

Water and Fuel Systems Maintenance (WFSM) Set B Volume 1 Practice Test (Sample)

Study Guide



Everything you need from our exam experts!

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SAMPLE

Questions

SAMPLE

- 1. What type of drive is used for turbine fans that face each other?**
 - A. Flexible**
 - B. Direct**
 - C. Fluid**
 - D. Fan**
- 2. Which is NOT a type of shaft misalignment?**
 - A. Combination**
 - B. Angular**
 - C. Skewed**
 - D. Parallel**
- 3. A positive ion is BEST described as an atom that?**
 - A. Has an equal number of electrons and protons**
 - B. Has lost an electron and has more protons**
 - C. Has lost a proton and has more electrons**
 - D. Cannot throw off any protons**
- 4. When disposing of waste water from a fuel tank bottom, where do you put it?**
 - A. Sanitary sewer**
 - B. Oil/water separator**
 - C. Water treatment facility**
 - D. Sewage treatment facility**
- 5. Which of these is the SMALLEST current that can be fatal under certain conditions?**
 - A. 1/2 of 1 amp**
 - B. 1/3 of 1 amp**
 - C. 1/8 of 1 amp**
 - D. 1/10 of 1 amp**

- 6. Static dissipating additive (SDA) is added to JP-8 to**
- A. Increase conductivity of the fuel**
 - B. Decrease conductivity of the fuel**
 - C. Eliminate the need for grounding**
 - D. Reduce the need for grounding**
- 7. What is the primary role of bioenvironmental engineers in relation to respirators?**
- A. Training employees on respirator use**
 - B. Approving respirators**
 - C. Monitoring air quality**
 - D. Maintaining equipment**
- 8. How are fuses rated?**
- A. Voltage and watts**
 - B. Watts and amperage**
 - C. Amperage and power**
 - D. Voltage and amperage**
- 9. What is the term for the lifting force of a liquid on a body?**
- A. Laminar**
 - B. Interface**
 - C. Buoyancy**
 - D. Dynamic pressure**
- 10. What significance does atmospheric pressure have on liquid behavior?**
- A. It creates buoyancy forces**
 - B. It affects fluid viscosity**
 - C. It determines liquid density**
 - D. It influences flow rate**

Answers

SAMPLE

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

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Explanations

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1. What type of drive is used for turbine fans that face each other?

- A. Flexible**
- B. Direct**
- C. Fluid**
- D. Fan**

The correct choice relates to the mechanism used to connect the turbine fans, which are positioned opposite each other. In practices involving turbine fans, particularly in scenarios where efficiency and space are concerns, a fluid drive system is commonly employed. A fluid drive allows the transfer of power through a fluid medium, which provides several advantages, including the ability to absorb shock loads and accommodate some misalignments between the drive components. This is particularly crucial when turbine fans face each other, as they may require precise control to maintain proper airflow and operational efficiency. Using a fluid drive also reduces the need for rigid couplings and allows for smoother operation, as it can adapt to varying operational conditions. This flexibility is essential in complex systems where fans are required to perform under different loads or operational requirements. Hence, this type of drive effectively enhances the performance and longevity of the turbine fans when they are configured in such a way.

2. Which is NOT a type of shaft misalignment?

- A. Combination**
- B. Angular**
- C. Skewed**
- D. Parallel**

Shaft misalignment refers to the condition where two or more shafts do not align properly along their intended axis, which can lead to increased wear and reduced efficiency in machinery. The types of shaft misalignment that professionals typically recognize include angular, parallel, and combination. Angular misalignment occurs when the shafts are misaligned at an angle to each other, causing the coupling to operate at an angle. Parallel misalignment arises when the shafts are offset from one another but remain parallel. Combination misalignment is a mix of both angular and parallel misalignment, where elements of both types are present. The term "skewed" is not typically recognized as a standard category of shaft misalignment in technical literature and practice. Instead, angular or parallel misalignment would be the ways in which shafts can become misaligned. Therefore, identifying skewed as not being a type of misalignment aligns with conventional terminology and understanding in the field of shaft alignment and maintenance.

