ASSIGNMENT 2

Q1. Define standard and criteria for drinking water and how it is fixed for different uses?

Ans. Water Quality standard: Drinking water must be colorless, odorless, tasteless. It should be free from turbidity and toxic chemical compound. There should be absence of harmful microorganism and radio activity.

Water quality Criteria: Best scientific data(measures) for protection of aquatic life (marine and freshwater) and human health.

Beneficial use designations	1. Recreational class waters (primary contact, secondary contact such as boating, and children's recreation such as wading) 2. Aquatic life class waters (Coldwater fisheries, warmwater fisheries, sensitive species waters, including rivers, lakes, wetlands, or reservoirs) 3. Drinking water classification for potable water supplies

Q2. Define water demand. Also write down different type of water demand as per different people (i.e., Domestic / Municipal, Industrial, amenity, society, fire demand and agriculture).

Ans. The quantity of water sufficient to one person is known as water demand. Types of water demand:

1. Domestic/municipal water demand.
2. Industrial water demand.
3. Institution and commercial water demand.
4. Demand for public uses.

5. Fire demand.
6. Water needed to compensate losses in thefts and wastes.

Q3. Explain design period, also explain several factors affecting design period.

Ans. It is the no. of years in future for which the proposed facility would meet the demand of the community is known as design period.

Factors affecting design periods:

1. Ease of expansion
2. Availability of funds
3. Climate condition
4. Increasing population/quantity of water available at source
5. Types of cities
6. Appurtenance uses
7. Lead time
8. Life of structure

Q4. Define Intake (Dry and wet) & their classification?

Ans. The structure which is made up at the water source to draw the water from that source to other components of water supply system is known as intake structure.

Classifications:

Category 1:

1. Submerged intake

2. Exposed intake

Category 2:

3. Wet intake
4. Dry intake

Category 3:

5. River intake
6. Reservoir intake
7. Lake intake
8. Canal intake

Q5. Different population forecasting method & its advantages and disadvantages?

Ans. Two methods of population forecasting:

1. **Arithmetic Increase Method:**
   Pn = Po + nX'
   Where
   Pn = Population of an area after any time 't' or Population after 'n' decades, Po = Last known Population of that area; n = number of decades (10 years = 1 decade); X' = average increase in population.

2. **Geometric Increase Method:** This method is employed in a area where the population is rapidly increasing. Here the future population Pn is given by,

$$Pn = Po\left(1 + \frac{r}{100}\right)^n$$

   Here, r = Assumed growth rate in percentage, n is in decades and Po is the last known population of the city.

ADVANTAGES: