Total number of printed pages:2

D/3rd/DCE304

2021

ENVIRONMENTAL ENGINEERING

Full Marks: 100

Time: Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

Q1.

a) What are the common impurities found in natural sources of water and their effects upon its quality (6)

b) Explain in brief the various process which are generally adopted for treating public water supplies (10)

c) Explain break point chlorination (4)

Q2.

a) Differentiate between: (5*3=15)

i) disinfection and sterilization
ii) coagulation and flocculation
iii) mass curve and demand curve
iv) confined aquifer and unconfined aquifer
v) grid iron system and radial system

b) What are the standards for potable water in respect of (5) i)turbidity ii) pH iii) threshold odour intensity iv) total solid v) chloride content

Q3.

a) Explain zones of underground water with a neat sketch (5)

b) Design a set of rapid sand filter unit for 4 million litres per day of supply with a rate of filtration of 4500 litres/hr/m^2. Assume 5% filtered water is required for back wasting. Assume any missing data. (15)

Q4.

a) Discuss in brief the different physical test conduct for the suitability of drinking water (12)

b) What are the various action takes place during the filtration process. Compare slow sand filter and rapid sand filter with regards to rate of filtration, area of bed, frequency of cleaning and bacterial removal efficiency (4+4=8)

Q5.

a) Define the following terms: (16)
sewage, turbidity, detention period, sewer, hardness, aquifer, coagulant, screening

b) Explain dry feeding method of coagulant (4)

Q6

a) Explain the working of slow sand filter with a neat sketch (12)

b) Define aeration and aerator. What are the objectives of aeration process? Mention various types of aerator and explain any one of them (8)