

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER– IV EXAMINATION – SUMMER 2026****Subject Code:3141312****Date:30-05-2026****Subject Name: Municipal Engineering****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Draw a complete outlines of water supply scheme. **03**
 (b) Differentiate between Gravity system and pressurized system of water supply. **04**
 (c) Discuss about the surface water sources with respect to its quality and quantity. **07**
- Q.2** (a) Define the following terms: **03**
 (i) Percolation (ii) Aquifer (iii) Perched aquifer.
 (b) Explain river intake with the help of a neat sketch. **04**
 (c) Enlist and explain various factors which directly affect the per capita water demand. **07**
- OR**
- (c) Explain different types of water demands. **07**
- Q.3** (a) Define the following terms. (i) Non scouring velocity (ii) Dry weather flow (iii) Soil pipe. **03**
 (b) With the help of neat sketch describe hydrants. **04**
 (c) From a clear water reservoir 3 m deep and maximum water level at 30 m, water is pumped to an elevated reservoir at 75 m at the constant rate of 9,00,000 liter/hour. The distance is 1500 m. Give the economical diameter of the rising main and the water horse power of the pump. Neglect minor losses and take $f=0.01$. **07**
- OR**
- Q.3** (a) Define the following terms. (i) Anti siphonage pipe (ii) Self cleansing velocity (iii) invert **03**
 (b) List down the requirements of good distribution system. **04**
 (c) Give the classification of pumps. Explain Rotary pump with its merits and demerits. **07**
- Q.4** (a) Write a short note on sluice valve. **03**
 (b) Differentiate between drop manhole and manhole. **04**
 (c) Write a short note on different types of sewer joints. **07**
- OR**
- Q.4** (a) What precautions should be taken to prevent the explosions in sewers? **03**
 (b) Differentiate between Separate system and Combined system. **04**
 (c) Write a short note on “Various methods of collection for sanitation works”. **07**
- Q.5** (a) Differentiate between drains and sewers. **03**
 (b) Write a short note on maintenance of sewers. **04**
 (c) Write down the procedure for laying of sewer pipes. **07**
- OR**
- Q.5** (a) Why is it necessary to provide sewer appurtenances on the sewer lines? **03**
 (b) Enlist the different types of sewer sections & explain any one with neat sketch. **04**
 (c) Enlist various systems used in House Plumbing. Explain any one in detail. **07**

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV EXAMINATION – SUMMER 2025****Subject Code:3141312****Date:19-05-2025****Subject Name: Municipal Engineering****Time: 10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Give the sequence of units to be installed for a typical water Supply project.	03
	(b) Distinguish between continuous supply system and intermittent supply system.	04
	(c) Enlist and explain the various factors affecting the rate of demand of water.	07
Q.2	(a) Draw a neat sketch of centrifugal pump and shows all the component parts of it.	03
	(b) A city has a population of 60000. It is to be supplied with water at 250LPCD. Calculate B.H.P. of motor to raise the water to an overhead tank 60 m high. The length and diameter of rising main are 300 m and 30 cm respectively. The efficiency of motor is 95% and that of pump is 60%. Assume $f' = 0.04$ and peak hour demand as 1.50 times the average demand. Unit weight of water $\gamma = 1000/\text{m}^3$	04
	(c) Write a short note on reservoir intake with neat sketch.	07
	OR	
	(c) Discuss canal intake with sketch.	07
Q.3	(a) Define trap. Give the classification of trap according to the shape.	03
	(b) Draw a dead end distribution system and highlight its advantages.	04
	(c) Enlist and explain the steps for laying of water supply pipes.	07
	OR	
Q.3	(a) Define following terms: 1. Sullage 2. Intercepting Sewer 3. Invert	03
	(b) Differentiate between conservancy and water carriage system.	04
	(c) Enlist and explain five patterns of collection system of sewage.	07
Q.4	(a) Enlist the factors to be considered while selecting the materials for sewers and explain any one in brief.	03
	(b) Calculate the design flow for which a separate sewer is to be designed with given rate of supply of water is 255 LPCD and for a population of 1000 people.	04
	(c) Enlist Non-circular shapes of sewers and explain following with sketch: 1. Semi-Elliptical 2. Horse-Shoe Section 3. Basket handle	07

OR

- Q.4** (a) What do you mean by surface drains? Explain semi circular surface drain with drawing. **03**
- (b) Define sewer Appurtenances and draw a sketch of Drop manhole. **04**
- (c) Differentiate between followings: **07**
1. Cleanouts and inlets.
 2. Leaping weir and overflow weir

- Q.5** (a) Describe sluice valve with diagram. **03**
- (b) Discuss about collar joint. **04**
- (c) Differentiate between combined sewerage system and separate sewerage system. **07**

