

Commercial Food Equipment Service Association (CFESA) Steam Practice Test (Sample)

Study Guide



Everything you need from our exam experts!

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Questions

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- 1. What is a common issue to check for when troubleshooting solenoid valve problems?**
 - A. Proper voltage supply**
 - B. Correct plunger alignment**
 - C. Presence of water in the system**
 - D. Blockage in the actuator**
- 2. What maintenance is crucial for preserving the functionality of a steam trap?**
 - A. Regular cleaning and inspection**
 - B. Replacing valves every year**
 - C. Installing larger pipes**
 - D. Balancing pressure levels**
- 3. What is the consequence of insufficient steam space due to overfilling?**
 - A. Increased heating time**
 - B. Reduced safety of the equipment**
 - C. Higher energy efficiency**
 - D. Decreased steaming capacity**
- 4. What happens when the long probes in a liquid level control short to ground?**
 - A. The unit fills continuously.**
 - B. The control system fails completely.**
 - C. The unit fills once and requires a power reset.**
 - D. The control becomes more efficient.**
- 5. If a tank only fills once and doesn't refill until the power is reset, where is the issue likely located?**
 - A. Shorted long probe circuit**
 - B. Faulty power supply**
 - C. Clogged water inlet**
 - D. Dirty water filter**

- 6. What happens if a solenoid coil is energized when it is not mounted on the valve plunger housing?**
- A. The coil will work normally**
 - B. The coil will overheat and burn out**
 - C. The coil will lose all power**
 - D. The coil will operate inefficiently**
- 7. How does the pounds per hour rating of a relief valve relate to the BTU of the boiler?**
- A. It must be double the BTU rating of the boiler**
 - B. It must be equal to the BTU of the boiler or pressure vessel divided by 1,000**
 - C. It should be less than the BTU of the boiler**
 - D. It can be disregarded as unimportant**
- 8. What basic principle does a pilot reservoir system operate on?**
- A. Hot water flows upwards**
 - B. Water seeks its own level**
 - C. Pressure builds until released**
 - D. Steam rises to push water**
- 9. What is the maximum allowable length for the drain line from a convection steamer?**
- A. 1 to 2 feet**
 - B. 2 to 4 feet**
 - C. 4 to 6 feet**
 - D. 6 to 8 feet**
- 10. What is the primary reason for replacing steam generators?**
- A. Noise issues**
 - B. Scale build up and corrosion**
 - C. Defective electrical parts**
 - D. Poor steam output quality**

Answers

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1. A
2. A
3. B
4. C
5. A
6. B
7. B
8. B
9. B
10. B

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Explanations

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1. What is a common issue to check for when troubleshooting solenoid valve problems?

- A. Proper voltage supply**
- B. Correct plunger alignment**
- C. Presence of water in the system**
- D. Blockage in the actuator**

A common issue to check for when troubleshooting solenoid valve problems is proper voltage supply. Solenoid valves operate based on electromagnetic principles, requiring a specific voltage to activate the coil that opens or closes the valve. If the voltage supply is inadequate, fluctuating, or completely absent, the solenoid will not function correctly, leading to issues such as the valve remaining closed or open when it should be in the opposite state. Therefore, verifying that the correct voltage is reaching the solenoid is essential for diagnosing and resolving functionality issues. While checking for correct plunger alignment, presence of water in the system, or blockage in the actuator can be important in certain troubleshooting scenarios, these do not directly address the fundamental operation of the solenoid valve itself as related to its electrical activation. An incorrect voltage supply can lead to failure of the solenoid to operate, highlighting its significance in troubleshooting.

2. What maintenance is crucial for preserving the functionality of a steam trap?

- A. Regular cleaning and inspection**
- B. Replacing valves every year**
- C. Installing larger pipes**
- D. Balancing pressure levels**

Regular cleaning and inspection of steam traps is crucial for preserving their functionality because these traps play an essential role in removing condensate and non-condensable gases from steam systems. Over time, dirt, scale, and other debris can accumulate inside the steam trap, leading to blockages that inhibit its ability to operate effectively. By performing routine cleaning, technicians ensure that the trap remains unobstructed and functions properly, thereby maintaining system efficiency and preventing potential failures that could lead to costly downtime or damage. In addition to cleaning, inspections are vital for identifying wear and tear or any signs of malfunction early on. This proactive approach assists in addressing issues before they escalate into more serious problems, ensuring the longevity and reliability of the steam trap and the overall steam system. While other maintenance practices may seem important, such as replacing valves or adjusting pressure levels, they do not directly address the specific operational needs of steam traps as cleaning and inspection do. Therefore, focusing on regular cleaning and inspection is essential for keeping steam traps in optimal working condition.

