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Roll No

CE-4003-CBGS

B.E., IV Semester

Examination, December 2020

Choice Based Grading System (CBGS)

Water Supply and Waste Water Engineering - I

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.

ii) All questions carry equal marks.

1. a) What are the two major types of sources of water supplies?
Discuss the comparative merits and demerits of both these
types of sources. 7
- b) Write a short note on provision for 'fire demand' in water
supply. 7
2. Write short note on following chlorination. 14
 - i) Plain chlorination
 - ii) Pre chlorination
 - iii) Post chlorination
 - iv) Double chlorination
 - v) Break point chlorination
 - vi) Super chlorination
 - vii) Dechlorination
3. a) Illustrate with sketches the different types of layouts of
pipe systems in distributing water. 7
- b) Explain the Hardy cross method used for pipe network
analysis in water distribution system. 7

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4. a) State the types of sewers used in sewerage system giving their sketches. Comment on their hydraulic properties. 7
b) Under what circumstances is pumping of sewage necessary? What types of pumps would you recommend for pumping sewage and why? 7
5. Determine the ultimate BOD of a waste water sample which was subjected to the BOD determination as follows:
6ml of waste water containing no Dissolved Oxygen(DO) was mixed with 294 ml of diluted water containing 8.6 mg/L of DO. After incubation at 20°C for 5 days, the Do of mixture was 5.4mg/L. BOD rate constant K to the base e is 0.25/d. 14
6. Answer all part in short 14
a) Enumerate the amount of total solids present in waste water.
b) Calculate one day 37°C BOD of sewage sample whose 5-days 20°C BOD is 100 mg/L.
c) BOD/COD ratio
d) Give the flow diagram of activated sludge process.
e) Composition of municipal sewage
f) Functions of sedimentation tank
g) Application of any one of the coagulants.
7. a) Give the maximum acceptable limits of following for the public drinking water 7
i) Turbidity
ii) Colour
iii) Hardness
iv) pH
v) Fluorides
vi) Nitrates
vii) Phenolic substances

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- b) Assuming Geometric rate of growth of population of a town calculate the population of the town in the year 2031 with the help of the following census records of the population. 7

Year	1981	1991	2001
Population in thousands	258	495	735

8. Write short note on: 14
- a) Water borne diseases
 - b) Hardness of water
 - c) Oxygen sag curve
 - d) Self purification of streams
