G.PULLAIAH COLLEGE OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF CIVIL ENGINEERING
ENVIRONMENTAL ENGINEERING

UNIT I

SHORT QUESTIONS

1.Define wholesome water.

2.Write a note on break point of chlorination.

3.Explain BOD.

4.List the water born diseases.

5.Enumerate five physical characteristics of water.

6.Define arithmetic increase method for forecasting population.

7. Enumerate five biological characteristics of water.

8.Define geometrical increase method for forecasting population.

9. List out factors affecting the per capita demand.

10.What are the impurities present in water?

ESSAY QUESTIONS

1.List out the methods used for forecasting future population and explain any four in detail.

2. The population of 5 decades from 1960 to 2000 is given below in table. Find out the population after one, two and three decades. Beyond the last known decade, by using geometric increase method and incremental increase method.

Year	1960	1970	1980	1990	2000
Population	25000	28000	34000	42000	47000

3.Explain various types of demands of water. And explain factors influencing water demand?

4.The population of 5 decades from 1960 to 2000 are given below in table. Find out the population after one, two and three decades. Beyond the last known decade, by using geometric increase method and logistic curve method.

Year	1960	1970	1980	1990	2000
Population	25000	28000	34000	42000	47000

5.Explain incremental increase method of forecasting population. The population of 5 decades from 1960 to 2000 are given below in table. Find out the population after one, two and three decades. Beyond the last known decade, by using incremental increase method.

Year	1960	1970	1980	1990	2000
Population	26000	29000	35000	45000	49000

6..Explain the chemical characteristics and physical characteristics of water.

7.Explain decremented method of forecasting population. The population of 5 decades from 1960 to 2000 are given below in table. Find out the population after one, two and three decades. Beyond the last known decade, by using decremented method.

Year	1970	1980	1990	2000	2001
Population	26000	29000	35000	45000	49000

8.(a) Discuss the various factors affecting the water demand of a city.

(b) Explain various biological characteristics of water.

9(a) Describe the various methods of population forecast and explain any one of them.
(b) What are the usual types of waterborne diseases? Enumerate the bacteria responsible for them.

UNIT II
SHORT QUESTIONS
1.Classify types of filters.
2.What is Chlorine demand?
 3.Mention types of distribution systems.
 4.Enumerate five chemical characteristics of water.
 5.Define decrement decrease method for forecasting population.
6.Define sedimentation process.
7.Enumerate two differences for rapid gravity filter and slow sand filter.
8.Define flocculation and coagulation.
9.List the design components of both rapid gravity filters and slow sand filters.
10.Justify with two statements that "alum is the most effective coagulant".
11. List the design components of both rapid gravity filters and slow sand filters.
12. Mention types of distribution systems.
13.State different types of Coagulants used in water treatment.
14.Write short note on the following: (i) Scour valve. (ii) Check valve.
15. State the various layout of water distribution systems.

ESSAY QUESTIONS
1. Sketch the schematic process flow diagram of water treatment plant. Explain the functions of each unit.
 2. With a neat sketch, explain about the rapid gravity filter.
3.Name and discuss the four mechanisms thought to occur during coagulation. Explain sedimentation briefly.
4.Calculate the area of filtrating media required for treating water by means of rapid sand filter giving the data:Population: 80,000.   Rate of supply: 200lpcd, Maximum demand :1.5 times the average, assume suitable rate of filtration.
 5.Distinguish between slow sand gravity and gravity sand gravity filters with reference to rate of filtration, quantity of sand and size of filter, main treatment process responsible, pre treatment required, and period of cleaning, method of cleaning, loss of head, efficiency of removal of bacteria, turbidity and suitability in water supply schemes.
 6. Explain the sedimentation, coagulation and flocculation process with neat sketches.
7. Describe the construction details and functions of various components of a " Slow Sand Filter" with the help of a sketch. Explain in detail how it works and the operation and maintenance problems associated with it.
8 .Calculate the area of filtrating media required for treating water by means of rapid sand filter giving the data:Population: 80,000.   Rate of supply: 200lpcd, Maximum demand :1.5 times the average, assume suitable rate of filtration.
9.(a) What are the important points to be considered for protected water supply systems?
(b) Explain the design period and factors affecting the design period.
10 (a) What is sedimentation?
(b) Explain different types of sedimentation tanks.
(c) Differentiate between slow and rapid sand filters.