3. What is the consequence of insufficient steam space due to overfilling?

- A. Increased heating time**
- B. Reduced safety of the equipment**
- C. Higher energy efficiency**
- D. Decreased steaming capacity**

Insufficient steam space due to overfilling can lead to reduced safety of the equipment for several reasons. When a steam boiler is overfilled, it can create excessive pressure and the potential for dangerous situations, such as the risk of exploding or leaking steam. The steam space is designed to allow for the proper expansion of steam and to help manage the pressure within the system. When this space is compromised, the equipment may operate outside of its intended parameters, leading to stress on the components, increasing the likelihood of mechanical failure, and potentially putting operators at risk. This emphasis on safety is crucial in any commercial food service context, as equipment failure can lead not only to costly repairs but also pose significant hazards to personnel working in those environments. Therefore, maintaining appropriate steam levels is essential for both the safe operation of the equipment and the protection of those who operate it.

4. What happens when the long probes in a liquid level control short to ground?

- A. The unit fills continuously.**
- B. The control system fails completely.**
- C. The unit fills once and requires a power reset.**
- D. The control becomes more efficient.**

When the long probes in a liquid level control short to ground, the system typically responds by allowing the unit to fill only once and subsequently requires a power reset. This is because a short circuit can cause the control system to recognize a false reading, often leading to an overload or activation of protective measures within the system. As a result, the liquid level control will disconnect or shut down to prevent damage or malfunction. While the unit filling continuously might seem plausible, this usually occurs under normal functioning without a short circuit. Similarly, a complete failure of the control system isn't necessarily the immediate result of a short; the system may still engage in one filling cycle before requiring a power reset. Enhanced efficiency of the control in response to a short circuit is not an expected behavior, as shorts typically lead to erratic or uncontrolled operations rather than improvements in efficiency. Thus, the answer focuses on the necessary process of a one-time fill requiring a power reset to restore normal functionality.

5. If a tank only fills once and doesn't refill until the power is reset, where is the issue likely located?

A. Shorted long probe circuit

B. Faulty power supply

C. Clogged water inlet

D. Dirty water filter

The scenario describes a tank that fills only once and does not refill until the power is reset. This suggests that the system is experiencing a problem with the level sensing mechanism. A shorted long probe circuit can cause the level sensor to malfunction by continuously reporting inaccurate water levels to the control system. As a result, the control mechanism does not trigger the refilling process after the initial fill. In many steam equipment systems, long probes are used to detect water levels within the tank. If the probe circuit is shorted, it may read the water level as sufficient even when it is low, preventing the refill valve from opening. This would lead to the observed issue of only one fill occurring until the entire system is reset, which clears the error state and allows a single refill. Other potential causes, such as a faulty power supply, clogged water inlet, or dirty water filter, would manifest differently. A faulty power supply would likely prevent the operation of the entire system rather than just affecting the refill process. A clogged water inlet could prevent the tank from filling at all, not allowing it to fill even once. A dirty water filter might impact water flow but would not stop the system from recognizing that the tank needs to refill.

6. What happens if a solenoid coil is energized when it is not mounted on the valve plunger housing?

A. The coil will work normally

B. The coil will overheat and burn out

C. The coil will lose all power

D. The coil will operate inefficiently

When a solenoid coil is energized without being properly mounted on the valve plunger housing, it can overheat and potentially burn out. This occurs because the solenoid is designed to create a magnetic field when energized, which in turn moves a plunger or armature. When the coil is not mounted on the plunger, it cannot complete the magnetic circuit effectively, leading to excessive resistance and generating heat. In normal operation, the magnetic field generated is meant to act upon the plunger to perform a specific function, such as opening or closing a valve. Without this mechanical connection, the energy from the coil is not used effectively, causing the winding to continuously draw current without performing its intended action. This excessive draw of current without proper load can lead to overheating of the coil, increasing the risk of damage. This explains why it's crucial for solenoid coils to be properly installed and connected to their respective valve plungers to function safely and efficiently.

