

# ONE TIME EXIT SCHEME

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10CV71

**Seventh Semester B.E. Degree Examination, April 2018**  
**Environmental Engineering - II**

Time: 3 hrs.

Max. Marks:100

**Note: 1. Answer any FIVE full questions, selecting at least TWO questions from each part.**  
**2. Draw neat sketches wherever necessary.**

### PART - A

- 1 a. Explain "Combined system" and "Separate system" of sewerage giving their merits and demerits. (08 Marks)
- b. Explain "Dry weather Flow (DWF)" and explain its variations patterns. Explain the factors on which DWF depends. (12 Marks)
- 2 a. What are the factors that govern the selection of sewer materials? List the types of materials used for sewer construction. (08 Marks)
- b. Explain the concept of self cleaning velocity. (04 Marks)
- c. Design a circular sewer to serve a residential colony in a town with the following data :  
Area of the colony : 40 Hectares ; Population : 80,00 ;  
Per capita consumption : 220 Lpd ; Critical rainfall intensity : 5cm/hr ;  
Available Ground slope : 1 in 900. (08 Marks)
- 3 a. Explain the different shapes of sewers and their applications on the field, with neat sketches. (10 Marks)
- b. Explain with neat sketches of the following :  
i) Manhole ii) Grease & Oil traps. (10 Marks)
- 4 a. Explain the concept of BOD & COD, giving their ability in the waste water management. List their limitations. (12 Marks)
- b. The following observation were made in the laboratory on 2% dilution of waste water :  
D.O. of aerated dilution water = 7.0mg/lit.  
D.O. of diluted sample after 5 days = 2.0 mg/c lit.  
D.O. of original sample of waste water = 0.5mg/liter. Calculate the deoxygenation rate constant of 20°C on 0.23. (08 Marks)

### PART - B

- 5 a. Define Self purification. Explain the factors involves in self purification of Stream River. (04 Marks)
- b. What is Oxygen sag curve? Explain with neat sketches. (04 Marks)
- c. Explain the various zones of purification, with neat sketch. (04 Marks)
- d. Write short notes on : i) Sewage sickness ii) Sewage farming. (08 Marks)
- 6 a. Explain with flow diagram, sewage treatment scheme for a large city. Indicate the different options of secondary treatment. (10 Marks)
- b. Explain the working of a 'grit chamber', with a neat sketch. (05 Marks)
- c. Discuss with a neat sketch any one method of disposal of septic tank effluent. (05 Marks)

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- 7 a. Explain with a neat sketch, the working of a Trickling filter. What is the principal on which it works? (12 Marks)
- b. Design a rectangular tank to treat 4.2 million litres/day of a average demand. Assume velocity of flow 250 m/min. Detention period 2 hrs , total depth of tank 3.6m with free ward of 40cm. (08 Marks)
- 8 a. What is meant by activated sludge? Describe with neat sketches the treatment of sewage by activated sludge process. (12 Marks)
- b. Explain with neat sketches, the working of
- i) Rotating biological contraction      ii) Sludge drying beds. (08 Marks)

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