

SAMPLE QUESTIONS 3A1 (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 3A1 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.

Friction is expected to

- A. Help a body's motion
- B. Oppose a body's motion**
- C. Verify a bodies motion
- D. Centralize a body's motion

In mechanics, the velocity of a body that is increasing with time is said to be

- A. escalating
- B. decelerating
- C. retarding
- D. accelerating**

A simple machine lifts a load a distance of 2.7 m, while the effort moves through a distance of 25 m. Calculate the velocity ratio.

- A. 6.75
- B. 9.3**
- C. 25.2
- D. 9.31

For a lever to be in equilibrium, the

- A. clockwise moments must equal zero
- B. counter-clockwise moments must equal zero
- C. lever must have a torqueing effect
- D. clockwise moments must equal the counter-clockwise moments

What is 538 C when converted into Rankine?

- A. 1,004 R
- B. 1,460 R**
- C. 1,432 R
- D. 1,300 R

What is the basic unit of measure for heat?

- A. Newtons
- B. Watts
- C. Joules**
- D. Entropy

Superheated steam has a temperature that is

- A. Referred to as the saturation point
- B. Referred to as the vaporization point
- C. Lower than the saturation temperature for that pressure
- D. Higher than the saturation temperature for that pressure**

The critical temperature of steam corresponding to the critical pressure of 22,090 kPa is

- A. 0°C
- B. 100°C
- C. 374.14°C**
- D. 650 C

Conduction of heat takes place

- A. From a hot surface to a cold surface**
- B. By a difference in density of the substance
- C. In straight lines much like the sun's rays
- D. Even if there is no temperature difference

When the temperature of a body of gas remains constant, Boyle's Law may be stated by which of the following equations

- A. $P_1P_2 = V_1V_2$
- B. $P_2V_1 = P_1V_2$
- C. $P_1V_1 = P_2V_2$**
- D. $P_1V_2 = P_2V_1$

In order for a chemical equation to be balanced

- A. Weights must be added to the beam
- B. The ductile compounds must be removed
- C. Physical changes are excluded
- D. Equal number of atoms must appear on both sides**

Elasticity is the property a body possesses that allows the body to

- A. Return to its original shape after being deformed**
- B. Withstand great deformation under high loads before rupturing
- C. Be rolled into the desired shape without breaking
- D. Remains deformed after the effort causing deformation is removed