

1078

**B.E. (Civil Engineering) Fifth Semester  
CIV-504: Environment Engineering – I**

Max. Marks: 50

Time allowed: 3 Hours

**NOTE:** Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Part. Assume missing data suitably, if any. Use of scientific calculator is allowed.

x-x-x

- Q1. (a) Define the terms. i) Trap efficiency of a reservoir ii) Well interference  
(b) Under what conditions is water considered wholesome for drinking?  
©Bring out the causes of failure of pumps.  
(d) Compare the lime soda process and zeolite process of water softening.  
(e) List down the water fixtures commonly used in plumbing works, indicating their ideal requirements.

**PART-A (Marks:2x10=20)**

- Q2. (a) How would you determine the storage capacity of a reservoir using mass curve technique?  
(b) Differentiate between i) Unconfined aquifer and confined aquifer  
ii) Gravity spring and non gravity spring (5,5)

- Q3. (a) Discuss the quality standards required in i) Boiler feed water ii) Agriculture

(b) The analysis of water from a well showed the following results in mg/l :

Ca = 60, Mg = 45, Na = 75, K = 20 .

HCO<sub>3</sub> = 225, SO<sub>4</sub> = 220, Cl = 75

Find the total hardness, carbonate hardness and non carbonate hardness. (4,6)

- Q4. (a) Write notes on i) Hourly variations in water demand

ii) Advantages of water meters in distribution systems



(b) Two sharp ended pipes of diameter 60 mm and 100 mm respectively each of length 100 m are connected in parallel between two reservoirs which have a difference of level of 10 m. If the friction factor for each pipe is 0.35, calculate i) Rate of flow in each pipe and

ii) The diameter of a single pipe 100 m long which would give the same discharge, if it were substituted for the original two pipes. (4,6)

**PART-B (Marks:2x10=20)**

Q5. (a) When is water required to be lifted up by means of pumps in water supply system for towns and cities?

(b) Write notes on

- (i) Boosting of water pressure
- (ii) Economical size of rising main
- (iii) Prime movers for pump operation (4,6)

Q6. (a) Distinguish between i) Fill and draw type and continuous type of sedimentation tank

ii) Plain chlorination and post chlorination

(b) Determine the dimensions of a set of rapid sand filters (gravity type) for treating water required for a population of 8,00,000 with an average rate of demand 225 litres per head per day. (4,6)

Q7. (a) Discuss the procedure followed by an industry in performing environment cost analysis.

(b) Sketch a rain water harvesting system for a multistory building.

© What base line parameter data would you collect for a project related with construction activity

(4,4,2)

X-X-X