

Code No: 135CE**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech III Year I Semester Examinations, May/June - 2019****ENVIRONMENTAL ENGINEERING****(Common to CE, MIE)****Time: 3 hours****Max. Marks: 75****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A**(25 Marks)**

- 1.a) Define Arithmetical Increase method. [2]
- b) What are the recommended values in LPCD of water supply for domestic needs? [3]
- c) What are the factors that influence sedimentation process? [2]
- d) Define coagulation. Mention different chemical coagulants used in water treatment. [3]
- e) Mention Hazen-Williams formula. [2]
- f) Give examples for various types of pipes used in water supply projects. [3]
- g) What are the advantages of Inverted Siphon? [2]
- h) What is sewage pumping station? Mention the design consideration of sitting and orientation of each pumping station. [3]
- i) Give the formula of head loss through clean flat bar screens. [2]
- j) Difference between Screening and Grit removal. [3]

PART - B**(50 Marks)**

- 2.a) What are the chemical tests to be conducted to the water? Explain briefly.
- b) Mention the factor to consider during design of intake structures. [5+5]

OR

- 3.a) What is meant by fluctuations in rate of demand in Water Quantity estimation and how it is calculated.
- b) Explain Infiltration Gallery with Operation and maintenance aspects. [5+5]

- 4.a) Give the formula of stokes law and where it is used.
- b) Write about disinfection kinetics and explain about break point reaction. [3+7]

OR

- 5.a) What is Multimedia filters?
- b) Design a rectangular sedimentation tank to treat 2.4 million liters raw water per day. The detention period may be assumed to be 3 hours. [3+7]

- 6.a) Explain about grid iron system with neat sketch.
b) Write about Dry Weather flow and which are the factors indicate the occurrence of Dry Weather flow. [6+4]

OR

- 7.a) List and explain the factors to be considered in selecting pipe materials for water supply.
b) Write short note on the estimation of storm water runoff. [6+4]

- 8.a) How pumping of sewage is different than pumping of fresh water?
b) Write a short note on specific speed of the centrifugal pumps. [5+5]

OR

- 9.a) What are the advantages of Flushing tank and Inverted siphons?
b) Write about the characteristics of sewage. [4+6]

10. Design a grit chamber of population 50,000 with water consumption of 135 LPCD. [10]

OR

- 11.a) Write a short note on skimming tank.
b) Explain in detail the process flow of trickling filters. [4+6]

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