7. How does the pounds per hour rating of a relief valve relate to the BTU of the boiler?

A. It must be double the BTU rating of the boiler

B. It must be equal to the BTU of the boiler or pressure vessel divided by 1,000

C. It should be less than the BTU of the boiler

D. It can be disregarded as unimportant

The pounds per hour rating of a relief valve is a critical safety parameter that must be carefully evaluated in conjunction with the BTU (British Thermal Unit) rating of the boiler or pressure vessel. The rationale behind the correct choice is based on the fundamental principles of thermal energy and the need for appropriate steam release to prevent overpressure scenarios. When the BTU capacity of a boiler is known, it indicates the energy expenditure of the boiler; thus, to safely manage the steam produced, the relief valve must have a specified capacity to discharge enough steam. The choice indicating that the relief valve's rating must be equal to the BTU rating divided by 1,000 reflects this relationship, ensuring that the valve can adequately vent steam under emergency conditions—thus preventing potentially hazardous situations such as overpressure that could lead to equipment failure or safety incidents. Understanding this correlation helps technicians size relief valves correctly in relation to the boilers they serve, ensuring that safety standards are met and maintained effectively. The other choices do not align with the necessary safety practices regarding valve sizing and could lead to significant operational issues if not properly addressed.

8. What basic principle does a pilot reservoir system operate on?

A. Hot water flows upwards

B. Water seeks its own level

C. Pressure builds until released

D. Steam rises to push water

A pilot reservoir system operates on the principle that water seeks its own level. This means that in a closed system, water will naturally rise and fall to equalize pressure and maintain stability within the system. This principle is essential for the functionality of pilot reservoir systems in steam applications, as it ensures that the water level within the system remains consistent, allowing for efficient operation and preventing issues such as overheating or inconsistent steam generation. In contrast, concepts like hot water flowing upwards or steam rising to push water relate more to specific scenarios rather than the fundamental operating principle of the pilot reservoir system itself. Similarly, mentioning pressure building until released is more associated with pressure relief valves or steam systems' operation but does not directly define the basic functioning of a pilot reservoir. Therefore, water seeking its own level is a core tenet that underlies the operation of these systems in maintaining balance and efficiency.

9. What is the maximum allowable length for the drain line from a convection steamer?

- A. 1 to 2 feet**
- B. 2 to 4 feet**
- C. 4 to 6 feet**
- D. 6 to 8 feet**

The maximum allowable length for the drain line from a convection steamer is typically defined for safety and efficiency reasons. A drain line that exceeds the appropriate length can lead to several issues, such as improper drainage, potential clogs, and inadequate evacuation of steam or water, which can affect the functionality of the steamer. When a drain line is kept within the range of 2 to 4 feet, it helps ensure that gravity effectively aids in the drainage process, minimizing the risk of backflow or wasted time waiting for water to drain. This distance strikes a balance between practical installation considerations and operational efficiency, ensuring that the equipment functions as intended and that the hygiene and safety standards are met. Drains shorter than this may not effectively accommodate the requirements of larger or more complicated installations, while longer lengths could introduce risks of stagnation or other complications that could affect the operation of the steamer and compliance with local codes or regulations. Thus, the range of 2 to 4 feet is considered optimal for the drain line connected to a convection steamer.

10. What is the primary reason for replacing steam generators?

- A. Noise issues**
- B. Scale build up and corrosion**
- C. Defective electrical parts**
- D. Poor steam output quality**

The primary reason for replacing steam generators is scale build-up and corrosion. Over time, minerals in the water used for steam generation can accumulate within the generator. This scale can significantly impede the functionality and efficiency of the equipment, leading to reduced steam production and potentially increased energy consumption as the unit struggles to meet demand. Additionally, corrosion can occur due to prolonged exposure of metal parts to high temperatures and moisture, which compromises the structural integrity of the steam generator. Without proper maintenance, scale and corrosion can lead to catastrophic failures, making it crucial to replace affected steam generators to ensure efficiency, safety, and reliability in food service operations. Regularly monitoring the condition of steam generators and addressing scale and corrosion issues can help prolong their lifespan, but once certain thresholds are passed, replacement becomes the most viable option.