

Roll No.

24289

B. Tech 5th Sem. (Civil. Engg.)
Examination – December, 2014

WATER SUPPLY & TREATMENT

Paper : CE - 305 - F

Time : Three Hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, Selecting *one* question from each Section. Question No. 1 is *compulsory*. All questions carry equal marks.

1. (i) What is Gravity Conduit ? $4 \times 5 = 20$
- (ii) Define (a) Blow off Valve (b) Non return Valve
- (iii) Write short note on catchment yield.
- (iv) Define Coagulants with examples.

SECTION -A

2. A town has a population detail as given under.
Estimated the future population 2020. Justify the
method you have used. 20

Year	1920	1930	1940	1950	1960	1970	1980
Population	3,00,000	4,40,000	8,95,000	14,50,000	16,13,000	17,93,000	20,00,000

3. (a) What are the four tests to be carried out for physical examination of water quality in a natural river flowing over an alluvial bed ? Explain briefly the procedure and instruments required for carried out the tests. 10
- (b) State the WHO international water quality standards relating to the presence of : Nitrogen content; copper; taste & odour; pH; chloride content. 10

SECTION -B

4. A coagulation treatment plant with a flow of $0.5\text{m}^3/\text{sec}$ is dosing alum at 23 mg/L . No other chemical are being added. The raw water suspended solids concentration is 37 mg/L . The effluent suspended solids concentration is measured at 12 mg/L . The sludge content is 1% by weight & the Sp. gravity of sludge solids is 3.01. What volume of sludge must be disposal of each day ? Based on your result remark with reference to water treatment process. 20

5. (a) What is an infiltration gallery ? Describe briefly with neat sketches. 10
- (b) Write brief notes about deflouridation. 10

SECTION -C

6. (a) Explain the different types of piping materials. Explain any five with their merits and demerits. 10
- (b) Public water supply is conveyed from the source to the centre of supply by combined system. Draw three separate longitudinal sections indicating these systems and show the positions of various details in each. 10
7. (a) What are the necessities of pump usage ? What are the factors involved in the selection of pumps ? 10
- (b) Explain the different type of appurtenances of pipes with neat sketches. 10

SECTION -D

8. Explain the different layout of distribution system with merits and demerits. 20

9. Determine the distribution of flow in the pipe network shown. The head loss h_L may be assumed as kQ^n . The flow is turbulent and pipes are rough. The value of k for each pipe is indicated in Figure. Use Hardy-Cross method.

20

