

SAMPLE QUESTIONS 2B3 (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 2B3 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.

An AC generator was manufactured with two pairs of poles to work for 50 Hz. This generator will rotate with a velocity of _____ rpm.

- A. 1000
- B. 1500**
- C. 1800
- D. 3600

In a three-phase star connection, the line voltage equals

- A. phase voltage
- B. 0.707 x phase voltage
- C. 1.414 x phase voltage
- D. 1.732 x phase voltage**

The most common method of motor-speed control in shunt and compound DC motors is

- A. varying the field coil resistance with a rheostat**
- B. varying the armature moment of inertia by adding a capacitor
- C. connecting the field coil to a medium frequency AC power supply
- D. varying the voltage of the circuit by connecting armature brushes to AC power

When a synchroscope pointer stops at the 12 o'clock position it means that the

- A. voltage of the system and the alternator are in phase.**
- B. alternator voltage leads the system voltage by 90 electrical degrees.
- C. system voltage leads the alternator voltage by 90 electrical degrees.
- D. voltage of the system and the alternator differ by 180 electrical degrees.

On an AC generator the _____ of the incoming machine is not a condition required for synchronization.

- A. frequency
- B. rotor size**
- C. terminal voltage
- D. phase sequence

A _____ may be defined as a device designed to open and close a switch by non-automatic means and to open the circuit automatically on a predetermined overcurrent.

- A. cartridge fuse
- B. circuit breaker**
- C. double-pole switch
- D. dual-element time-delay fuse

A concern with compressor cooling water systems is that

- A. cooling water contamination of the lubricating oil.
- B. dirty or hard water causes scaling of the water jacket surfaces.**
- C. larger air driers are required to remove the water introduced to the air.
- D. larger after coolers are required to remove the water introduced to the air.

The two main types of refrigeration system evaporators are

- A. open and closed.
- B. dry expansion and oil free
- C. dry expansion and flooded.**
- D. atmospheric and pressurized

What is the difference between a direct and an indirect refrigeration system?

- A. The direct system uses a secondary medium to achieve the required cooling
- B. The indirect system uses a secondary medium to achieve the required cooling**
- C. The direct system utilizes counter flow scrubbers to promote heat transfer in the intercooler.
- D. The indirect system utilizes an indirect compression system, while the direct system uses direct compression.

When a refrigeration system has to be inspected for leaks after its installation, gases, such as dry _____, are typically used as the testing medium.

- A. nitrogen or dry oxygen
- B. hydrogen or dry oxygen
- C. propane or carbon-dioxide
- D. nitrogen or carbon-dioxide**

What are two causes of high condenser pressure?

- A. Compressor surging, ice pluggage in condenser
- B. Too much cooling water, oil entrained in refrigerant
- C. Short circuiting, ammonia leaking across heat exchanger
- D. Insufficient cooling water, Non-condensable gases present**

The thermodynamics of refrigeration is similar to that of heat engines except

- A. heat moves unaided from cold to hot.
- B. the cycle goes in the opposite direction.**
- C. the cycle remains the same as the Laws of Thermodynamics don't change.
- D. vapor compression systems derive their cooling effect from the compression of a liquid refrigerant.