The following is a general outline to serve as a study guide in preparing for the Grade 1 examination. All areas may not be covered on any one exam, nor does the outline necessarily include all topics, which may appear on an exam. The percentage value shown after each major heading gives the approximate relative value of that area on the exam.

I. General Knowledge approx. 13%
   A. Wastewater Characteristics
   B. Mathematics
   C. Overall Treatment
   D. Certification Laws and Regulations

II. Preliminary Treatment approx. 10%
   A. Design Parameters
   B. Operating Parameters

III. Primary Treatment approx. 10%
   A. Design and Purpose
   B. Operating Parameters
   C. Troubleshooting
   D. Calculations

IV. Secondary Treatment approx. 18%
   A. Types
   B. Operating Parameters
   C. Calculations

V. Solids Handling approx. 10%
   A. Anaerobic Digester
      1. Operating Parameters
      2. Problems-recognition and action
   B. Vacuum Filters
   C. Chemical Usage

VI. Disinfection approx. 12%
   A. Purpose and Application
   B. Factors which Control Disinfection
   C. Calculations

VII. Maintenance approx. 13%
    A. Pumps, Packing
    B. Seasonal Maintenance
    C. Safety

VIII. Laboratory approx. 7%
    A. Sampling
    B. Equipment
    C. Terminology
    D. Test Procedures
    E. Calculations

IX. Safety
    A. Breathing
    B. Laboratory
    C. Electrical

There are several publications available which are useful in preparing for the exam although you will not find it necessary to be familiar with all of them in order to do well on the test.

*The Sacramento Course*

*Standard Methods Latest Edition*

*Water Pollution Control Federal Manuals Nos. 1, 4,11,16, 18, 20*

*The New York Manual*

*ABC Study Guide to the ABC Testing Services for Wastewater Collections Systems and Treatment Plant Operations - Volumes 1 and 2*

*DEM Computer-Assisted Training*

These publications can be reviewed in the Office of Water Resources, RIDEM, 235 Promenade Street, Providence, RI (401) 222-6820.
1. Chlorine is added to wastewater at a constant rate of 100 pounds in 24 hours. The wastewater flow averages 1.4 MGD. How much chlorine would be used in 6 hours?
   
   A. 6 pounds  
   B. 100 pounds  
   C. 37.5 pounds  
   D. 25 pounds  
   E. 30 pounds

2. Effluent Biochemical Oxygen Demand should be in the range of:
   
   A. Greater than 30 mg/l  
   B. Less than 30 mg/l  
   C. Approximately 100 mg/l per million gallons  
   D. BOD is rarely present in effluent, as it is broken down to become TSS

3. A tricking filter will not operate effectively if:
   
   A. The activated carbon filter become porous  
   B. Ponding occurs  
   C. The distribution arms rotate clockwise  
   D. The RAS rate is insufficient

4. Influent total Suspended Solids have a value of 230 mg/l, the final effluent Total Suspended Solids has a value of 6 mg/l the percent removal is:
   
   A. 9.4%  
   B. 99%  
   C. 95%  
   D. 26%  
   E. 97%

   Answers: 1) D  2) B  3) B  4) E