3. A positive ion is BEST described as an atom that?

- A. Has an equal number of electrons and protons**
- B. Has lost an electron and has more protons**
- C. Has lost a proton and has more electrons**
- D. Cannot throw off any protons**

A positive ion is best described as an atom that has lost an electron and has more protons than electrons. This definition highlights the fundamental concept of ion formation in chemistry. Atoms are typically neutral, meaning they have an equal number of protons (which are positively charged) and electrons (which are negatively charged). When an atom loses an electron, the balance shifts - there are now more protons than electrons, resulting in a net positive charge. This imbalance is why the species is referred to as a positive ion or cation. In atomic structures, protons reside in the nucleus and cannot be easily lost under normal conditions; hence, the formation of a positive ion primarily involves the removal of electrons. This process is significant in various chemical reactions and is fundamental to understanding the behavior of elements in different bonding scenarios.

4. When disposing of waste water from a fuel tank bottom, where do you put it?

- A. Sanitary sewer**
- B. Oil/water separator**
- C. Water treatment facility**
- D. Sewage treatment facility**

The correct disposal method for wastewater from a fuel tank bottom is to utilize an oil/water separator. This is because the waste water from a fuel tank bottom often contains various contaminants, including oils and fuel residues. An oil/water separator is specifically designed to separate oil and other hydrocarbons from water, ensuring that the potentially harmful substances are removed before the water is discharged. Using an oil/water separator helps protect the environment by preventing contaminated water from entering the larger water systems or sewers that are not designed to handle such pollutants. The separator collects the oil on the surface, which can then be properly treated or disposed of, while allowing the cleaner water to be safely released. In contrast, disposing of this wastewater directly into a sanitary sewer may not comply with regulations regarding contaminants, as wastewater treatment facilities may not effectively remove all oil and chemicals. A water treatment facility typically handles a different type of wastewater and may not be specifically equipped for fuel-contaminated water. Similarly, a sewage treatment facility is designed for human waste and gray water rather than industrial or hazardous waste like that from fuel tanks. Thus, utilizing an oil/water separator is the most appropriate and regulated method for this type of disposal.

5. Which of these is the SMALLEST current that can be fatal under certain conditions?

- A. 1/2 of 1 amp**
- B. 1/3 of 1 amp**
- C. 1/8 of 1 amp**
- D. 1/10 of 1 amp**

The smallest current that can be potentially fatal under certain conditions is 1/10 of 1 amp. This value is significant because electrical safety studies have shown that currents as low as 0.1 amp (or 1/10 of an amp) can be dangerous and possibly lethal. The human body has a threshold for electrical current that, when exceeded, can disrupt normal heart function and lead to conditions like ventricular fibrillation, which is a chaotic heart rhythm that can be fatal if not treated immediately. The danger of electrical current does not solely depend on the magnitude of the current but also on various factors, including the path the current takes through the body, the duration of exposure to the current, and the specific health conditions of the individual. Thus, even relatively small currents can have severe consequences, emphasizing the critical nature of understanding electrical safety. This is why 1/10 of 1 amp is highlighted as particularly significant in the context of electrical shock hazards.

6. Static dissipating additive (SDA) is added to JP-8 to

- A. Increase conductivity of the fuel**
- B. Decrease conductivity of the fuel**
- C. Eliminate the need for grounding**
- D. Reduce the need for grounding**

Static dissipating additive (SDA) is incorporated into JP-8 fuel to enhance the fuel's conductivity. This addition is critical because it helps in reducing the buildup of static electricity that can occur during the transfer and handling of the fuel. When fuel is pumped or agitated, static electricity can accumulate and, if not controlled, may lead to sparks that could ignite the fuel vapor. By increasing the conductivity of the fuel, SDA allows for better dissipation of static charges, minimizing the risk of static discharge incidents. This improved conductivity ensures that any static electricity generated during the handling of the fuel is safely dissipated to the ground, thus bolstering safety measures during fueling operations. Overall, the main purpose of adding SDA is to mitigate the hazards of static electricity in aviation fuels like JP-8.

