

**B.Tech. CIVIL ENGINEERING (BTCLEVI)**

**Term-End Examination**

00303

**December, 2016**

**BICE-014 : ENVIRONMENTAL ENGINEERING – I**

*Time : 3 hours*

*Maximum Marks : 70*

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*Note : Answer any **five** questions. All questions carry equal marks. Assume suitable data, if missing. Use of scientific calculator is allowed.*

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1. (a) Explain the operation of rapid sand gravity filter using a neat sketch. 7
- (b) Discuss the various chlorination practices. 7
2. (a) Explain the water softening process. 7
- (b) How is testing of water mains carried out? 7
3. (a) Differentiate between type-I and type-II settling processes used in water treatment. 4
- (b) Describe the different types of hardness present in water. How are they removed? 10

4. A town is projected to be supplied water at the rate of 200 lt/person/day, in the 21<sup>st</sup> century. Estimate the water requirement of the city in the year 2020 using incremental increase method, based on the data given below.

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<i>Year</i>	<i>Population</i>
1960	2,37,98,624
1970	4,69,78,325
1980	5,47,86,347
1990	6,34,67,823
2000	6,90,77,421

5. (a) Explain the self-purification process of surface water. 7
- (b) Explain the processes of coagulation and flocculation used in water treatment. 7
6. Write notes on the following :
- (a) Lime-Soda Ash Treatment Process 7
- (b) Water Supply and Plumbing in Buildings 7
7. (a) Discuss the relative merits and demerits of various disinfectants used in water treatment. 7
- (b) Describe the different types of distribution reservoirs used in a water distribution system. 7