

## Sample Exam Questions and Recommended References for ABC's Backflow Prevention Assembly Tester Exam

The following questions are provided as examples of the **types** of questions that will be covered on the ABC standardized Backflow Prevention Assembly Tester (BPAT) certification exam. You will not find any of these questions duplicated on a certification exam, so don't try to memorize the questions and answers. These sample questions should not be used in place of other training materials and courses. The reference material listed at the end of this document will help you better understand the topics and answer similar questions that may be on the certification exam.

### **BASIC CONCEPTS** (30% of the exam)

- Explain hydraulic concepts of backsiphonage, backpressure, and pressure drop
- Identify acceptable/unacceptable backflow prevention installations
- Describe backflow prevention assemblies and devices
- Explain the difference between backflow prevention assemblies and devices
- Describe the public health principles, laws, and regulations

### Sample Questions for Basic Concepts

1. What is the pressure at the base of a 100 foot high standpipe filled with water?
  - A. 0.433 psi
  - B. 2.31 psi
  - C. 14.7 psi
  - D. 43.3 psi
2. A column of water exerts pressure at the bottom of a column due to
  - A. Atmospheric pressure
  - B. Temperature of the water
  - C. Weight of the water
  - D. Minerals in the water
3. What is the primary consideration when deciding whether to install a reduced pressure or a double check valve assembly?
  - A. Available space for installation
  - B. Cost
  - C. Availability of a floor drain
  - D. Degree of hazard
4. A cross-connection is an actual or potential connection that could allow backflow to occur between a potable water system and a piping system that contains potentially unsafe
  - A. Water only
  - B. Water or steam only
  - C. Water, steam, or gases only
  - D. Water, steam, gases, chemicals, or unknown substances
5. What are two types of backflow conditions?
  - A. Backpressure and backsiphonage
  - B. Backsiphonage and capillary action
  - C. Isolation and containment
  - D. Potable and non-potable
6. A link between a potable water supply and any non-potable supply or source is called a(n)
  - A. Air gap
  - B. Barometric loop

- C. Cross-loop
- D. Cross-connection

**OPERATING CHARACTERISTICS** (52% of the exam)

- Recognize indicators of normal and abnormal conditions
- Identify causes of abnormal conditions using proper troubleshooting techniques
- Identify and describe all components of each type of backflow prevention assembly
- Identify operational characteristics of all testable assemblies and non-testable devices
- Describe operation of backflow assembly/components

**Sample Questions for Operating Characteristics**

1. A check valve in an approved backflow assembly must be
  - A. Resilient seated and loaded to the open position
  - B. Resilient seated and loaded to the closed position
  - C. Hard seated and loaded to the open position
  - D. Hard seated and loaded to the closed position
  
2. To avoid creating water hammer, when returning a backflow prevention assembly to service the tester should
  - A. Slowly pressurize the assembly and then slowly pressurize the downstream piping
  - B. Slowly pressurize the downstream piping and then slowly pressurize the assembly
  - C. Close shut-off valve #2 after opening shut-off valve #1
  - D. Close shut-off valve #1 after opening shut-off valve #2
  
3. In a backsiphonage condition, the check valves of a double check assembly will be
  - A. 1<sup>st</sup> check closed and 2<sup>nd</sup> check open
  - B. 1<sup>st</sup> check open and 2<sup>nd</sup> check closed
  - C. 1<sup>st</sup> check open and 2<sup>nd</sup> check open
  - D. 1<sup>st</sup> check closed and 2<sup>nd</sup> check closed
  
4. How many test cocks must an approved double check valve assembly have?
  - A. 3
  - B. 4
  - C. 5
  - D. 8
  
5. A leaking check valve #2 of a reduced pressure assembly and backpressure may cause
  - A. Pressure regulator damage
  - B. Disc compression
  - C. Relief valve discharge
  - D. Check valve #1 to open
  
6. What could be the problem if the relief valve of a reduced pressure assembly discharges intermittently?
  - A. Shut-off valve #1 is closed with backpressure
  - B. Shut-off valve #1 is open with backpressure
  - C. Large pressure fluctuations
  - D. Assembly is improperly sized
  
7. Which of the following backflow assemblies contains an independently operating internally loaded check valve and an independently operating loaded air inlet valve located on the discharge side of the check?
  - A. Atmospheric vacuum breaker
  - B. Double check valve assembly
  - C. Pressure vacuum breaker assembly
  - D. Reduced pressure backflow assembly

8. Which of the following backflow assemblies is allowable for use against a contaminant when the backflow could be caused by backpressure?
  - A. Atmospheric vacuum breaker
  - B. Double check valve assembly
  - C. Pressure vacuum breaker assembly
  - D. Reduced pressure backflow assembly
  
9. While testing check valve #2 of a reduced pressure backflow assembly under backpressure, what would be observed if the second check valve was fouled?
  - A. No differential on the test kit and no discharge from the relief valve
  - B. No differential on the test kit and discharge from the relief valve
  - C. Differential on the test kit and no discharge from the relief valve
  - D. Differential on the test kit and discharge from the relief valve
  
