

Code No: RT41011

**R13****Set No. 1**

IV B.Tech I Semester Supplementary Examinations, February - 2019

**ENVIRONMENTAL ENGINEERING – II**

(Civil Engineering)

Time: 3 hours

Max. Marks: 70

*Question paper consists of Part-A and Part-B**Answer ALL sub questions from Part-A**Answer any THREE questions from Part-B*

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**PART-A (22 Marks)**

1. a) Define Sewerage and combined sewer. [3]
- b) What are the different components of pumps? [4]
- c) Define pH of water. [3]
- d) What are the characteristics of fluidized bed reactors? [4]
- e) List out the purpose of usage of membrane reactors. [4]
- f) List out the methods of disposal of sewage. [4]

**PART-B (3x16 = 48 Marks)**

2. a) Explain about the estimation of sewage flow and storm water drainage. [8]
- b) Discuss about the collection and conveyance of waste water. [8]
3. a) Explain briefly about the requirements of pumping stations. [8]
- b) Describe briefly about one pipe system in plumbing. [8]
4. a) Design a circular sewage sedimentation tank for a town having population of 40,000. The average water demand is 120 lts/capita/day. Assume that 70% water reaches at the treatment unit and the maximum demand is 2.7 times the average demand? [8]
- b) Explain briefly about the Grit chambers. [8]
5. a) Describe briefly about the types of trickling filters. [8]
- b) Design a high rate trickling filter plant to treat settled domestic sewage having BOD of 200mg/L for an average flow of 22 mLd to satisfy an effluent BOD<sub>5</sub> of 10mg/L. Adopt peak factor as 2.25. [8]
6. a) Explain briefly about Imhoff tanks. [8]
- b) Design an Imhoff tank to treat the sewage from a town with 40,000 population. The suspended solids in the influent sewage are 130ppm. The water content of the sludge is 5%. If the rate of sewage flow is 135 lts/capita/day. Design the tank with two months storage. [8]
7. a) Write short notes on characteristics of sludge. [8]
- b) Describe briefly about the disposal of sludge in water bodies. [8]