OR

- Q.5** (a) Differentiate between gravity and pumping system. **03**
- (b) Explain the significance of minimum and maximum velocities of flow in the design of sewers. **04**
- (c) Enlist and explain the factors affecting on the quantity of storm sewage. **07**

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV (NEW) EXAMINATION – SUMMER 2024****Subject Code:3141312****Date:03-07-2024****Subject Name: Municipal Engineering****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

Marks

- | | | | |
|------------|------------|---|-----------|
| Q.1 | (a) | What is the necessity of water supply scheme in present day community? | 03 |
| | (b) | Explain quality and quantity of surface water. | 04 |
| | (c) | Prepare a list of pumps used in water supply and explain any two. | 07 |
| Q.2 | (a) | Explain the necessity of providing manhole in sewer lines. | 03 |
| | (b) | Differentiate between gravity system and pressurized system of water supply. | 04 |
| | (c) | What are the factors on which location of intake works depend? Draw a neat sketch of river intake and explain its working. | 07 |
| | | OR | |
| | (c) | What are the requirements for good distribution systems? Describe in brief various types of distribution systems. | 07 |
| Q.3 | (a) | What precautions should be taken to prevent the explosions in sewers? | 03 |
| | (b) | Enlist different Storm relief works and explain any one with sketch. | 04 |
| | (c) | Sketch and explain following : 1) Air relief valve 2) Sluice valve | 07 |
| | | OR | |
| Q.3 | (a) | Differentiate between drains and sewers. | 03 |
| | (b) | Write down the procedure for laying of Sewer Pipes. | 04 |
| | (c) | What is the function of hydrants in the distribution system? With the help of neat sketch describe any two hydrants. | 07 |
| Q.4 | (a) | Define : 1) Porosity 2) Permeability 3) Aquifer | 03 |
| | (b) | How the reservoir storage capacity determined? | 04 |
| | (c) | Draw neat sketches and describe the following joints :
1) Expansion joint 2) Flanged joint | 07 |
| | | OR | |
| Q.4 | (a) | What are percussion wells? How do they differ from tube wells? | 03 |
| | (b) | What are the factors that directly affect the per capita demand of a town? Explain any two. | 04 |
| | (c) | Explain: 1) How is routine maintenance of distribution system carried out?
2) How are the leaks in distribution system detected? | 07 |
| Q.5 | (a) | Clearly differentiate between manhole and drop manhole. | 03 |
| | (b) | Explain the system of plumbing. | 04 |
| | (c) | Write a note on sewer materials. State the criteria for selection of sewer materials. | 07 |
| | | OR | |
| Q.5 | (a) | Write a short note on maintenance and cleaning of Sewers. | 03 |
| | (b) | How the sewer lines are tested? What precautions are taken during the back filling of trenches? | 04 |
| | (c) | Enlist the different types of sewer sections & explain any one with neat sketch. | 07 |

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– IV(NEW) EXAMINATION – SUMMER 2023

Subject Code:3141312**Date:19-07-2023****Subject Name:Municipal Engineering****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		Marks
Q.1	(a) What is the importance of Water supply scheme?	03
	(b) Define the following terms: [i] Porosity [ii] Water Bearing stratum [iii] Aquifer [iv] Permeability	04
	(c) Give the classification of sources of water. Explain each source in brief.	07
Q.2	(a) Write a short note on ideal population growth curve.	03
	(b) Differentiate between Gravity system & Pressurized system of water supply.	04
	(c) A town having a population of 60,000 is supplied with a per capita water supply of 180 litres per day. A separate sewer from this town enters a pumping station through a low level sewer at R.L. 120.00 m. This sewage is to be pumped to a high level sewer at R.L. 129.00 m. Assuming that 80% of water reaches the sewer, determine a) size of sump well, b) BHP of pump motor required and c) size of rising main, if the length is 120 m. (Peak flow =3 times the average flow, Velocity of flow in rising mains = 1 m/s, Min. time of pumps running continuously = 15 min, Head losses in bends = 0.4 m, Efficiency of pump =65% and Efficiency of Driving Unit = 75%)	07
	OR	
	(c) What are the factors on which location of intake works depend? Draw a neat sketch of river intake and explain its working.	07
Q.3	(a) Write a short note on “Traps”.	03
	(b) Draw neat sketches and describe the following joints: (i) Expansion joint & (ii) Flanged joint	04
	(c) Under what circumstances pumps are required? What are the main classifications of pumps?	07
	OR	
Q.3	(a) Draw a diagram of Dead end system.	03
	(b) Prepare a list of different types of valves used in water supply and explain any two in brief with neat sketch.	04
	(c) Enlist the distribution systems and explain anyone with a neat sketch, enlisting its merits and demerits.	07
Q.4	(a) What should be the characteristics of materials to be used for sewer construction?	03
	(b) Enlist various systems used in House Plumbing. Explain any one in detail.	04

