

Seat No.: \_\_\_\_\_  
No. \_\_\_\_\_

Enrolment

## GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma Engineering - SEMESTER-V • Examination – SUMMER • 2015

Subject Code: 3350603

Date: 07-05-2015

Subject Name: Water Supply and Sanitary Engineering

Time: 02:30 pm - 05:00 pm

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. English version is considered to be Authentic.

- Q.1** Answer any seven out of ten. **14**
1. Enlist the objectives of water supply engineering.
  2. Enlist the objectives of sanitary engineering.
  3. Enlist various sources of water.
  4. Enlist types of water demand.
  5. Enlist types of water distribution systems.
  6. Enlist various processes involved in water treatment.
  7. Enlist various types of water supply pipe joints
  8. Enlist various methods of sewage collection.
  9. Enlist various types of sewers.
  10. Enlist various types of sewer appurtenances.
- Q.2** (a) Enlist various factors for checking suitability of water and explain any one. **03**  
OR  
(a) Enlist the various criteria considered for a water supply scheme. **03**  
(b) Enlist various types of filters and explain any one. **03**  
OR  
(b) Explain various methods of chlorination of water and explain break point chlorination. **03**  
(c) Enlist advantages and disadvantages of Reinforced cement concrete pipes. **04**  
OR  
(c) Enlist advantages and disadvantages of conservancy system of sewage collection. **04**  
(d) Enlist various characteristics of water and explain any two characteristics. **04**  
OR  
(d) Enlist types of fluctuations in water demand and explain hourly fluctuations in detail. **04**
- Q.3** (a) Enlist different types of bacteria in water and explain diseases caused by them. **03**  
OR  
(a) Differentiate between shallow well and deep well with neat sketches. **03**  
(b) Enlist various criteria for designing a water supply scheme and explain the factors which affect the location of a water treatment plant. **03**  
OR  
(b) Enlist advantages and disadvantages of surface water sources over ground water sources. **03**  
(c) Enlist advantages and disadvantages of trickling filters with neat sketch. **04**  
OR  
(c) Enlist various pipe plumbing tools and explain any one with neat sketch. **04**  
(d) Explain trap and its types, also enlist various requirements of a good trap. **04**

OR

(d) Explain water closet and enlist requirements of a good water closet. **04**

**Q.4** (a) Enlist various methods of sewage disposal and explain any one. **03**

OR

(a) Enlist various common measures for conservation of water and also explain role of public to conserve water in day to day life. **03**

(b) Enlist various aims and principles of house drainage with respect to a house drainage plan with neat sketch. **04**

OR

(b) Explain Bell and spigot joint with a neat sketch. Also enlist requirements of a good sewer joint. **04**

(c) The population of a town as per census are as follows. Calculate the population of the town in decades 2011 and 2021 using the arithmetic increase method. **07**

Year	1951	1961	1971	1981	1991
Population	60,000	81,000	1,20,000	1,59,000	2,10,500

**Q.5** (a) Define design periods of a water supply schemes. Also state value of design period for various components of water supply scheme like: **04**

- (i) storage by dams,
- (ii) treatment units and
- (iii) Water distribution system.

(b) Enlist various methods of population forecasting and explain the graphical method in detail. **04**

(c) Give the standard value of water demand for the followings (any three): **03**

- (i) Hostels, (ii) restaurants, (iii) cinema and theatres
- (iv) Medical quarters, (v) offices (vi) Day schools

(d) Give the standard values of desirable limits for various water quality parameters (any three): **03**

- (i) pH, (ii) Chlorides, (iii) Residual free Chlorine, (iv) Dissolved solids, (v) Total hardness, (vi) E-Coli

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