JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATIONS-2022

B.Tech-8th Semester (Civil)

COURSE CODE (3): **18B11CE314** MAX. MARKS: 35

COURSE NAME: **Water Supply Engineering**

COURSE INSTRUCTORS: AKHILESH GANDHI MAX. TIME: 2 Hours

Note: *All questions are compulsory. Marks are indicated against each question in square brackets.*

Q1. a) Explain the theory of Sedimentation (Type-1). Derive the expression for strokes law. (4 Marks)

b) In a continuous flow type sedimentation tank 3 Mtr. deep and 60 Mtr. long, what flow velocity of water would you recommend for effective removal of particles with size .025 mm. The specific gravity of particles is 2.65 and kinematic viscosity is .01 cm2/sec. (3 Marks)

Q.2 a) Explain the theory of filtration. Describe in detail Rapid sand filters. (4 Marks)

b) Design a rapid sand filter to treat 4MLD of water. Make suitable assumptions (4 Marks)

Q.3) Explain the following terms :- (5 Marks)

a) Breakpoint Chlorination

b) Overflow Rate

c) Detention Time

d) Coagulation

e) Displacement Efficiency

Q.4) Explain in detail(with diagrams) different types of water distribution systems. (5 Marks)

Q.5) A city with population of 2 lakhs has to be supplied with water at 180 litres per person per day. The probable hourly variation in the rate of demand is given below:

Period of the day	Percentage of average hourly expected flow
0-1	15
1-2	15
2-3	15

3-4	20
4-5	25
5-6	40
6-7	80
7-8	120
8-9	180
9-10	220
10-11	220
11-12	150
12-13	100
13-14	80
14-15	60
15-16	110
16-17	150
17-18	180
18-19	160
19-20	140
20-21	80
21-22	45
22-23	15
23-24	10

Determine the capacity of balancing reservoir to be provided for balancing the variable demand against a constant rate of pumping. (Pumping is done for 24 Hours) Also mention the rate of pumping required. Solve the problem by using mass curve method. (10 Marks)