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37	A	B	C	D	E
38	A	B	C	D	E
39	A	B	C	D	E

PRACTICE QUESTIONS

Technical Standards and Safety Authority (TSSA)

1B-1

OE 1st Class B1

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

Before you begin

What this is

9 practice questions for Technical Standards and Safety Authority (TSSA) 1B-1 , 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, 1B-1
- the question number
- the email address on your order

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

QUESTION 1 SINGLE CHOICE

Under Ontario's Operating Engineers regulation, which authority is responsible for certifying and licensing operating engineers and operating plants in the province?

- ☒ **A** Technical Standards and Safety Authority (TSSA)
- ☐ **B** Ontario Ministry of Labour, Immigration, Training and Skills Development
- ☐ **C** Canadian Standards Association (CSA)
- ☐ **D** Boilers and Pressure Vessels Safety Branch of the federal government

ANSWER A

WHY In Ontario, the Technical Standards and Safety Authority (TSSA) is delegated the responsibility for administering the Operating Engineers certification and licensing program, including issuing certificates of qualification and licensing operating plants under the TSSA's Fuels Safety program and applicable Ontario operating engineers standards.

QUESTION 2 SINGLE CHOICE

On a fire-tube boiler, which component is primarily responsible for directing combustion gases from the furnace to the smokebox and back to the stack?

- ☐ **A** Mud drum
- ☐ **B** Tube sheet
- ☒ **C** Baffles (or firebrick)
- ☐ **D** Safety valve

ANSWER C

WHY Baffles (or firebrick arches) in a fire-tube boiler are installed to lengthen the path of hot combustion gases, forcing them to travel across the tube bank multiple times before exiting through the smokebox and stack. This increases heat transfer efficiency. The mud drum collects sediment, the tube sheet anchors the tubes, and the safety valve protects against overpressure.

QUESTION 3

SINGLE CHOICE

Before lighting off a cold boiler that has been out of service, the operator should first:

- ☐ A Open the main steam stop valve to warm the steam line
- ☒ B Fill the boiler with treated water and ensure proper warm-up venting
- ☐ C Close all valve fittings on the safety valve discharge
- ☐ D Immediately bring the boiler up to full load

ANSWER B

WHY A cold boiler must be filled with properly treated water first, with vents and drains opened as required to expel air and allow gradual expansion. This avoids thermal shock and water hammer. Opening the steam stop before proper warm-up, capping safety valves, or going straight to full load would be unsafe and damaging.

QUESTION 4

SINGLE CHOICE

A low-water condition is observed on a steaming boiler. What is the FIRST correct action for the operator to take?

- ☐ A Add feedwater immediately to restore the level
- ☒ B Shut down the burner and discontinue firing
- ☐ C Open the blowdown valve to verify gauge accuracy
- ☐ D Increase the damper to reduce steam demand

ANSWER B

WHY The priority in a low-water condition is to stop firing immediately and discontinue the heat input to prevent exposing the tubes or crown sheet to flame without water coverage. Adding water to a hot boiler that may have an overheated surface can cause violent flashing. After stopping firing, the operator can investigate the cause and follow standard recovery procedures.

QUESTION 5

SINGLE CHOICE

Which water treatment function is performed primarily to prevent scale formation on the internal heating surfaces of a boiler?

- ☐ A Deaeration
- ☐ B Phosphate treatment
- ☐ C pH reduction
- ☒ D Soften the make-up water using ion exchange prior to the boiler

ANSWER D

WHY Scale forms when hardness (calcium and magnesium) precipitates onto hot boiler tubes. Softening the make-up water externally before it enters the boiler removes hardness ions and is the primary method of preventing scale. Deaeration removes dissolved oxygen (to prevent corrosion), and phosphate treatment controls residual hardness inside the boiler but is not the primary scale-prevention method.

QUESTION 6

SINGLE CHOICE

Under TSSA Operating Engineers expectations, what is the minimum number of safety valves required to be fitted to a power boiler (high-pressure boiler) according to standard Canadian/Ontario practice?

- ☐ A One safety valve of any size
- ☒ B At least two safety valves
- ☐ C At least three safety valves
- ☐ D Safety valves are optional if a rupture disc is installed

ANSWER B

WHY Power boilers are required by code (ASME and adopted Ontario/TSSA standards) to have at least two safety valves of adequate combined capacity. A single safety valve is not acceptable because failure of that one valve could result in catastrophic overpressure. The exact sizing rules (capacity, set pressure, and stagger) are detailed in ASME Section I.

QUESTION 7

SINGLE CHOICE

A boiler's pressure gauge is suspected of being inaccurate. Which action is required to verify gauge accuracy on a routine basis?

- ☐ A Compare the reading against the manometer installed at the feed pump
- ☐ B Drain the gauge and observe whether the needle returns to zero
- ☒ C Compare the reading with the gauge on the steam header or a calibrated test gauge
- ☐ D Tap the gauge face lightly with a finger and watch for needle movement

ANSWER C

WHY Pressure gauge accuracy is verified by comparison against a known accurate reference such as a master/test gauge or an adjacent gauge on the same line under operating conditions. Simply draining the gauge, tapping it, or comparing to an unrelated manometer does not confirm calibration accuracy.

QUESTION 8

SINGLE CHOICE

When blowing down a boiler to control dissolved solids and remove sludge, the operator must:

- ☐ A Open the blowdown valve fully and close it immediately to avoid water hammer
- ☒ B Open the blowdown valve slowly, then close it slowly to avoid thermal shock and water hammer
- ☐ C Increase the firing rate during blowdown to maintain steam pressure
- ☐ D Perform blowdown only when the boiler is at full operating pressure

ANSWER B

WHY Blowdown valves must be opened and closed slowly. Rapid changes in flow and temperature can cause water hammer, thermal shock, and erosion of valves and piping. Blowdown is most effective when performed at or near normal water level, and the firing rate is generally left alone unless the operator is managing steam pressure during the operation.

QUESTION 9

SINGLE CHOICE

Under Ontario's Operating Engineers regulation and adopted standards, who is legally authorized to certify and license operating engineers for power and heating plants?

- ☐ A The Ontario Ministry of Labour
- ☒ B The Technical Standards and Safety Authority (TSSA)
- ☐ C The Canadian Standards Association (CSA)
- ☐ D The Boiler and Pressure Vessel Safety Branch of Ontario

ANSWER B

WHY In Ontario, the Technical Standards and Safety Authority (TSSA) is the delegated authority responsible for administering the Operating Engineers regulation, including certification and licensing of operating engineers. The Ministry of Labour does not perform this function, CSA is a standards-writing body, and there is no separate Boiler and Pressure Vessel Safety Branch performing licensing of operating engineers in Ontario.