

Basic Engineering Common Core (BECC) 2 Practice Test (Sample)

Study Guide



Everything you need from our exam experts!

Copyright © 2025 by Examzify - A Kaluba Technologies Inc. product.

ALL RIGHTS RESERVED.

No part of this book may be reproduced or transferred in any form or by any means, graphic, electronic, or mechanical, including photocopying, recording, web distribution, taping, or by any information storage retrieval system, without the written permission of the author.

Notice: Examzify makes every reasonable effort to obtain from reliable sources accurate, complete, and timely information about this product.

SAMPLE

Questions

SAMPLE

- 1. What does the term "strain" mean in mechanical engineering?**
 - A. The change in length of a material**
 - B. The permanent deformation of a material**
 - C. The ratio of deformation to the original length**
 - D. The force applied to a material**
- 2. What part of the EOSS is used to verify proper valve alignment for each combination of tanks, components, fuel stations, and systems?**
 - A. Valve Diagrams**
 - B. Process Tables**
 - C. Tank tables**
 - D. Alignment Charts**
- 3. Which of the following best describes a stress-strain curve?**
 - A. A representation of temperature over time**
 - B. A graphical representation of force against area**
 - C. A graphical representation of stress versus strain in a material**
 - D. A comparison of elastic and plastic deformation**
- 4. How is the quantity of matter in an object defined?**
 - A. Weight**
 - B. Mass**
 - C. Volume**
 - D. Density**
- 5. What part of the EOP provides locations of tanks and their capacities?**
 - A. System Diagrams**
 - B. Tank status diagrams**
 - C. Capacity Charts**
 - D. Flow Diagrams**

- 6. What is the final step in the ORM process?**
- A. Identify hazards**
 - B. Supervise**
 - C. Assess hazards**
 - D. Make risk decisions**
- 7. What happens to a fuse when there is excess current?**
- A. It expands**
 - B. It melts**
 - C. It glows**
 - D. It adds resistance**
- 8. Flange safety shields are typically constructed of which material?**
- A. Polyester fabric**
 - B. Aluminized glass cloth**
 - C. Steel plating**
 - D. Fiberglass**
- 9. Which element is crucial for hazard identification in ORM despite the timing?**
- A. Planning**
 - B. Assessing**
 - C. Identifying**
 - D. Supervising**
- 10. What is the primary cause of corrosion in metals?**
- A. Mechanical stress applied to metals**
 - B. The electrochemical reaction between the metal and its environment**
 - C. Temperature changes in the environment**
 - D. The presence of specific alloys in the metals**

Answers

SAMPLE

1. C
2. C
3. C
4. B
5. B
6. B
7. B
8. B
9. C
10. B

SAMPLE

Explanations

SAMPLE

1. What does the term "strain" mean in mechanical engineering?

- A. The change in length of a material**
- B. The permanent deformation of a material**
- C. The ratio of deformation to the original length**
- D. The force applied to a material**

In mechanical engineering, "strain" is defined as the ratio of deformation to the original length of a material that has been subjected to an external load. This concept captures how much a material deforms under stress relative to its original dimensions. Strain is a dimensionless quantity because it expresses the change in length (deformation) as a fraction of the original length, allowing engineers to analyze how materials will behave under various loads without concern for the scale of the material involved.

Understanding strain is crucial for assessing the mechanical performance of materials, as it indicates how they might respond to forces and helps in the design of structures and components that can withstand applied loads without failing. This enables engineers to ensure the safety and reliability of structural designs by utilizing knowledge of material properties and strain behavior.

2. What part of the EOSS is used to verify proper valve alignment for each combination of tanks, components, fuel stations, and systems?

- A. Valve Diagrams**
- B. Process Tables**
- C. Tank tables**
- D. Alignment Charts**

The part of the Engineered Operating Support System (EOSS) that is used to verify proper valve alignment for each combination of tanks, components, fuel stations, and systems is referred to as the tank tables. These tables are crucial because they provide a structured format that outlines how different tanks and their associated valves are configured in relation to one another. They typically include information about necessary alignments, the status of each valve, and any specific instructions required to achieve the correct operational setup. Using tank tables helps ensure that operators can easily cross-reference tank and valve configurations to maintain safe and efficient system operations. This allows for precise control of flow between different tanks and systems, which is essential for avoiding issues like cross-contamination or improper fluid distributions. Therefore, tank tables serve a vital role in maintaining operational integrity and system safety.

