



SERVICE POOL CONTRACTORS GENERAL TRADE KNOWLEDGE EXAMINATION CONTENT INFORMATION

Revised September 14

The General Trade Knowledge portion of the examination is administered daily in Computer Based Testing (CBT) format. It will consist of 60 equally weighted questions. (Note: Both parts of the Service Pool examination will be administered on the first day.)

The examination will have questions relating to the following content areas and necessary knowledge for each area includes:

- reading and interpreting plans and specifications
- reading and interpreting codes
- basic mathematics (addition, subtraction, multiplication, division, calculations of area and volume, fractions, decimals, percentages, calculating the sides of triangles, square roots, powers of numbers, and solving simple algebraic equations for unknown variables)

You should be prepared to respond to examination questions on any of the content areas listed. Questions asked and content areas tested on previous examinations should not be assumed to be the only possible questions to be asked or content areas to be tested on this examination.

The percentage of questions shown for each content area may vary by as much as plus or minus three (3) percent. Please refer to the Candidate Information Brochure and the Reference List for additional information.

Content Area A **10%** **Plumbing Work**

- 1. Replacing and repairing recirculating lines**
 - knowledge of piping materials and applications
 - knowledge of placement
 - knowledge of associated fittings
 - knowledge of valve requirements
 - knowledge of related components

- 2. Pressure testing recirculating lines**
 - knowledge of psi
 - knowledge of hook-up and placement
 - ability to understand pressure test results
 - knowledge of dangers of pressure plugs and pressurized lines
 - knowledge of open trench hazards
 - knowledge of pressure testing techniques

- 3. Replacing and repairing filter equipment**
 - knowledge of filtration requirements
 - knowledge of type of filters
 - knowledge of gauges and valves
 - knowledge of placement of pumps
 - knowledge of types and capacities of motors
 - knowledge of piping requirements
 - knowledge of flow rates and piping pressures
 - knowledge of inlets and outlets

- 4. Replacing and repairing pumps**
 - knowledge of filtration requirements
 - knowledge of types of pumps and pump loads
 - knowledge of grounding versus bonding
 - knowledge of piping techniques and requirements
 - knowledge of pressures and flow requirements

- 5. Replacing and repairing skimmers**
 - knowledge of filtration requirements
 - knowledge of types of skimmers
 - knowledge of skimmer housings
 - knowledge of strainer baskets
 - knowledge of weirs and valves
 - knowledge of vacuum cleaning connections
 - knowledge of flow rates, pressures, and overflow systems

- 6. Installing solar heaters**
 - knowledge of solar heating requirements and practices
 - knowledge of state codes
 - knowledge of solar collectors
 - knowledge of piping techniques and requirements
 - knowledge of pipe fittings
 - knowledge of control requirements

knowledge of pump requirements

7. Installing conventional heaters (gas, heat pump, electric)

knowledge of state codes
knowledge of additional licensure requirements
knowledge of location requirements
knowledge of fire and gas codes
knowledge of sizing and flow rates
knowledge of heat exchangers for gas heaters
knowledge of location of L.P. gas tanks or natural gas line for gas heaters
knowledge of heat pumps for electric heaters
knowledge of immersion elements for electric heaters

8. Installing automatic cleaners

knowledge of piping requirements
knowledge of pipe fitting
knowledge of fittings
knowledge of pumps
knowledge of filtration requirements
knowledge of materials
knowledge of processes for automatic cleaners

9. Installing and repairing automatic feeders

knowledge of piping techniques and requirements
knowledge of feeder chemical hazards and compatibility
knowledge of pipe fitting requirements
knowledge of pipe materials
knowledge of processes for automatic feeders
knowledge of ORP sensor and pH adjuster requirements

10. Calculating proper pipe size

knowledge of hydraulics
knowledge of flow rates

**Content Area B
Deck Work**

10%

1. Repairing and replacing wood decks

knowledge of pressure treated wood
knowledge of other wood protection
knowledge of carpentry
knowledge of foundations
knowledge of composite deck materials

2. Repairing and replacing masonry type decks (concrete, tile, stone, brick, and pavers)

knowledge of sub-base materials
knowledge of work requirements
knowledge of work placement
knowledge of drainage and slope
knowledge of drains and plumbing
knowledge of form work
knowledge of expansion and contraction protection
knowledge of deck finishes
knowledge of reinforcement materials
knowledge of bonding new material to old
knowledge of cleaning in preparation for repair
knowledge of safety requirements
knowledge of expansion joints
knowledge of state codes
knowledge of maintaining strength of the deck
knowledge of soil conditions
knowledge of compaction
knowledge of concrete placement