10. What could be determined while testing check valve #1 of a double check valve assembly if the gauge reads 0.7 psid?
  - A. Check valve #1 is defective
  - B. Check valve #2 is defective
  - C. Shut-off valve #1 is leaking
  - D. Shut-off valve #2 is leaking
  
11. What could a tester determine if water is observed flowing from the air inlet of the pressure vacuum breaker prior to starting the test?
  - A. Shut-off valve #1 is open or leaking
  - B. Shut-off valve #2 is open or leaking with backpressure
  - C. Air inlet valve is defective
  - D. Check valve is leaking
  
12. What may be determined when testing the air inlet valve of an approved pressure vacuum breaker if the air inlet valve is observed to open after closing shut-off valve #1?
  - A. Air inlet valve is defective
  - B. Shut-off valve #1 is leaking
  - C. Shut-off valve #2 is leaking with flow downstream
  - D. Shut-off valve #2 is leaking with backpressure

**FIELD TEST EQUIPMENT** (5% of the exam)

- Recognize need for calibration
- Use manufacturer's instructions
- Identify storage and handling requirements
- Describe operational characteristics of each type

**Sample Question for Field Test Equipment**

1. When testing a reduced pressure assembly a test kit is used to determine the difference between
  - A. The water pressure at test cock #1 and test cock #4
  - B. The water pressure at test cock #2 and test cock #4
  - C. High side pressure and low side pressure
  - D. High side pressure and gauge pressure

**FIELD TEST AND INSPECTION PROCEDURES** (13% of the exam)

- Perform notification procedures (advance notification)
- Identify type of assembly
- Record physical identification of assembly
- Identify direction of flow
- Perform preliminary steps prior to testing
- Perform test procedures
- Evaluate test results
- Explain reasons for using proper procedures
- Record necessary information on all required reports
- Provide test results to appropriate parties
- Use necessary tools/test equipment/reference manuals
- Conform to safety procedures
- Identify safety hazards

**Sample Questions for Field Test and Inspection Procedures**

1. While testing a reduced pressure assembly, if the high side hose is connected to test cock #3 and the low side hose is connected to test cock #2, the needle on the test kit gauge will indicate
  - A. No differential
  - B. 15 psid
  - C. The apparent static pressure drop across check valve #1
  - D. The opening point of the differential pressure relief valve
2. A double check valve assembly must be tested at least every
  - A. 6 months
  - B. 12 months
  - C. 18 months
  - D. 24 months
3. When testing the relief opening point on a reduced pressure backflow assembly, the tester needed to open the low control valve more than  $\frac{1}{4}$  turn. What would this indicate?
  - A. Check valve #1 leaks
  - B. Check valve #2 leaks
  - C. Relief valve leaks
  - D. Shut-off valve #2 leaks
4. To test check valve #2 of the reduced pressure assembly for tightness against backpressure, which test kit control valves must be in the open position?
  - A. High and Low
  - B. High and Bypass
  - C. Low and Bypass
  - D. High, Low, and Bypass
5. When setting up the reduced pressure assembly for testing, the tester closes shut-off valve #2, observes the gauge drop to the low end of the scale, and water discharges from the relief. The tester would then
  - A. Continue the test
  - B. Stop the test and fail the assembly
  - C. Open shut-off valve #2 and retest the assembly
  - D. Reset the test kit with the low bleed and retest the assembly

## **CORRECT ANSWERS**

---

### Basic Concepts

- |              |              |              |
|--------------|--------------|--------------|
| 1. Answer: D | 3. Answer: D | 5. Answer: A |
| 2. Answer: C | 4. Answer: D | 6. Answer: D |
- 

### Operating Characteristics

- |              |              |               |
|--------------|--------------|---------------|
| 1. Answer: B | 5. Answer: C | 9. Answer: D  |
| 2. Answer: A | 6. Answer: C | 10. Answer: A |
| 3. Answer: D | 7. Answer: C | 11. Answer: C |
| 4. Answer: B | 8. Answer: D | 12. Answer: C |
- 

### Field Test Equipment

1. Answer: C
- 

### Field Test and Inspection Procedures

- |              |              |              |
|--------------|--------------|--------------|
| 1. Answer: A | 3. Answer: D | 5. Answer: B |
| 2. Answer: B | 4. Answer: B |              |
- 

## **REFERENCE MATERIAL**

---

ABC BPAT exam questions are referenced to the following manuals. This list of references is recommended to help individuals prepare for an ABC BPAT exam.

- Manual of Cross-Connection Control, 9<sup>th</sup> Edition, Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California, KAP-200 University Park MC-2531, Los Angeles, California 90089-2531, Phone: 213-740-2032.
- Recommended Practice for Backflow Prevention and Cross-Connection Control, AWWA Manual M14, American Water Works Association, 6666 West Quincy Avenue, Denver, Colorado 80235, Phone: 800-926-7337.
- Cross-Connection Control Manual, (WH-550) USEPA, Water Resource Center (RC4100), Room 2615, 401 M Street SW Washington, DC 20460, Phone: 202-260-7786.
- Cross Connection Control Manual, Accepted Procedure and Practice Handbook, Pacific Northwest Section-AWWA, PO Box 2050, Clackamas, OR 97015, Phone: 877-767-2992.