

**Programme:** B. Tech

**Course Name:** Environmental Engineering - I

**Course Code:** ECE 358

**Tutorial – 1**

**Topics Covered – Unit 1 (CO1)**

**Tutorial – 1**

1. The following information has been received from a census data

<b>Year</b>	<b>Population</b>
1951	75000
1961	110000
1971	150000
1981	200000
1991	242000

Determine the population using (a) arithmetic (b) geometric (c) incremental increase of growth method for the years 2001, 2011, 2021 and 2031

2. Using the same information as described in Question 1, estimate the population for the same years based on graphical method.

3. In three consecutive decades the population of a town is 40,000; 100,000 and 130,000. Determine: (a) Saturation population; (b) Equation for logistic curve; (c) Expected population in next decade.

4. The population in a town was determined to be 125000 in 2000 and 180000 in 2010. The decreasing rate of growth was determined to be 0.007, determine (a) saturation population and (b) population for the year 2020 and 2030.

5. The population in a town was determined to be 225000 in 2010 and 300000 in 2020. Assume a suitable decreasing rate of growth, determine the saturation population. Use this saturation population to predict population for year 2030 and 2040. Also explain the logistic curve equation.