ENVIRONMENTAL ENGINEERING
SYLLABUS 2022-2023 (OSMANIA UNIVERSITY)

UNIT - I

- Need for planned water supply schemes
- Water demand for industrial and agricultural requirements
- Sources of water
- Water quality requirements for different beneficial uses
- Population forecast Numericals on population forecast & solutions
- Water treatment through:
    - Aeration (presentation) Numericals
    - Coagulation (presentation) Numericals
    - Flocculation (presentation) Numericals
    - Sedimentation (presentation) Numericals

UNIT - II

- Filtration (presentation) Numericals
- Disinfection (presentation) Numericals
- Softening (presentation) Numericals
- Methods of layout of distribution pipes (presentation)
- Design of distribution by Hardy Cross method for simple distribution networks (presentation) Numericals
- Various types of valves and pipes used in water supply systems (presentation)

UNIT - III

- Domestic and stormwater sewage
- Quantity of sewage Numericals
- Sewage flow variations
- Sewer shapes (presentation)
- Design of sewerage systems Numericals
- Operation and maintenance of sewers (presentation)
- Sewage pumping (presentation)
- Sewer appurtenances (presentation)

UNIT - IV

- Self-purification of streams (presentation)
- Concept of B.O.D and C.O.D Numericals (presentation)
- Wastewater treatment
    - Aerobic treatment systems (presentation)
    - Anaerobic treatment systems (presentation)
    - Suspended growth systems (presentation)
    - Attached growth systems (presentation)
- Quality requirements of recycled water for various purposes
- Principles of septic tank Numericals (presentation)

UNIT - V

- Theory and design concepts of
  - Activated sludge process Numericals (presentation)
  - Mechanically aerated lagoons Numericals (presentation)
  - Sequencing Batch Reactor (SBR) (presentation)
  - Waste Stabilization Ponds (WSP) Numericals (presentation)

- Basic concepts of bioremediation (presentation)

PROBLEMS & SOLUTIONS

IMPORTANT QUESTIONS

ADDITIONAL NOTES

IMPORTANT TERMS AND FORMULAE

DESIGN CRITERIA OF

- **AERATION TANK** ⇒ **EXAMPLE PROBLEM**
- **CASCADE AERATOR** ⇒ **EXAMPLE PROBLEM**
- **SCREEN CHAMBER** ⇒ **EXAMPLE PROBLEM**
- **COAGULATION TANK** ⇒ **EXAMPLE PROBLEM**
- **FLOCCULATION TANK** ⇒ **EXAMPLE PROBLEM**
- **SEDIMENTATION TANK** ⇒ **EXAMPLE PROBLEM**
- **FILTRATION PROCESS** ⇒ **EXAMPLE PROBLEM**
- **DISINFECTION PROCESS** ⇒ **EXAMPLE PROBLEM**
- **SOFTENING PROCESS** ⇒ **EXAMPLE PROBLEM**
- **ROTATING BIOLOGICAL CONTACTOR** ⇒ **EXAMPLE PROBLEM**
- **SEPTIC TANK** ⇒ **EXAMPLE PROBLEM**