	(c)	What are the aims and objectives of sewage disposal? Explain in detail.	07
		OR	
Q.4	(a)	Explain the hydrostatic test for laying of new sewer pipelines.	03
	(b)	Enlist different types of Materials for Sewers. Explain any two in detail.	04
	(c)	How does the sewage flow vary from hour to hour, day to day and season to season in what way does this affect the design of sewage system?	07
Q.5	(a)	Draw a neat flow diagram of water supply scheme..	03
	(b)	What factors affect the quantity of storm water flow?	04
	(c)	What are the factors on which location of intake works depend? Draw a neat sketch of Reservoir intake and explain its working.	07
		OR	
Q.5	(a)	What is coefficient of runoff?	03
	(b)	Define the terms: (i) Self-cleaning velocity (ii) Non scouring velocity (iii) Invert (iv) Sullage	04
	(c)	Enlist and explain factors affecting water demand.	07

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-IV (NEW) EXAMINATION – SUMMER 2022

Subject Code:3141312**Date:04-07-2022****Subject Name:Municipal Engineering****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

MARKS

- Q.1**
- | | | |
|-----|---|-----------|
| (a) | What is the importance of Water supply scheme? | 03 |
| (b) | Draw a neat flow diagram of water supply scheme. | 04 |
| (c) | Explain river as a source of water considering the quality and quantity of water. | 07 |

- Q.2**
- | | | |
|-----|--|-----------|
| (a) | What is design period? State the design periods for any three components of water supply scheme. | 03 |
| (b) | A water supply scheme has to design for a city having a population of 100000. Estimate the important kinds of drafts (demands) which may be required to be recorded for an average water consumption of 250 lpcd. Also record the required capacities of the major components of the proposed water works system. | 04 |
| (c) | A town having a population of 60,000 is supplied with a per capita water supply of 180 litres per day. A separate sewer from this town enters a pumping station through a low level sewer at R.L. 120.00 m. This sewage is to be pumped to a high level sewer at R.L. 129.00 m. Assuming that 80% of water reaches the sewer, determine a) size of sump well, b) BHP of pump motor required and c) size of rising main, if the length is 120 m.
(Peak flow = 3 times the average flow, Velocity of flow in rising mains = 1 m/s, Min. time of pumps running continuously = 15 min, Head losses in bends = 0.4 m, Efficiency of pump = 65% and Efficiency of Driving Unit = 75%) | 07 |

OR

- | | | |
|--|---|-----------|
| | (c) Prepare a list of different types of valves used in water supply and explain any two in brief with neat sketch. | 07 |
|--|---|-----------|
- Q.3**
- | | | |
|-----|--|-----------|
| (a) | Write a short note on ideal population growth curve. | 03 |
| (b) | Differentiate between Gravity system & Pressurized system of water supply. | 04 |
| (c) | Enlist the types of layout for water distribution systems and explain any two in detail. | 07 |

OR

- Q.3**
- | | | |
|-----|--|-----------|
| (a) | Describe a river intake with the help of a neat sketch. | 03 |
| (b) | Draw neat sketches and describe the following joints: (i) Expansion joint & (ii) Flanged joint | 04 |

- (c) Under what circumstances pumps are required? What are the main classifications of pumps? **07**
- Q.4** (a) Define the term: (i) Time of Concentration, (ii) Inlet Time & (iii) Time of Travel **03**
- (b) What factors affect the quantity of storm water flow? **04**
- (c) Determine design discharge for a combined system serving population of 75000 with rate of water supply of 150 lpcd. The catchment area is $150 \times 10^4 \text{ m}^2$ and the average coefficient of runoff is 0.70. The time of concentration for the design rainfall is 35 min and the relation between intensity of rainfall and duration is $I = 1000 / (t+20)$. **07**
- OR**
- Q.4** (a) What do you understand by the terms 'self-cleansing velocity' and 'non-scouring velocity' in sewers? **03**
- (b) Write a note on laying of sewers. **04**
- (c) How does the sewage flow vary from hour to hour, day to day and season to season in what way does this affect the design of sewage system? **07**
- Q.5** (a) Explain the hydrostatic test for laying of new sewer pipelines. **03**
- (b) What are the aims and objectives of sewage disposal? **04**
- (c) What are the differences between drains and sewers? What are the requirements of an ideal drain section? **07**
- OR**
- Q.5** (a) What are the requirements of a good trap? **03**
- (b) What should be the characteristics of materials to be used for sewer construction? **04**
- (c) Describe the conservancy and water-carriage system of sanitation. In new developing town which method you will prefer and why? **07**
