2.5 30255 ENVIRONMENTAL ENGINEERING

UNIT-1 INTRODUCTION:

1.1 Necessity of water supply system
1.2 Development of water supply system

UNIT-2 QUANTITY OF WATER:

2.1 Water demand per capita for domestic and other uses
2.2 Population forecast
2.3 Fire demand
2.4 Design period
2.5 Demand as per B.I.S

UNIT-3 SOURCES OF WATER:

3.1 Surface sources
3.2 Sub-surface sources
3.3 Quality of water obtained from different sources

UNIT-4 QUALITY OF WATER:

4.1 Examination of water
 4.1.1 Physical
 4.1.2 Chemical
 4.1.3 Bacteriological
4.2 Portability of water
4.3 Impurities of water
 4.3.1 Suspended
 4.3.2 Colloidal
 4.3.3 Dissolved impurities
4.4 Permissible standard for potable water
4.5 Effects of impurities if they are more than permissible limits

UNIT-5 TREATMENT OF WATER:

5.1 Flow diagrams of treatment plants
5.2 Function, constructional details, working of
 5.2.1 Aeration unit
 5.2.2 Feeding and mixing devices of chemicals
 5.2.3 Sedimentation
 5.2.4 Coagulation and flocculation unit
 5.2.5 Filtration unit
  5.2.5.1 Slow sand filter
  5.2.5.2 Rapid sand filter

UNIT-6 WASTE WATER TREATMENT:

6.1 Necessity of systematic collection and disposal of waste
6.2 Present status in the state
6.3 Dry waste
6.4 Semi-liquid waste
6.5 Liquid waste
6.6 Terminology related to sanitary engineering

UNIT-7 QUANTITY OF SEWAGE:
7.1 Domestic sewage
7.2 Industrial waste
7.3 Storm water
7.4 Volume of domestic sewage dry weather flow (D.W.F.) and equivalent DWF
7.5 Variation of flow
7.6 Limiting velocities
 7.6.1 Non-silting velocity
 7.6.2 Non-scouring velocity
 7.6.3 Self cleansing velocity
 7.6.4 Transporting velocity
7.7 Depth of flow

UNIT-8 CHARACTERISTICS AND COMPOSITION OF SEWAGE:
8.1 Decomposition of sewage
8.2 Sewage sampling
8.3 Physical and chemical analysis
8.4 Testing of sewage
 8.4.1 Physical test
 8.4.2 Biological test
 8.4.3 Chemical test

UNIT-9. SEWERAGE SYSTEMS:
9.1 Types
 9.1.1 Separate system
 9.1.2 Combined system
 9.1.3 Partially separate system
9.2 Different shapes of sewers

UNIT-10 APPURTENANCES:
10.1 Manholes
10.2 Drop manhole
10.3 Inlets
10.4 Catch basin
10.5 Inverted syphon
10.6 Flushing tanks

10.7 Ventilating shaft
10.8 Lamp holes

UNIT-11. SEWAGE DISPOSAL:
11.1 General composition of sewage
11.2 Strength of sewage
11.3 Land disposal
11.4 Dilution method of disposal

UNIT-12. TREATMENT AND DISPOSAL:
12.1 Primary treatment
12.2 Secondary treatment
12.3 Function and construction of
12.3.1 Screening chambers
12.3.2 Grit chambers
12.3.3 Clarifier chambers
12.3.4 Trickling filters
12.3.5 Aeration tank

Reference Book:
1. Environmental Engineering by Dr. Pushpendra, Er Upendra Singh &Dr. Inder Paul Singh