Content Area C

10%

Tile, Coping and Trim Work

1. Replacing and repairing tile and trim work

knowledge of code requirements
knowledge of material properties
knowledge of specific handling requirements
knowledge of measurements
knowledge of measuring equipment
knowledge of types of grouts and requirements
knowledge of adhesive requirements
knowledge of mortar requirements
knowledge of cleaning
knowledge of leveling techniques and requirements
knowledge of architectural effects
knowledge of mitering

2. Checking for level placement of materials

knowledge of code requirements
knowledge of leveling equipment
knowledge of leveling techniques and requirements

3. Replacing and repairing gutters

knowledge of code requirements
knowledge of leveling
knowledge of slopes
knowledge of concrete
knowledge of finishes

knowledge of tile
knowledge of plumbing
knowledge of inlets and outlets
knowledge of form work

Content Area D
Accessory Work

10%

- 1. Replacing and repairing electrical components**
knowledge of state codes
knowledge of automatic timers
knowledge of lights
knowledge of electrical connections to chlorinating generators
knowledge of electrical connections to heaters
knowledge of electrical connections to pumps
knowledge of automation devices
- 2. Installing diving boards and diving platforms**
knowledge of materials for diving boards
knowledge of installation requirements
knowledge of safety requirements
knowledge of proper placement
- 3. Installing slides**
knowledge of materials for slides
knowledge of installation requirements
knowledge of proper placement
knowledge of safety requirements
- 4. Installing ladders and rails**
knowledge of state codes
knowledge of safety requirements
knowledge of water balancing
knowledge of installation requirements
knowledge of electrical bonding
knowledge of anchoring
- 5. Installing auxiliary lighting**
knowledge of fiber optic lighting
knowledge of low voltage accent lighting
- 6. Installing pool and spa safety barriers**
knowledge of installation procedures
knowledge of state codes
knowledge of safety requirements
knowledge of gate requirements
- 7. Utilizing pool blankets and covers**
knowledge of materials and types

knowledge of the properties of materials
knowledge of safety requirements
knowledge of installation
knowledge of securing installation
knowledge of chemical balance effects

Content Area E
Interior Surface Preparation and Finishing

10%

- 1. Performing interior pool and spa clean-ups**
knowledge of drawdown
knowledge of complete pool draining
knowledge of possible uplift and dewatering
knowledge of chemicals
knowledge of cleaning solutions
knowledge of cleaning procedures
knowledge of safety requirements
knowledge of disposal requirements
- 2. Performing interior pool and spa plastering of pneumatically placed or poured concrete pools**
knowledge of gunite materials, procedures, and requirements
knowledge of shotcrete materials and procedures
knowledge of concrete requirements
knowledge of concrete testing
knowledge of concrete properties
knowledge of form work
knowledge of finishing and brazing
knowledge of surface preparation
knowledge of state codes
knowledge of dewatering procedures
knowledge of plastering materials
- 3. Resurfacing fiberglass pools and spas**
knowledge of materials
knowledge of fiberglass resurfacing practices
knowledge of soils
knowledge of coping
knowledge of leveling and installing
knowledge of fiberglass pool shell construction
- 4. Installing lining in vinyl-lined pools**
knowledge of materials
knowledge of methods
knowledge of soils
knowledge of pool wall construction
knowledge of coping
knowledge of leveling and installing
knowledge of anchoring and bracing

Content Area F
Start Up

10%

- 1. Pre-testing and balancing fill water**
 - knowledge of water chemistry
 - knowledge of testing procedures and requirements
 - knowledge of reagents
 - knowledge of saturation index
 - knowledge of pH
 - knowledge of total alkalinity
 - knowledge of hardness
 - knowledge of metals
 - knowledge of phosphates
- 2. Testing filters and filtration**
 - knowledge of differences between pressure and vacuum filtration
 - knowledge of turnover rates
 - knowledge of pumps
 - knowledge of testing procedures
- 3. Balancing pool and spa water**
 - knowledge of saturation index
 - knowledge of water chemistry
 - knowledge of testing procedures and requirements
 - knowledge of solutions
 - knowledge of reagents
 - knowledge of pH
 - knowledge of total alkalinity
 - knowledge of hardness
 - knowledge of disinfecting
 - knowledge of sanitizing
 - knowledge of safety requirements
 - knowledge of chemical hazards
- 4. Perform equipment startup**
 - knowledge of equipment specifications
 - knowledge of system design
 - knowledge of heating equipment
 - knowledge of filtration equipment
 - knowledge of auxiliary equipment
 - knowledge of pumps

Content Area G
Service and Maintenance

35%

- 1. Demonstrating pool operation to the operator**
 - knowledge of mechanical and hydraulic systems

knowledge of chemical systems
knowledge of general pool care requirements
knowledge of safety requirements
knowledge of equipment
knowledge of daily reports (commercial pools)

