Need To Know for Wastewater Operator License Exams

Class II Curriculum

Operation of Wastewater Treatment Plants, Volume I:

Chap 5 – Sedimentation and Flotation, Lesson 2
Chap 8 – Activated Sludge B, Lessons 2 & 3
Chap 9 – Waste Treatment Ponds, Lesson 3
Chap 10 – Disinfection and Chlorination, Lessons 2, 4 & 5
Appendix – Math Operation

Wastewater Treatment Plants, Volume II (Fourth Edition)

Chap 11 – Activated Sludge, Lessons 1 & 2
Chap 16 – Laboratory Procedures and Chemistry, Lessons 2 - 4

APC&EC Regulation 3 (PDF File)

The following items are subjects and skills a person should know and understand before taking the Class II examination – Need to know all Class I NTK plus the following:

1. Regulations
   a. What federal agency has the duty of developing and enforcing regulations to protect nations’ waters?
   b. What is the name of the permitting system called that regulates the discharge of pollutants?
   c. Where are the environmental regulations located?
   d. Major goals of the Federal Water Pollution Control Act of 1972
   e. Storm water from pipelines are regulated by?
   f. The Resource Conservation and Recovery Act main statute convening
   g. Penalties for a noncompliance are covered in what federal regulations?
   h. Where is toxic waste disposed?
   i. Material Safety Data Sheet
   j. Conventional pollutants
   k. National Pollutant Discharge Elimination System (NPDES)
   l. AR Regulation 3

2. Biology/Chemistry/Laboratory
   a. Test used to estimate the organic loading
   b. Hypochlorinator
   c. Chlorine leak detection
   d. pH
      i. Range of pH?
      ii. Net change per-unit of pH
   e. Disease-producing bacteria
   f. Oxygen demand
   g. Types of dechlorinating agents
   h. Largest single cause of accidents in labs
   i. Specific Gravity
   j. Chlorine gas
   k. An Imhoff cone
   l. Blanks
   m. Percolation
   n. Laboratory: glassware, errors, sampling, holding times
   o. Hydrogen sulfide gas
   p. Solids: suspended and total

3. Math
   a. Units of flow measurements
   b. Detention time
   c. Pumping rates
   d. Volume
      i. Gallons
      ii. Cubic Feet
e. Temperature calculations
f. Water Horse Power
g. Dosage
   i. 100% concentration
   ii. Less than 100% concentration
h. Type and sizes of Chlorine cylinders
i. Demand
j. Velocity
k. Hydraulic loading of trickling filters
l. BOD calculations
m. A weir overflow rate

4. Operation & maintenance
   a. Screen shutdown procedures
   b. Lock out and tag out
   c. Manhole safety
d. Chlorine leakage
   i. Equipment
   ii. Method
   iii. Ventilation
e. Other plant safety

5. Clarifiers
   a. Average detention time
   b. Location of a primary unit
c. Location of a secondary unit
d. Sludge wasting
e. Settling

6. Trickling Filters
   a. Filter slime
   b. Major parts of Trickling filters
c. Types of media used
d. Units of loading for trickling filters
e. Operation problems of trickling filters

7. Metering
   a. Types of flow metering devices and characteristics
   b. Chlorine metering devices
c. Chart recording

8. Activated sludge
   a. Observations and problems
   b. Types of aeration
c. Sludge age
d. The term “Activated”
e. Diffusers
f. Modes of operation

9. Oxidation ditches
   a. Dissolved oxygen concentration
   b. Parts
c. Controlling MLSS
d. Modification of what type of process

10. Ponds
    a. Types
    b. Effect of wind action
c. Most common type of pond
d. Toxic waste
e. Top of a levee
f. Algae bloom

11. Miscellaneous
    a. Short Circuiting
    b. Shock load
c. Operating practices
d. Infiltration