

**JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT**  
**T2- EXAMINATION (October - 2017)**  
**B. Tech. (V- SEM.)**

COURSE CODE: 10B11CE514

MAX. MARKS: 25

COURSE NAME: Water Supply Engineering

MAX. TIME: 1.5 HRS

COURSE CREDIT: 4

*Note: Attempt all questions. Assume suitable data if required. Carrying of mobile phone during examinations will be treated as case of unfair means*

1. Design a river intake structure for a population of 80,000 with a per capita demand of 220 l/d including (i) number and size of openings in an intake well; (ii) size, shape and height of intake well and (iii) gravity pipe for raw water connecting intake well and jack well. The R.L of the river bed is 110 m, the R.L of lowest water level is 112 m; the R.L of normal water level is 125m and R.L of high flood level is 130m (6)
2. With neat flow sheet and proper labels illustrate the water treatment systems if the source is from (a) river and (b) lake. (2+2)
3. With a neat sketch, explain the concept of 'air dispersed in water' (3).
4. A settling column analysis is run on suspension type-I which is having a height of 2 m and the initial concentration of well mixed sample of 650 mg/l. Results of the analysis are shown below. Using this table determine (a) theoretical efficiency if the loading rate is  $2.4 \times 10^{-2}$  m/min (b) theoretical efficiency if the loading rate is  $3.0 \times 10^{-2}$  m/min and (c) theoretical efficiency of settling basin with a surface area of  $500 \text{ m}^2$  and  $14,400 \text{ m}^3/\text{d}$  (6)

Time (min)	0	58	77	91	114	154	250
Conc'n remaining (mg/l)	650	560	415	325	215	130	52

5. With a neat sketch, explain the different functional zones in a sedimentation tank (3).
6. Design a circular sedimentation tank to treat a flow of 10MLD (3).