- 2. Sanitizing pools and spas through chlorination**
 - knowledge of water chemistry
 - knowledge of chlorinating feeder types
 - knowledge of pH
 - knowledge of pool chemicals
 - knowledge of effects of pool chemicals
 - knowledge of practices of pool chemicals
 - knowledge of safety requirements
 - knowledge of dangers of chlorinating agents
 - knowledge of chlorinating requirements
 - knowledge of chlorinating procedures and requirements
 - knowledge of testing techniques and requirements
 - knowledge of reagents
 - knowledge of adjusting techniques and requirements
- 3. Performing shock treatment or super-chlorination**
 - knowledge of water chemistry
 - knowledge of pH
 - knowledge of pool chemicals
 - knowledge of effects of pool chemicals
 - knowledge of safety requirements
 - knowledge of dangers of chlorinating agents
 - knowledge of chlorinating requirements
 - knowledge of chlorinating procedures and techniques
 - knowledge of chemical balancing
 - knowledge of testing techniques and requirements
 - knowledge of reagents
 - knowledge of adjusting techniques and requirements
 - knowledge of turbidity
- 4. Determining breakpoint chlorination**
 - knowledge of pH
 - knowledge of pool chemicals
 - knowledge of effects of pool chemicals
 - knowledge of practices of pool chemicals
 - knowledge of safety requirements
 - knowledge of dangers of chlorinating agents
 - knowledge of chlorinating requirements

knowledge of chlorinating procedures
knowledge of chemical balancing techniques
and requirements
knowledge of testing techniques and
requirements
knowledge of reagents
knowledge of adjusting techniques and
requirements

5. Sanitizing pools and spas through chlorine

generating salt system
knowledge of electrolysis
knowledge of water chemistry
knowledge of pH
knowledge of pool chemicals
knowledge of effects of pool chemicals
knowledge of practices of pool chemicals
knowledge of safety requirements
knowledge of salt system requirements
knowledge of salt system procedures
knowledge of chemical balancing techniques
and requirements
knowledge of testing techniques and
requirements
knowledge of reagents
knowledge of adjusting techniques and
requirements
knowledge of salt system equipment
maintenance

6. Sanitizing pools and spas through oxidation

knowledge of effects of pool chemicals
knowledge of practices of pool chemicals
knowledge of safety requirements
knowledge of chemical balancing techniques
and requirements
knowledge of testing techniques and
requirements
knowledge of reagents
knowledge of adjusting techniques and
requirements

7. Testing and adjusting pH values

knowledge of water chemistry
knowledge of pH
knowledge of pool chemicals
knowledge of effects of pool chemicals
knowledge of safety requirements
knowledge of dangers of chlorinating agents
knowledge of chlorinating requirements
knowledge of chlorinating procedures
knowledge of chemical balancing techniques
and requirements

knowledge of testing techniques and
requirements
knowledge of reagents
knowledge of adjusting techniques and
requirements

8. Testing and adjusting water hardness

knowledge of water chemistry
knowledge of pH
knowledge of pool chemicals
knowledge of effects of pool chemicals
knowledge of practices of pool chemicals
knowledge of safety requirements
knowledge of dangers of chlorinating agents
knowledge of chlorinating requirements
knowledge of chlorinating procedures
knowledge of chemical balancing techniques
and requirements
knowledge of testing techniques and
requirements
knowledge of reagents
knowledge of adjusting techniques and
requirements

9. Testing and adjusting total alkalinity

knowledge of water chemistry
knowledge of pH
knowledge of pool chemicals
knowledge of effects of pool chemicals
knowledge of safety requirements
knowledge of dangers of chlorinating agents
knowledge of chlorinating requirements
knowledge of chlorinating procedures
knowledge of chemical balancing techniques
and requirements
knowledge of testing techniques and
requirements
knowledge of reagents
knowledge of adjusting techniques and
requirements

10. Testing and adjusting cyanuric acid

knowledge of water chemistry
knowledge of pH
knowledge of pool chemicals
knowledge of effects of pool chemicals
knowledge of safety requirements
knowledge of dangers of chlorinating agents
knowledge of chlorinating requirements
knowledge of chlorinating procedures
knowledge of chemical balancing techniques
and requirements

knowledge of testing techniques and requirements
knowledge of reagents
knowledge of adjusting techniques and requirements

11. Testing and adjusting metals

knowledge of water chemistry
knowledge of pool chemicals
knowledge of effects of pool chemicals
knowledge of safety requirements
knowledge of dangers of chlorinating agents
knowledge of chlorinating procedures
knowledge of chemical balancing techniques and requirements
knowledge of testing techniques and requirements
knowledge of reagents
knowledge of adjusting techniques and requirements

