Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–V (NEW) EXAMINATION – WINTER 2020

Subject Code:3150616 Date:03/02/2021

Subject Name:Pipeline Engineering

Time:10:30 AM TO 12:30 PM Total Marks: 56

Instructions:

1. **Attempt any FOUR questions out of EIGHT questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

MARKS

Q.1 **(a)** What is Pumping Station? and List Factors Affecting Site Selection of Pumping Station. **03**

(b) What is Rising Main? Explain How You will Find out Economical Diameter of Rising Main and Head Loss in Rising main. **04**

(c) A City with Population of 1.2 Million has Continuous Water Supply at 250 lpcd. Hourly Consumption is as Follow **07**

Time	LPC
12 Midnight to 5 am	10
5 am to 11 am	95
11 am to 3 pm	30
3 pm to 9 pm	90
9 pm to 12 Midnight	25

Determine The Capacity of Reservoir required for Distribution of Water by Analytical Method if,

- **A.** The Pumping is done 24 Hrs. in a Day
- **B.** The Pumping is done from 5 am to 11 am & 3 pm to 9pm.

Q.2 **(a)** Differentiate between Continuous and Intermittent Water Supply System. **03**

(b) Define DMA? Explain Concept of DMAs with Neat Sketch. **04**

(c) A City with 1 Million Population Poses a Water Demand of 140 LPCD. If The Average Daily Demand of Water is to be Sources from a 2.5 km Away River and The Demand Has to be Supplied in 10 Hrs., Calculate the Size of the Main and B.H.P. of The Pumps Required, If: **07**

(a) One Pipe is to be Used with Velocity 2 m/s.
(b) Pipe is to be Used with Velocity of 1.5 m/s.
(c) Two Pipes to be Used Carrying Equal Discharge with Velocity 1.2 m/s.

Consider the Difference in Water Level of Sump and Reservoir is 30 m, Take Friction Factor as 0.04, and Efficiency of Pump as 80 %.

Q.3 **(a)** How Corrosion Damage can be Prevented in Pipe? **03**

(b) Explain Any one Water Leak Detection System in Detail. **04**

(c) Enlist & Explain Water Distribution Methods them with Sketch. **07**

Q.4 **(a)** Explain Lining Process for Pipe Briefly. **03**

	(b)	Describe Rehabilitation of Pipeline? Explain the Process of Rehabilitation.	**04**
	(c)	What is Water Audit? Explain Major Components of Water Balance Calculation.	**07**
Q.5	**(a)**	Describe Factors Affection Selection of Pipe Material.	**03**
	(b)	Explain Working Process of Air Relief Valve.	**04**
	(c)	Define Water Hammer. What can cause Water Hammer and Explain How to Avoid Water Hammer in Brief.	**07**
Q.6	**(a)**	What is Flow Meter? Enlist Type of Flow Meter.	**03**
	(b)	Explain Methods to Avoid Pressure Surge.	**04**
	(c)	What are the different types of Pipes used for Water Supply? Explain any Two in Detail.	**07**
Q.7	**(a)**	Explain Basic Requirements of Flow Meter.	**03**
	(b)	How Do You Lay a Pipeline?	**04**
	(c)	Enlist Types of Joints in Pipe. Explain Any Two in Detail with Neat Sketch.	**07**
Q.8	**(a)**	What is Zero Velocity Valve? Explain in Brief.	**03**
	(b)	How Pressure Test is Performed?	**04**
	(c)	Explain Spigot and Socket Joint & Mechanical Joint in Detail.	**07**

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