

SAMPLE QUESTIONS 3B1 (MULTIPLE CHOICE)

(NOTE: These questions are intended as representations of the style of questions that may appear on examinations, they are not intended as study material and, as such, may not be in line with any current examination syllabus)

Currently all the 3B1 SOPEEC examinations are delivered in a multiple-choice format. Examination candidates have 3.0 hours to answer 100 multiple choice questions. This works out to be 1.8 minutes per question.

To use your time wisely it is recommended that you read through the questions and answer only the questions for which the answer comes to you quickly. Leave other questions and calculation questions for later.

Elevating the steam drum above the bottom drum or header in a watertube boiler _____ circulation.

- A. decreases natural
- B. increases forced
- C. increases natural**
- D. does not affect the

In top-supported steam generating units/boilers, the major anchor point for the positioning of other boiler components is the

- A. steam drum**
- B. furnace slinger tubes
- C. economizer header
- D. steam superheater header

A typical gas supply system of a multi-burner steam generator includes an arrangement commonly termed a _____, which consists of a pair of safety shut-off valves (SSVs) with an automatic vent valve between them.

- A. triple-block and bleed
- B. single-block and bleed
- C. double- block and bleed**
- D. triple- block isolation

The method of creating balanced mechanical draft in a boiler furnace uses a/an _____.

- A. induced fan located at the outlet of the furnace
- B. forced-draft fan and induced-draft fan**
- C. draft fan located before the furnace proper
- D. induced fan located at the inlet of the stack

In a gas-blanketed wet lay-up of a boiler the space above the water is filled with

- A. hydrogen
- B. helium
- C. oxygen
- D. nitrogen**

A low-water fuel cutoff device protects a boiler by shutting off the fuel supply to the burners if the water _____ to a predetermined level.

- A. level rises
- B. level drops**
- C. temperate drops
- D. temperature rises

The most common causes of scale in a watertube boiler are

- A. iron and silica
- B. copper and aluminum
- C. calcium and magnesium**
- D. sodium and manganese

Backwashing consists of _____ through the filter, thus freeing the trapped material from the bed.

- A. varying the water density
- B. increasing the water pressure
- C. decreasing the water pressure
- D. reversing the direction of flow**

The two main methods of pump-shaft sealing are _____ seals.

- A. o-ring and silicone
- B. o-ring and air-pressure
- C. stuffing boxes and silicone
- D. stuffing boxes and mechanical**

Water is stored in a tank at 120°C. The density of the water is 943.1 kg/m³, and the pressure at the bottom of the tank is 55.55 kPa.

What is the water level in the tank?

- A. 5.0 m
- B. 8.5 m
- C. 6.0 m**
- D. 11.0 m

Overlap is characterized by a/an _____ of the weld metal, which is not fused to the base metal.

- A. lack of deposit
- B. local overheating
- C. excessive removal
- D. excessive deposition**

According to ASME Code, Section VIII, Division 1, the maximum _____ of a pressure vessel that is at a specified temperature must be marked on the pressure-vessel nameplate.

- A. fracture pressure
- B. yield point pressure
- C. hydrostatic pressure
- D. allowable working pressure**