UNIT III
SHORT QUESTIONS
1.Write the decomposition of sewage.
2.Differentiate between Sewer and sewerage.
3.What are the characteristics of waste water?
4.Define the term B.O.D.
5.What is meant by time of concentration?
6.Explain in brief about Man holes.
7.What is conservancy system?
8.What is water carriage system?
9.Give two differences between separate and combined system.
10.What is dry weather flow?
11.List the characteristics of sewage.
12.Give the types of sewers.
13.What is C.O.D.
14.Classify the cycles of decay.

ESSAY QUESTIONS
1.Explain water carriage and conservancy system.
2. Write a short note on sewage forming.
3.The sewage is flowing 4.5 mLD form a primary clarifier to a standard rate trickling filter.The 5 day BOD of the influent is 160 mg/L, the volume of the adopted organic loading is to be 160 g/m3/day and surface loading 2000 L/m2/day. Determine the volume of filter and its depth also calculates the efficiency of this filter unit.
4.The 5 day 300C BOD of sewage sample is 110 mg/L. Calculate its 5 day 200C BOD. Assume the decay constant at 200C is 0.1
5.Explain any two:
(i) Man holes.
(ii) Street inlets.
(iii) Siphon spill way.
6.Explain the maintenance, clearing and ventilation of sewers.
7.Explain about preventive measures against waste water.
8.Describe the classification of sewerage systems.
9. What are the factors to be considered before making selection for the material for sewers?
10. What is meant by time of concentration? What is its importance in the design of storm water sewers?
11.Determine ultimate B.O.D for a sewage having 5-day B.O.D at 20°C as 200 p.p.m. Assume R20 = 0.1 per day.
12.Explain the factors effecting Dry weather flow.

UNIT IV
SHORT QUESTIONS
1. Write the factors affecting sludge digestion and its control.
2.List the advantages and disadvantages of septic tank.
3.What is the necessity of sludge digestion?
4.Draw a lay out a waste water treatment unit.
5.What are the characteristics of waste water?
6.What are cycles of decomposition?
7.List the types of screens.
8.List the types of sedimentation tanks.

ESSAY QUESTIONS
1.Explain the principle of oxidation ponds.
2.Explain the working principle of sludge digestion tank.
3.Explain operation troubles in trickling filter.
4.Explain screening and its types.
5 Describe about skimming tanks and design aspects.
6.What is a trickling filter? State its types.
7. Enumerate various method of sludge disposal.
8.What is septic tank? And explain the design aspects of a septic tank.
9.Discuss in briefly about various methods of disposal of refuse.
10.Explain the design parameters of the grit chambers.
11.Explain the classification of sedimentation process of waste water treatment.
12.Explain the design parameters of sedimentation tank.
13.Explain the Imhoff tanks.

UNIT V
SHORT QUESTIONS
1.State the term solid waste and list out various types of solid wastes.
2.Classify the various types of air pollutants.
3.List the characteristics of solid waste.
4.Define 3 R's.
5.What are the sources of air pollution.
6.What are the sources of the noise pollution.
7.Give two permissible limits of noise pollution.
8.What are the devices used to measure the noise pollution?
9.List 5 air quality standards and limits.
10.List types of transportations involved in solid waste management.
11.What are the different types of disposals of solid waste?
12.What are types of composting methods?
ESSAY QUESTIONS
1.Explain the various engineering systems for solid waste management.
2.Classify various categories of air pollution.
3.State permissible limits of noise pollution.
4.Explain different types of disposal methods for solid waste.
5. Explain different types composting methods.
6.Explain different type of transportation methods for solid waste.
7.Explain the causes for air pollution.
8.Describe the classification and sources of air pollution.
9.Explain the characteristics of any five air pollutants.
10.Explain the various effects of air pollution.