

Dr Dharmendra

Roll No.:

20111202

National Institute of Technology, Hamirpur (H.P.)
B.Tech End Semester Theory Examination, 20-11-2023
(session B Timing: 02.30 PM to 05.30 PM)

(2) (53)

Branch: Civil Engineering

Semester: 5th Semester

Course Name: Water Supply and Treatment

Course Code: CE - 312

Time Allotted: 3 Hours

Maximum Marks: 50

Note: 1) Assume Suitable data wherever necessary.
2) All the parts of each section should be answered at one place and in proper sequence as per the question paper.

In case of haphazard answering of questions, 3 marks will be deducted from the total marks scored by a candidate.

1. Q.1 Why some diseases are called water-borne? Classify, Which of the following come under which categories?
- (i) Typhoid
 - (ii) Malaria
 - (iii) Jaundice
 - (iv) Influenza
 - (v) Cholera
- (5)

Q.2 (a) Define 'river intake'? What are the factors which govern the location of an intake structure on a meandering river?

(b) Draw a neat sketch showing the intake arrangements which one you suggest for drawing water for a city water supply plant being fed direct from a 'river under-slucices'. (5+5=10)

Q.3 Describe principle of settling tank? Prove that theoretically the surface loading (Q/A) is a measure of effective removal of particle rather than depth in a sedimentation? Calculate volume of a sedimentation tank to accommodate 2.5hr detention time and a flow rate of 5MLD. Assuming suitable data calculate dimension of water in tank? (2+3+3)

Q. 4 Describe the various processes and mechanism involve in the filtration unit? Compare between the slow sand and rapid sand filter? Calculate the amount of water that can be treated in a day using a square filter of 5 m side dimension with a filter rate of $3L/m^2.s$? (3+4+3= 10)

Q.5 What are different types of disinfection used in water supply? Explain chemistry of chlorination and breakpoint chlorination with help of neat sketch. How different organic and inorganic interfering during chlorination explain with their implications? (10)

Q.6 i. Compare the merits and demerits of the continuous and intermittent system of water supply.
ii. Illustrate with neat sketches the different types of layouts of pipe systems in distributing water, and compare their comparative merits and demerits. (3+4)