3. Which of the following best describes a stress-strain curve?

- A. A representation of temperature over time
- B. A graphical representation of force against area
- C. A graphical representation of stress versus strain in a material**
- D. A comparison of elastic and plastic deformation

A stress-strain curve is fundamentally a graphical representation that illustrates the relationship between stress (force per unit area) and strain (deformation relative to the original length) experienced by a material when subjected to stress. This curve provides essential insights regarding the material's mechanical properties, including its elasticity, yield strength, and ultimate tensile strength. The stress-strain curve allows engineers and material scientists to understand how a material behaves under load. Initially, in the elastic region, the material will return to its original shape when the load is removed. As the load increases, the curve depicts the point at which the material begins to deform plastically, indicating that permanent deformation will occur. Understanding the various points and regions on the curve helps predict how materials will perform in real-world applications, which is crucial in design and safety evaluations. While other options offer related concepts, they do not capture the full essence of the stress-strain relationship as accurately as the chosen answer. For example, a representation of temperature over time pertains to thermal properties rather than mechanical behavior. A graphical representation of force against area mostly describes pressure rather than the material's response to stress and strain. A comparison of elastic and plastic deformation, while relevant, is more a subset of topics that can be derived from

4. How is the quantity of matter in an object defined?

- A. Weight
- B. Mass**
- C. Volume
- D. Density

The quantity of matter in an object is defined as mass. Mass is a fundamental property of matter that measures how much matter is contained within an object, regardless of its location in the universe. It is often measured in grams or kilograms. Mass is an intrinsic property, which means it does not change based on the object's environment or the gravitational field acting upon it. Weight, by contrast, is the force exerted on an object due to gravity and depends on both the mass of the object and the acceleration due to gravity at a given location. Therefore, weight is not a direct measure of the quantity of matter. Volume refers to the space an object occupies, which does not directly correspond to the amount of matter contained in that object. Density is the mass per unit volume of a substance and is a derived property that relates mass and volume rather than defining them individually. Thus, mass is the correct term to represent the quantity of matter in an object.

5. What part of the EOP provides locations of tanks and their capacities?

A. System Diagrams

B. Tank status diagrams

C. Capacity Charts

D. Flow Diagrams

The segment of the Engineering Operating Procedure (EOP) that provides detailed information about the locations of tanks and their capacities is the tank status diagrams. These diagrams serve as a visual representation, clearly indicating where each tank is situated within the system and providing specific volumetric data, such as how much fluid each tank can hold. Having this information consolidated in one place aids operators and engineers in planning, monitoring, and maintaining the system's efficiency and safety. System diagrams, while useful for understanding the overall functional layout of processes, do not typically detail the capacities of individual tanks. Capacity charts are primarily focused on maximum or standard storage volumes but may lack the spatial context of where tanks are located. Flow diagrams illustrate the movement of fluids through the system but do not provide specific tank location or volume information. This distinction is essential for effectively managing and utilizing the storage capabilities of the system.

6. What is the final step in the ORM process?

A. Identify hazards

B. Supervise

C. Assess hazards

D. Make risk decisions

In the Operational Risk Management (ORM) process, the final step, which is supervising, plays a crucial role in ensuring that the identified controls and risk mitigation strategies are effectively implemented and adhered to. Effective supervision involves monitoring ongoing operations and activities, making certain that the team follows the established safety measures and risk management practices. This step is essential for maintaining a continuous awareness of risk factors and for making timely adjustments to protocols as needed. By providing oversight during operations, supervision helps to reinforce the importance of risk management and ensures that any newly identified hazards or changes in circumstances are promptly addressed. This proactive approach supports a culture of safety and encourages individuals to remain vigilant about potential risks, thereby enhancing overall operational effectiveness.