7. What is the primary role of bioenvironmental engineers in relation to respirators?

- A. Training employees on respirator use**
- B. Approving respirators**
- C. Monitoring air quality**
- D. Maintaining equipment**

The primary role of bioenvironmental engineers in relation to respirators involves their responsibility for approving respirators as suitable for specific environments and conditions. This process is critical because it ensures that the respiratory protection provided to individuals is adequate to mitigate any health risks associated with airborne contaminants. Bioenvironmental engineers evaluate various respirator types against established safety standards and guidelines to verify that they meet the required performance criteria. While training employees on how to properly use respirators, monitoring air quality, and maintaining equipment are also important aspects of ensuring respiratory protection, the core responsibility of bioenvironmental engineers focuses on the approval process. Their expertise in evaluating and validating protective gear helps to ensure that respirators provide the necessary protection in occupational settings, aligning with safety regulations and best practices for health and safety in the workplace.

8. How are fuses rated?

- A. Voltage and watts**
- B. Watts and amperage**
- C. Amperage and power**
- D. Voltage and amperage**

Fuses are rated based on voltage and amperage to ensure they provide adequate protection for electrical circuits. The voltage rating indicates the maximum voltage that can be safely applied to the fuse without risking failure or danger. The amperage rating, on the other hand, specifies the maximum current that can flow through the fuse without blowing. This is essential for protecting the circuit from overloads; if the current exceeds the specified amperage, the fuse will blow, interrupting the circuit and preventing potential damage to electrical components or risks of fire. By focusing on these two parameters, voltage and amperage, fuses are able to serve their purpose effectively in safeguarding electrical systems. Recognizing the importance of both ratings helps in selecting the right fuse for a specific application, ensuring operational safety and reliability in various electrical systems.

9. What is the term for the lifting force of a liquid on a body?

- A. Laminar
- B. Interface
- C. Buoyancy**
- D. Dynamic pressure

The term for the lifting force of a liquid on a body is known as buoyancy. Buoyancy refers to the upward force that a fluid exerts on an object placed within it. This force enables objects, whether they are solid or hollow, to float or rise in a liquid, and its magnitude is determined by the weight of the fluid that is displaced by the object. According to Archimedes' principle, an object will float if the buoyant force is equal to or greater than its weight. Understanding buoyancy is crucial in fields like fluid mechanics and engineering, as it impacts various applications such as ship design, underwater vehicles, and the behavior of objects in different fluids. In general, the concept of buoyancy is fundamental for grasping how objects interact with liquids and the conditions under which they remain submerged or float.

10. What significance does atmospheric pressure have on liquid behavior?

- A. It creates buoyancy forces**
- B. It affects fluid viscosity
- C. It determines liquid density
- D. It influences flow rate

Atmospheric pressure plays a crucial role in the behavior of liquids, particularly in relation to buoyancy forces. When a liquid is in a gravitational field, such as water in a lake or a buoy floating on the ocean, atmospheric pressure acts on the surface of the liquid. This pressure, combined with the gravitational pull on the liquid, contributes to the buoyancy that allows objects to float. The buoyant force experienced by an object submerged in a fluid is equal to the weight of the fluid that the object displaces, a principle encapsulated in Archimedes' principle. As atmospheric pressure changes, it can alter the amount of fluid displaced by objects and thus impact the degree of buoyancy. For instance, higher atmospheric pressure can increase the density of the liquid in certain contexts, affecting how buoyant an object appears to be. Understanding the effects of atmospheric pressure on liquid behavior is essential in many fields, including fluid mechanics, engineering, and even natural sciences, as it directly affects calculations related to hydrostatics and the stability of floating objects. Other options, while they address important aspects of fluid dynamics, do not directly relate to the specific significance of atmospheric pressure in the context of buoyancy.