BRANCH :	**Civil Engineering**	**DISPLAY DATE :**	
BATCH :	**6TH Bx, By, Bz, Bd**	**SUBMISSION DATE :**	

Module-1 Water Treatment Plant

1.	Schematically describe complete water supply scheme. How to find out the quantity of water needed for a town?
2.	Enumerate various methods of population forecasting. Explain geometric increase and arithmetic increase method in detail
3.	What is per capita demand? Discuss factors affecting per capita demand.
4.	How you can calculate daily average water demand of your city? Show that maximum hourly consumption of maximum day is equivalent to 2.7 times the annual average hour demand.

Module-2 Water Treatment Processes & Treatment units

1.	Explain hydrostatic test to be perform after laying a water supply pipes.
2.	Define Inlet structures. Explain the factors affecting the site selection for an intake structure.
3.	What are the various types of intake works? Describe a river intake with help of neat sketch
4.	Enlist different types of pipes used for water supply. Explain any two in detail.

Module-3 Water Treatment Processes & Treatment units

1.	Define slow sand and rapid sand filters and give a point wise comparison between them.
2.	Enumerate various methods used for water softening.
3.	Differentiate between plain sedimentation and sedimentation aided with coagulation. Explain different types of settling.
4.	What are the different types of filters? Explain any one in detail with neat sketch.
5.	What are the objectives of Aeration in water treatment? Enlist different types of Aerators and describe any one in detail with neat sketch.
6.	Make a list of various forms of chlorination and explain break point chlorination with sketch.

7.	Give the site selection criteria for the location of water treatment plant. Draw a complete treatment train for the conventional water treatment plant.
8.	Explain zeolite process used for water softening along with their merits and demerits.
9.	Explain theory of coagulation process in water treatment.
10.	Define design period. Which factors are influencing selection of design period? Also, give design period for different components of water supply scheme.
11.	What are the requirements of disinfectants? Explain various minor methods of disinfection.
12.	Give design criteria for flash mixer.

Module-4 Distribution System

1.	Discuss requirement of a good distribution system. Describe layouts of Various water distribution networks.
2.	Enlist different type of storage and distribution reservoirs.
3.	How will you decide the storage capacity of elevated service reservoir?
4.	Explain Hardy cross method in detail.

Module-5 Collection of sewage &estimation of its discharge:

1.	Define Sewer. Enlist and explain different types of sewers.
2.	How estimation of dry weather wastewater discharge is carried out.
3.	Explain hydraulic elements of circular sewer, when running full as well a partially full.
4.	Why circular sewers are more preferred for the sewerage system?

Module-6 Sewer laying testing & Appurtenances

1.	Describe the steps of Laying of sewers.
2.	Enlist various sewer appurtenances. Discuss drop manhole with neat sketch.
3.	Sketch and discuss Manhole, Drop manhole and Lamp hole as sewer appurtenances.

Module-7 Unit operations/ processes for wastewater treatment:

1.	Draw a complete flow diagram of Municipal Wastewater Treatment Plant and describe the function of its each unit.
2.	Differentiate between 1. Activated sludge unit and trickling filter 2. Attached growth process and suspended growth process
3.	Define attached growth process. Explain trickling filter with sketch. Discuss design parameters.
4.	Describe the following in detail. (1) Grit Chamber (2) Activated sludge process
5.	Explain sludge digestion and its stages. Also, describe factors affecting sludge digestion.
6.	Write design criteria of horizontal flow grit chamber.
7.	Discuss "Septic tank – A low cot sanitation system."
8.	What are the main features of activated sludge process?
9.	How efficiency of high rate trickling filter is calculated?
10.	Write design criteria of horizontal flow grit chamber.
11.	Give advantages and disadvantages of aerobic digester.