DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,

LONERE – RAIGAD -402 103

Winter Semester Examination – December - 2019

Branch: Civil Engineering **Sem.:- I**

Subject: - Environmental Engineering (BTCVC504) **Marks: 60**

Date: - 16/12/2019 **Time:- 3 Hr.**

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Instructions to the Students

1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some data is noticed to be missing, you may appropriately assume it and should mention it clearly

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Q1. a) Explain in detail variation in rate of water demand. (6)
Give drinking water quality standards as per BIS 10500 for following parameters
i) pH ii) Hardness iii) Alkalinity iv) Chlorides v) MPN

b) Following figure represents census data for a town. Calculate the future population for the year 2020 by geometrical increase method. (6)

Year	1940	1950	1960	1970	1980	1990
Population in thousand	1,50,000	1,80,000	2.34,000	3,27,000	4,58,000	6,87,960

Q2. a) Derive an equation for Stokes equation to calculate settling velocity of spherical particle in sedimentation tank. (6)

b) A settling tank is designed for an overflow rate of 4000 lit/m^2/hr. Compute percentage of particles of diameter a) 0.05 mm and b) 0.02 mm, will be removed in this tank at 10^0 C? (6)

Q3. a) Explain any two types of water distribution layouts with its advantages and disadvantages. (6)

b) A water distribution network is an equilateral triangle in shape. If inflow at junction A is 60 units and outflow at B and C are 40 and 20 units respectively. Carry out hydraulic analysis of distribution system by using Hardy Cross method and find (6)

corrected flow in each pipe. Take initial value of discharge from A to B =15 units. Take the value of k in equation $h_f = k.Q^2$, for pipe AB= 4, BC = 1 and CA= 2. Take two trials.

Q4. a) Construct a typical flow diagram of sewage treatment plant with Activated sludge process as secondary treatment and explain the function of each unit. Show flow diagram with proper symbols. (6)

b) The BOD of sewage incubated for one day at 30°C has been found out to be 150 mg/Lit. Estimate 5 day BOD at 20° C? Assume k=0.12 /day, (Base 10). (6)

Q5. a) Classify solid wastes based on source. Give appropriate examples (6)

b) Explain following composting methods in detail (6)
   i) Bangalore method
   ii) Indore method

Q6. a) Enlist various control equipment used for particulate removal. Explain any two Control equipment in detail. (6)

b) What is Lapse rate and inversion? (6)
Write in detail different stability conditions affecting dispersion of air pollutants.

****End Paper****