusecs of sewage into a river whose minimum rate of flow is 2000 cusecs during its lean days with velocity of 0.5 m/sec. The 5 day BOD at 20°C for sewage is 250mg/lit and that of river is 1mg/lit. The D.O. of sewage is zero and that of the stream is 90% of the saturation DO. Find when and where the critical DO deficit will occur in the downstream portion of the river, and what its amount is? Assume coefficient of purification of the stream as 4.0 and deoxygenation coefficient as 0.1. **07**

- Q.3** (a) Which are the different types of solids present in water? How each type of solid can be determined? **07**
(b) Explain the function of Central Board and State board under “The water (Prevention and control of pollution) act-1974.” **07**

OR

- Q.3** (a) Explain the self-purification process of the streams and Explain different factors affecting the self-purification capacity of a stream. **07**
(b) Give the characteristics of the waste generated from Dairy industry and Textile Industry. **07**

- Q.4** (a) Explain in brief various types of water closets. **07**
(b) What do you mean by transfer stations? Give classification of Transfer stations. **07**

OR

- Q.4** (a) Define the terms: Sewage, Sullage, Plumbing System, Sewer, waste pipe, Sewerage system, Traps. **07**
(b) Write a short note on Cyclone separators. **07**

- Q.5** (a) How will you control noise pollution in your city? **07**
(b) Write a short note on “The Environment (protection) Act -1986”. **07**

OR

- Q.5** **(a)** What are the objectives of the “Air (prevention and control of pollution) Act-1981”? **07**
Explain the power of the boards under the “Air (prevention and control of pollution) Act-1981”.
- (b)** How will you determine the vehicle requirements in Hauled container system for solid waste collection system? **07**
