



**Total Mark**

[100 Marks]

**Answer all the following Questions**

**Marks**

**Question (1)**

[25]

Discuss the different types of pipes used in water distribution networks and sewerage system provide proper information ..... (25)

**Question (2)**

[20]

- (a) Discuss various components of water distribution systems .....(5)
- (b) Discuss using sketch the Hydrologic Cycle and its elements..... (5)
- (c) Discuss Factors affecting Consumption rate..... (10)

**Question (3)**

[35]

- (a) Mention five different methods for prediction of future population ..... (5)
- (b) The following table shows the population in millions of a country during the years 1910 – 2010, in ten years intervals. .... (30)

Year	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010
Pop.	23.2	31.4	39.8	50.2	62.9	76	92	105.7	122.8	131.7	151.1

- 1) Find the equation of the least square parabola fitting the data.
- 2) Estimate the population in 2030 & 2050

Knowing that :

$$\begin{aligned} \Sigma Y &= aN + b\Sigma X + c\Sigma X^2 \\ \Sigma XY &= a\Sigma X + b\Sigma X^2 + c\Sigma X^3 \\ \Sigma X^2 Y &= a\Sigma X^2 + b\Sigma X^3 + c\Sigma X^4 \end{aligned}$$

**Question (4)**

[20]

Discuss briefly Planning of Sanitary Landfill.....(20)

**End of Exam - Good luck**

This exam measures the following ILOs														
Question Number	Q1	Q2-a	Q2-b	Q2-c	Q4	Q2-a	Q3-a	Q3-b	Q4		Q2-a	Q3-a	Q3-b	Q4
Skills	a1-1	a1-2	a1-1	a1-2	a1-2	b2-1	b2-1	b2-1	b2-1		c1-1	c1-1	c1-1	c1-1
	Knowledge & Understanding Skills					Intellectual Skills					Professional Skills			