7. What happens to a fuse when there is excess current?

- A. It expands
- B. It melts**
- C. It glows
- D. It adds resistance

When excess current flows through a fuse, it causes the fuse element to melt. Fuses are designed to protect electrical circuits by breaking the circuit when the current exceeds a certain level. The fuse contains a metal wire or strip that has a specific melting point. When the current exceeds this threshold, the heat generated by the current flow raises the temperature of the fuse element to the point where it melts, effectively interrupting the flow of electricity and preventing potential damage to the circuit components or reduction of safety hazards. This melting process is essential for the functionality of a fuse, as it ensures that the circuit is protected from overcurrent conditions. The other options do not accurately describe the primary mechanism of a fuse's operation. For example, expansion might occur due to heat but is not the primary action that a fuse takes in response to excess current. Glowing may happen as the fuse heats up, but this is not the defining action that protects the circuit. Adding resistance is not a characteristic of how a fuse functions; instead, it is a simple device designed to fail when necessary, rather than alter its resistance dynamically.

8. Flange safety shields are typically constructed of which material?

- A. Polyester fabric
- B. Aluminized glass cloth**
- C. Steel plating
- D. Fiberglass

Flange safety shields are typically constructed of aluminized glass cloth due to its exceptional heat resistance and durability. This material is designed to withstand high temperatures and provide effective protection against thermal hazards associated with flanges and piping systems. Aluminized glass cloth combines the heat resistance of glass fibers with the reflective properties of an aluminum coating, which helps to dissipate heat and prevent damage to surrounding equipment and personnel. While polyester fabric, steel plating, and fiberglass have their uses in various applications, they do not offer the same level of thermal protection or structural integrity needed for safety shields around flanges. Polyester fabric may not withstand high temperatures as effectively, steel plating is heavier and may not provide the necessary flexibility, and while fiberglass may offer good heat resistance, it lacks the added reflective capability of the aluminized coating, making aluminized glass cloth a more suitable choice in this context.

9. Which element is crucial for hazard identification in ORM despite the timing?

- A. Planning**
- B. Assessing**
- C. Identifying**
- D. Supervising**

Identifying is a fundamental element in Operational Risk Management (ORM), as it forms the basis for recognizing potential hazards that could impact safety and performance. The process of hazard identification involves systematically reviewing tasks, activities, and environments to pinpoint elements that could pose risks. This step is crucial regardless of the timing, as it allows for the early detection of risks before they can manifest into actual incidents. The identification phase not only focuses on spotting existing hazards but also anticipates possible future risks, incorporating a proactive approach in risk management. By effectively identifying hazards, organizations can implement appropriate controls and measures to mitigate risk, leading to a safer operational environment. While planning, assessing, and supervising also play important roles in ORM, they typically build upon the foundational step of identifying hazards. Without first identifying the risks, the subsequent processes would lack the necessary context and focus to ensure effective risk management.

10. What is the primary cause of corrosion in metals?

- A. Mechanical stress applied to metals**
- B. The electrochemical reaction between the metal and its environment**
- C. Temperature changes in the environment**
- D. The presence of specific alloys in the metals**

The primary cause of corrosion in metals is the electrochemical reaction between the metal and its environment. This process typically involves the metal reacting with moisture, oxygen, and various electrolytes present in the environment. When these elements come into contact with the metal surface, they can lead to the formation of corrosion cells, where the metal loses electrons (oxidation) and transforms into metal ions. This transformation compromises the integrity and structure of the metal. Moist environments are particularly conducive to corrosion, as water acts as an electrolyte, facilitating the electrochemical reactions. Additionally, impurities such as salts can accelerate these reactions by enhancing conductivity. This is why understanding the principles of electrochemistry is crucial for preventing corrosion and protecting metal surfaces through various methods, such as coatings or cathodic protection. Other factors like mechanical stress, temperature fluctuations, and the presence of specific alloys can contribute to the corrosion process or influence its rate, but they are not the primary driving force. Instead, it is the fundamental electrochemical interaction between the metal and its surrounding environment that is the key factor in corrosion occurrences.