

# 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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