JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY-2008

III B.TECH SUPPLIMENTARY EXAMINATIONS
ENVIRONMENTAL ENGINEERING-I
(CIVIL ENGINEERING)

AUG/SEP-2008

MARK-3 HOUR
MARK-80

ANSWER ANY FIVE QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

1. (a) The populations of a town in 1950, 1960, 1970 and 1980 are 58000, 75000, 90,000 and 135000 respectively. Find the population in 2020 using Arithmetic, Geometric and Incremental increase methods.

(b) Discuss the various factors affecting the Design Water Demand of a City.

2. Discuss the suitability of various surface and ground water sources for use in Municipal and Industrial water supplies with reference to their Quality and Quantity.

3. Discuss in detail, with the help of sketches, the role of following design considerations while designing a Settling/Sedimentation system like a clarifier.

(a) Surface loading

(b) Detention Time

(c) Shape of the Reactor

(d) Depth

(e) Types of Sedimentation.

4. Describe the construction details, and functions of various components of a 'Slow Sand Filter' with the help of a sketch. Explain in detail how it works and the Operation and maintenance problems associated with it. Also explain its design principles.

5. (a) State the functions of a service reservoir and sketch the sectional elevation of the same, showing the various appurtenances.

(b) Discuss with the help of diagrams, various methods of laying out the distribution system.

6. (a) Write short note on BOD.

(b) Calculate 1 day 370 C BOD of sewage sample whose 5-days 200C. BOD is 100 mg/l.

7. (a) Draw a neat sketch to represent a flow diagram of a typical sewage treatment plant and explain the functions of each component.

(b) How sedimentation of sewage is done? Explain in brief the theory of sedimentation. Explain the applications of Stokes law for sewage sedimentation.

8. (a) Design a septic tank for 100 users in a hostel. Assume per capita water demand as 150 litres.

(b) Write a note on soak pit