

Code No: 126AA

R13**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech III Year II Semester Examinations, April - 2018****ENVIRONMENTAL ENGINEERING****(Civil Engineering)****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) What is an aquifer. [2]
- b) Explain water demand for fire. [3]
- c) Explain troubles in operation of filters. [2]
- d) Explain jar test in brief. [3]
- e) What is meant by grey water? [2]
- f) Explain what is BOD. [3]
- g) Give waste water characteristics. [2]
- h) What is meant by sewage sickness? [3]
- i) What is meant by bulking of sludge? [2]
- j) What is aerobic and anaerobic sludge digestion? [3]

PART - B**(50 Marks)**

- 2.a) Describe the water demand for various purposes. What are the factors affecting water demand.
- b) Explain different sources of water. [5+5]

OR

3. Discuss in detail different water quality parameters and their testing. [10]
- 4.a) Explain different coagulants used in sedimentation along with the chemical reactions involved.
- b) Describe equivalent pipe method in detail. [5+5]

OR

- 5.a) Discuss different types of layouts of water distribution system.
- b) Explain the theory and working of a rapid gravity filter with neat sketch. [5+5]
6. Discuss in detail sewer appurtenances along with the purpose for which they are used. [10]

OR

- 7.a) Explain different systems of plumbing.
- b) A 20cm diameter sewer with an invert slope of 1 in 300 is running full. Calculate the velocity and the rate of flow in the sewer. Is it self cleaning. Find also the velocity and rate of flow, when the sewer is running half full. Take $n=0.013$. [5+5]

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8.a) What is the purpose of preliminary treatment of sewage? Write a brief note on the various units employed for the same. How are grit and screenings disposed off?

b) With a neat sketch explain ASP.

[5+5]

OR

9.a) Explain the principle and working of a trickling filter with neat sketch.

b) What is the purpose of preliminary treatment of sewage? Write a brief note on the various units employed for the same. How are grit and screenings disposed off?

[5+5]

10.a) Write about soak pit and oxidation ditch.

b) Explain different methods of sludge disposal.

[5+5]

OR

11.a) Explain the design and construction of oxidation pond.

b) What is sludge digestion? What are the factors affecting it?

[5+5]

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