12. Knowledge of the effect of chemical balances on staining

knowledge of safety requirements
knowledge of chemicals
knowledge of chemical properties
knowledge of mixing procedures
knowledge of chemical effects
knowledge of storage procedures and requirements
knowledge of water balancing
knowledge of filtration
knowledge of pool and spa surface finishes

13. Cleaning D.E. filters by pressure backwashing and jet spraying

knowledge of system design
knowledge of pump requirements
knowledge of flow rates
knowledge of safety requirements
knowledge of testing procedures
knowledge of water clarity
knowledge of gauges
knowledge of drainage
knowledge of valves
knowledge of filter media

14. Backwashing sand filters

knowledge of system design
knowledge of pump requirements
knowledge of flow rates
knowledge of safety requirements

knowledge of testing procedures
knowledge of water clarity
knowledge of gauges
knowledge of drainage
knowledge of valves
knowledge of filter media
knowledge of sand filter alternatives

15. Cleaning cartridge filters

knowledge of system design
knowledge of pump requirements
knowledge of flow rates
knowledge of safety requirements
knowledge of testing procedures
knowledge of water clarity
knowledge of gauges
knowledge of drainage
knowledge of valves
knowledge of filter media

16. Disinfecting and sanitizing decks and locker rooms

knowledge of sodium hypochlorite
knowledge of calcium hypochlorite
knowledge of lithium hypochlorite
knowledge of safety requirements
knowledge of chemical properties
knowledge of mixing procedures
knowledge of chemical effects
knowledge of storage procedures and requirements

17. Using other pool sanitizers (e.g., bromine, iodine, ozone, ultraviolet, ions)

knowledge of safety requirements
knowledge of chemicals
knowledge of chemical properties
knowledge of mixing procedures
knowledge of chemical effects
knowledge of chemical balancing techniques and requirements
knowledge of storage procedures and requirements
knowledge of alternate sanitation device installation

18. Using other pool chemicals (e.g., flocculants, algacides, sequestering agents, phosphate treatments, degreasers and defoamers)

knowledge of safety requirements

knowledge of chemicals
knowledge of chemical properties
knowledge of mixing procedures
knowledge of filtration requirements
knowledge of filtration media
knowledge of chemical effects
knowledge of chemical balancing techniques and requirements
knowledge of storage procedures and requirements

19. Testing and adjusting saturation index

knowledge of water chemistry
knowledge of pH
knowledge of pool chemicals
knowledge of effects of pool chemicals
knowledge of safety requirements
knowledge of chlorinating techniques and procedures
knowledge of chemical balancing techniques and requirements
knowledge of testing procedures
knowledge of reagents
knowledge of adjusting procedures

20. Replacing light bulbs and underwater lights

knowledge of different voltage lights
knowledge of proper safety procedures and requirements
knowledge of importance of GFCI requirements
knowledge of safe wiring and sealing water out
knowledge of material specifications
knowledge of bonding and grounding requirements
knowledge of state codes

21. Installing markers and signs to notify the public of safety procedures

knowledge of state codes
knowledge of safety requirements
knowledge of placement
knowledge of location

22. Maintaining and repairing plumbing equipment

knowledge of safety requirements
knowledge of piping requirements
knowledge of fittings
knowledge of pipe fittings
knowledge of piping protection
knowledge of pressure requirements
knowledge of gauges

knowledge of pressure testing
knowledge of flow rates
knowledge of pumps
knowledge of leak detection

23. Maintaining and repairing pool shells

knowledge of leak detection
knowledge of leak testing
knowledge of safety requirements
knowledge of materials
knowledge of the properties of materials
knowledge of crack repair procedures

24. Evaluating and adjusting system requirements

knowledge of system design
knowledge of checking for correct turnover rate
knowledge of checking for filtering media effectiveness
knowledge of checking flow rate
knowledge of testing and adjusting water chemistry
knowledge of checking and clearing strainer baskets
knowledge of automatic cleaner strainers
knowledge of D.E. separation tank cleaning

25. Performing heater maintenance and repair

knowledge of heating system efficiency
knowledge of safety requirements
knowledge of system design
knowledge of system capacity
knowledge of temperature measurements
knowledge of effects of temperature
knowledge of changes in temperature
knowledge of effects of water chemistry on heater components
knowledge of pool chemistry
knowledge of gas and electric requirements
knowledge of state codes
knowledge of additional licensure requirements

**Content Area H
Safety Procedures**

5%

1. Complying with state and federal requirements

knowledge of state and federal codes
knowledge of ADA requirements
knowledge of VGBA requirements

2. Implementing a safety program

knowledge of safety requirements

3. Utilizing accident prevention techniques

knowledge of storage procedures

knowledge of safety requirements

knowledge of transportation requirements and procedures

knowledge of pool closure procedures