

B.Tech. SEM -VII (Civil) 2014 Course (CBCS) : SUMMER - 2019
SUBJECT: ENVIRONMENTAL ENGINEERING - II

Day: Saturday
Date: 11/05/2019

S-2019-2791

Time: 02.30 PM TO 05.30 PM
Max Marks. 60

N.B. :

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Assume suitable data, if necessary.

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- Q.1 a)** Explain the conditions in which separate and combined system of collection of sewage can be considered. (05)
- b)** What is dry weather flow? What are factors affecting the dry weather flow? (05)
- OR**
- Q.1 a)** What are the sources of wastewater in a city? Explain variations in sewage flow. (05)
- b)** Determine the velocity and discharge through a sewer of 30cm diameter with a bed slope of 1:150 with sewer flowing 0.3 of full depth. (05)
Given : $n = 0.013$ for $d/D = 0.3$ the value of $v/V = 0.776$ and $q/Q = 0.1956$
- Q.2 a)** What is the significance of BOD and COD in treatment of sewage? (05)
- b)** Draw a flow sheet of sewage treatment plant and explain functions of each unit. (05)
- OR**
- Q.2 a)** The 5 day BOD at 20°C of waste water is 200mg/L. Determine ultimate BOD and 4 day BOD at 27°C. Given: rate constant at 20°C = 0.12 and temperature coefficient = 1.047. (05)
- b)** Explain with sketch working of screen chamber. (05)
- Q.3 a)** What is activated sludge process? Explain with sketch. (05)
- b)** Design a high rate trickling filter for the following data; (05)
Sewage flow: 9000m³/d, Recirculation ratio $R = 1.5$,
BOD of raw sewage: 150mg/L,
BOD removal in PST: 30% . Final effluent BOD desired: 30 mg/L.
- OR**
- Q.3 a)** What is sludge volume index? Explain its significance in ASP. (05)
- b)** What is SBR? Explain its theory and working. (05)
- Q.4 a)** What are principles of anaerobic digestion of sludge? Explain (05)
- b)** Explain single stage and two stage digester with sketch. (05)
- OR**
- Q.4 a)** What are different methods of treatment and disposal of sludge? Explain (05)
- b)** Explain factors affecting anaerobic digestion of sludge. (05)
- Q.5 a)** Write a note on: Equalization and neutralization of industrial waste water. (05)
- b)** Explain sugar factory waste water with reference to characteristics of waste water and Treatment of waste water. (05)
- OR**
- Q.5 a)** What are various methods of sampling of waste water? Explain (05)
- b)** Explain for pulp and paper industry waste water with reference to sources of waste water and treatment of waster water. (05)
- Q.6 a)** What is the necessity of rural sanitation? Explain its different components. (05)
- b)** What is the importance of recycle and reuse of waste water? Explain (05)
- OR**
- Q.6 a)** What are the advantages and disadvantages of two pit latrine? Explain (05)
- b)** What is the status of rural sanitation in India? (05)

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