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PRACTICE QUESTIONS

CONNECTICUT OCCUPATIONAL TRADES

Z97SEKYQ

CT OE-2 Heating, Piping, and Cooling Operating Engineer

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

Before you begin

What this is

9 practice questions for CONNECTICUT OCCUPATIONAL TRADES Z97SEKYQ , each with its answer key and an explanation. Answer a question before you read its key — the explanation is worth more once you have committed.

If something looks wrong

Send us three things and we will check it:

- the exam code, Z97SEKYQ
- the question number
- the email address on your order

Write to **support@mometrix.net**. We reply within one business day.

QUESTION 1

MULTIPLE CHOICE

Which of the following conditions will cause a properly functioning low-water cutoff (LWCO) on a steam boiler to shut down the burner? (Choose two.)

- ☒ **A** The boiler water level drops below the LWCO probe
- ☐ **B** The steam pressure exceeds the operating pressure control setting
- ☒ **C** The LWCO probe loses contact with the boiler water due to a foaming or low-water condition
- ☐ **D** The boiler water temperature rises above 212°F

ANSWER A - C

WHY The LWCO's purpose is to interrupt burner operation when the water level falls below the safe minimum, either by the probe no longer being submerged or by loss of water contact caused by foaming. Boiler steam pressure is handled by the operating pressure control and pressure safety valve, not the LWCO, and water temperature is not an LWCO input.

QUESTION 2

MULTIPLE CHOICE

A service technician observes that the suction line of a running air-conditioning system is frosting heavily back to the compressor. Which two of the following are the most likely causes? (Choose two.)

- ☒ **A** Restricted metering device (TXV/EEV) or restricted filter-drier
- ☒ **B** Low refrigerant charge
- ☐ **C** Oversized condenser fan motor
- ☐ **D** Low evaporator airflow (dirty coil or blocked filter)

ANSWER A - B

WHY Heavy frost extending back to the compressor indicates refrigerant is returning as a liquid-vapor mix because not all of it boiled off in the evaporator. This is classically caused by an undercharge or by a metering device/drier restriction starving the evaporator. Oversized condenser airflow and low evaporator airflow both cause low suction superheat, not suction-line frost back to the compressor.

QUESTION 3

TRUE FALSE

A combustion-proving (flame-establishing) control on a gas-fired boiler is required to shut off the gas supply if the burner fails to ignite within the trial-for-ignition period.

☒ **A** True☐ **B** False**ANSWER A**

WHY True. Flame-proving controls continuously verify ignition and combustion. If a flame is not established within the trial-for-ignition timing, or if it is lost during operation, the control must close the gas valve to prevent unburned gas from accumulating.

QUESTION 4

SINGLE CHOICE

Which water characteristic is most directly controlled by using softened or demineralized feedwater in a low- to medium-pressure boiler?

☒ **A** Dissolved oxygen content☐ **B** Total hardness and scale-forming minerals☐ **C** Condensate temperature☐ **D** Stack temperature**ANSWER A**

WHY Water softening and demineralization remove hardness ions (calcium and magnesium) that form scale on heat-transfer surfaces. Softened water has not yet been deaerated, so it does not directly control dissolved oxygen — that requires a separate deaerator or chemical scavenger. Condensate and stack temperatures are not properties of the feedwater treatment itself.

QUESTION 5

SINGLE CHOICE

Under EPA Section 608 requirements, which of the following refrigerants has the highest Ozone Depletion Potential (ODP) and is therefore subject to the strictest phase-out?

- ☐ A R-134a
- ☐ B R-22
- ☒ C R-12 (CFC)
- ☐ D R-410A

ANSWER C

WHY CFCs such as R-12 contain chlorine and have the highest ODP (R-12 is defined as ODP 1.0). HCFCs like R-22 have a much lower ODP (≈ 0.055) and were phased out later, while HFCs such as R-134a and R-410A have zero ODP.

QUESTION 6

SINGLE CHOICE

On a hydronic heating system, the device that automatically removes air from the piping and helps maintain system pressurization is called a:

- ☐ A Expansion tank
- ☒ B Air separator / air vent
- ☐ C Y-strainer
- ☐ D Balance valve

ANSWER B

WHY An air separator (with an automatic air vent) is installed to collect and bleed out air and microbubbles from the circulating water. The expansion tank accommodates thermal expansion of the water, the Y-strainer catches debris, and the balance valve is used to set flow rates through circuits.

QUESTION 7

SINGLE CHOICE

A cooling tower's approach temperature is defined as:

- ☐ A The temperature difference between the entering and leaving water
- ☒ B The temperature difference between the leaving water and the entering wet-bulb temperature
- ☐ C The temperature of the water at the tower basin divided by the ambient relative humidity
- ☐ D The difference between the entering wet-bulb and entering dry-bulb temperatures

ANSWER B

WHY Approach is how close the tower cools the water to the ambient wet-bulb temperature — the theoretical limit of evaporative cooling. A smaller approach indicates better tower performance. Range, by contrast, is the difference between entering and leaving water temperatures.

QUESTION 8

SINGLE CHOICE

During combustion analysis of a natural-draft gas-fired appliance, an excessively high stack temperature most likely indicates:

- ☐ A Incomplete combustion and elevated CO
- ☒ B Heat exchanger fouling or insufficient heat-transfer surface condition
- ☐ C Excessive combustion air
- ☐ D A blocked flue draft regulator

ANSWER B

WHY Stack temperature rises when heat is not transferred efficiently to the water or air being heated. The most common causes on a clean-burning gas appliance are fouled or scaled heat exchanger surfaces restricting heat transfer. Excessive combustion air typically lowers stack temperature, and incomplete combustion usually depresses stack temperature while raising CO.

QUESTION 9

SINGLE CHOICE

Two centrifugal pumps in a chilled-water system are piped in parallel and each is rated for 100 GPM at 80 ft of head. When both pumps operate together, the system flow will be:

- ☐ A 100 GPM at 80 ft of head
- ☒ B Approximately 200 GPM at 80 ft of head
- ☐ C Approximately 200 GPM at 160 ft of head
- ☐ D 50 GPM at 80 ft of head

ANSWER B

WHY Pumps in parallel add their flow capacities at the same head. So two identical 100 GPM @ 80 ft pumps produce roughly 200 GPM at about 80 ft, subject to the system curve. Pumps in series, by contrast, would add head at the same flow.