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Code No. : 31024 S

**VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD**  
**B.E. (Civil Engg.) III Year I-Semester Supplementary Examinations, May/June-2018**

**Environmental Engineering**

Time: 3 hours

Max. Marks: 70

*Note: Answer ALL questions in Part-A and any FIVE from Part-B*

**Part-A (10 × 2 = 20 Marks)**

1. Infer the necessity of protected water supply.
2. Explain the purpose of intake structure. Give the classification of intake structures.
3. Illustrate the principle involved in filtration process.
4. Define the chlorination of water.
5. Differentiate between BOD and COD.
6. Compare Separate and Combined sewerage system.
7. Infer your understanding on preliminary treatment of wastewater.
8. Define Activated Sludge Process with a flowchart.
9. List out the various low cost treatment methods.
10. Identify the merits of sludge disposal methods.

**Part-B (5 × 10 = 50 Marks)**

11. a) Explain the various sources of water. [5]  
b) Forecast the population of a town for two decades using geometric increase method using the population census given below: [5]

Year	1970	1980	1990	2000	2010
Population	55,000	64,000	71,400	80,500	90,100

12. a) Differentiate between Slow Sand and Rapid Sand Filter. [6]  
b) Determine the settling velocity of a spherical particle of diameter 0.001cm, settling in a sedimentation chamber. Assume specific gravity of the particle as 2.65 and kinematic viscosity of water as 0.001cm<sup>2</sup>/s. [4]
13. a) Explain different sewage disposal methods. [5]  
b) Design a combined sewer for a town with population of one lakh in an area of 100 ha. The mean flow of sewage from the town is 150 litres/day/capita with a velocity of 1.2m/s. The intensity of rainfall is 4cm/hr. The coefficient of runoff of the area is 0.50. The ratio of peak to average flow is 1.8. [5]
14. a) Explain the various stages of wastewater treatment with a flowchart. [5]  
b) Illustrate the necessity and working of a trickling filter with a neat sketch. [5]
15. a) Explain sludge digestion with a neat sketch. [7]  
b) How do Imhoff tanks differ from septic tanks in principle of operation? [3]
16. a) Explain the Hardy Cross Method. [5]  
b) Explain the Coagulation process. [5]
17. Answer any *two* of the following:  
a) What are Sewer Appurtenances and summarize them. [5]  
b) Explain the different Aeration techniques used in Activated sludge process. [5]  
c) Discuss the types of solid waste. [5]

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