

Enrollment No: _____

Exam Seat No: _____

C.U.SHAH UNIVERSITY

Winter Examination-2019

Subject Name : Water and Wastewater Engineering

Subject Code : 4TE06WWE1

Branch: B.Tech (Civil)

Semester: 6

Date: 20/09/2019

Time: 10:30 To 01:30

Marks: 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
 - (2) Instructions written on main answer book are strictly to be obeyed.
 - (3) Draw neat diagrams and figures (if necessary) at right places.
 - (4) Assume suitable data if needed.
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Q-1 Attempt the following questions:

(14)

- a) What are the objectives of water treatment?
- b) Differentiate between separate and combined sewerage system.
- c) Mention the need of low cost sanitation system.
- d) Enlist different types of settling tanks.
- e) What is rising main?
- f) Define super chlorination.
- g) What are the requirements of a good distribution system?
- h) Enlist different types of sedimentation tanks.
- i) Give advantages and disadvantages of aerobic digester.
- j) What is per capita demand?
- k) Define Garbage.
- l) Why circular sewers are more preferred for the sewerage system?
- m) What are the main features of activated sludge process?
- n) How you can calculate daily average water demand of your city?

Attempt any four questions from Q-2 to Q-8

Q-2 Attempt all questions.

- (a) Describe the site selection criteria for selecting the site of intake structure. Enlist all the types of intake structures and explain any one in detail. **(07)**



- (b) Give the site selection criteria for the location of water treatment plant. Draw a complete treatment train for the conventional water treatment plant and describe the functions of any two units. (07)

Q-3 Attempt all questions

- (a) What are the different types of filters? Explain any one in detail with neat sketch. (07)
- (b) Enumerate the design considerations for the plain sedimentation tank. (07)

Q-4 Attempt all questions

- (a) Enlist different layouts of distribution network and explain any two types with neat sketches. (07)
- (b) Describe the steps of Laying of sewers. (07)

Q-5 Attempt all questions

- (a) Enumerate the working of a trickling filter with the help of a neat sketch. (07)
- (b) Explain about the sludge digestion process with its stages. (07)

Q-6 Attempt all questions

- (a) Explain in detail with a neat sketch of a septic tank and state its design criteria. (07)
- (b) Discuss the geometrical increase method and incremental increase method of population forecasting in detail. (07)

Q-7 Attempt all questions

- (a) Explain how symbiotic relationship between algae and bacteria is used in oxidation pond used for treatment of sewage. (07)
- (b) What are the requirements of disinfectants? Explain in detail about the various minor methods of disinfection. (07)

Q-8 Attempt all questions

- (a) Why preliminary treatment is needed before primary and secondary treatment of wastewater. Explain working of any two units used for preliminary treatment of wastewater. (07)
- (b) What is water softening? When it is required? Enlist different methods used for water softening and explain any one in detail. (07)

