# WMSL Advanced DC Board Practice Test (Sample)

## Study Guide


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# Questions

**1. Which type of system is the AFFF system primarily designed to combat?**

**A. Electrical fires**

**B. Flammable liquid fires**

**C. Gas fires**

**D. All of the above**

**2. What is the primary function of PKP as an extinguishing agent?**

**A. Creates foam vapor barrier**

**B. Interrupts the chemical chain reaction**

**C. Extinguishes cooking oil fires**

**D. Increases oxygen in the environment**

**3. What is the discharge capability of ESPs with a 50 foot static head?**

**A. 140 GPM**

**B. 180 GPM**

**C. 265 GPM**

**D. 100 GPM**

**4. Which frame corresponds to Fire Zone Bulkheads?**

**A. Frame 22**

**B. Frame 28**

**C. Frame 36**

**D. Frame 70**

**5. What is considered the most important fire boundary?**

**A. Bottom**

**B. Vertical**

**C. Topside**

**D. Horizontal**

**6. Which method is used to conduct atmospheric tests?**

- **A. Light test**
- **B. Gas analysis**
- **C. Colorimetric analysis**
- **D. Thermal imaging**

**7. What size trunk is typically used with the RAMFAN?**

- **A. 8 inch**
- **B. 10 inch**
- **C. 12 inch**
- **D. 14 inch**

**8. What is the primary purpose of an EEBD?**

- **A. For fighting fires**
- **B. For escaping a space**
- **C. For medical emergencies**
- **D. For underwater breathing**

**9. Why is CO2 recommended for Class C fires?**

- **A. It is environmentally friendly**
- **B. It removes flammable gases**
- **C. It is non-conductive and leaves no residue**
- **D. It is the most economical option**

**10. In which situation would closures and fittings be opened by personnel without special permission?**

- **A. Circle Yoke**
- **B. Circle Zebra**
- **C. Circle X-Ray**
- **D. Circle William**

# Answers

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

# Explanations

## 1. Which type of system is the AFFF system primarily designed to combat?

**A. Electrical fires**

**B. Flammable liquid fires**

**C. Gas fires**

**D. All of the above**

**The Aqueous Film Forming Foam (AFFF) system is specifically engineered to combat flammable liquid fires, which are typical in environments where hydrocarbons or other flammable liquids are present. AFFF works by creating a film on the surface of the burning liquid, effectively smothering the flames and preventing the release of flammable vapors. Its formulation allows it to quickly spread over the surface, providing a barrier that cuts off the oxygen supply, which is essential in extinguishing such fires. While AFFF systems are particularly effective against flammable liquid fires, they are not designed for electrical fires or gas fires. Electrical fires require specific extinguishing agents that can safely interrupt the electric current, and using water or foam (like AFFF) on them can pose a danger of electrical shock. Gas fires, on the other hand, often require different extinguishing strategies as they involve a combustible gas that necessitates the stopping of the gas flow or using agents that can eliminate the presence of the gas itself. Understanding the unique properties and applications of AFFF highlights its specialized role in fire suppression, reinforcing why flammable liquid fires are the primary fire type it is designed to combat.**

## 2. What is the primary function of PKP as an extinguishing agent?

**A. Creates foam vapor barrier**

**B. Interrupts the chemical chain reaction**

**C. Extinguishes cooking oil fires**

**D. Increases oxygen in the environment**

**The primary function of PKP, or Potassium Bicarbonate, as an extinguishing agent is to interrupt the chemical chain reaction of fire. When PKP is deployed, it releases potassium ions that react with free radicals involved in the combustion process. This action effectively disrupts the ongoing reactions that contribute to the sustaining of flames, thereby helping to extinguish the fire. It is particularly effective on Class B fires, which involve flammable liquids and gases, but its mechanism of action through the interruption of the chain reaction is what makes it broadly applicable. This property is vital, as it not only quenches existing flames but also prevents them from reigniting. Understanding this function is crucial when selecting an appropriate extinguishing agent for various fire scenarios.**

## 3. What is the discharge capability of ESPs with a 50 foot static head?

**A. 140 GPM**

**B. 180 GPM**

**C. 265 GPM**

**D. 100 GPM**

**The discharge capability of Electric Submersible Pumps (ESPs) varies significantly based on factors such as static head, pump design, and application scenarios. For a static head of 50 feet, the correct discharge capability being indicated is 180 GPM. This value is consistent with the performance curves and specifications typically associated with ESP systems designed for moderate static heads. At a static head of 50 feet, the ESP is optimized to deliver a higher flow rate, which in this case is represented by the 180 GPM figure. This amount of flow reflects the pump's efficiency and design characteristics aimed at achieving a balance between pressure and volume, essential for typical operations in applications like oil and gas extraction or water well pumping. The other values presented do not align with the expected performance curves associated with ESPs at this static head; they suggest either a lower capacity than what would be efficient at 50 feet or might pertain to different operational conditions not specified in the question. Thus, the focus on 180 GPM indicates a suitable capability considering the parameters defined.**

## 4. Which frame corresponds to Fire Zone Bulkheads?

**A. Frame 22**

**B. Frame 28**

**C. Frame 36**

**D. Frame 70**

**The correct response identifies Frame 28 as the location corresponding to Fire Zone Bulkheads. This area is significant in ship design, specifically concerning fire safety and compartmentalization. Fire zone bulkheads are essential structural elements that help contain fire and smoke, thereby increasing the safety of ship operations and protecting critical areas of the vessel. In the context of a ship's design, the frames serve as reference points for positioning various compartments and bulkheads that play a role in the fire safety strategy. The bulkheads at Frame 28 are typically engineered to meet specific regulatory requirements related to fire resistance, ensuring that there are effective barriers between different zones of the ship. Understanding the significance of Frame 28 highlights how marine safety protocols dictate the layout and construction of vessels, emphasizing the importance of fire zone management in maritime engineering and operations.**

## 5. What is considered the most important fire boundary?

**A. Bottom**

**B. Vertical**

**C. Topside**

**D. Horizontal**

**The most important fire boundary is the topside. This is because the topside boundary plays a critical role in fire containment and prevention, particularly in environments like industrial plants or buildings where fire hazards are prevalent. The topside serves as a critical barrier against smoke and heat rising to upper levels, which can lead to more severe fire spread and increased risk to life and property. It is designed to prevent fire from spreading vertically, thus protecting occupants and limiting damage to structures. Moreover, maintaining an effective topside boundary enhances safety protocols and enables better evacuation procedures by controlling the flow of heat and smoke. In terms of fire safety regulations and engineering practices, the significance of the topside boundary is recognized in building codes and fire safety management strategies, ensuring structures can withstand and mitigate fire hazards effectively.**

## 6. Which method is used to conduct atmospheric tests?

**A. Light test**

**B. Gas analysis**

**C. Colorimetric analysis**

**D. Thermal imaging**

**The correct method for conducting atmospheric tests is gas analysis. This technique is crucial for assessing the presence and concentration of various gases in the environment, particularly in contexts where safety and health are of concern, such as in confined spaces or hazardous locations. By employing gas analysis, it is possible to identify toxic or flammable gases, ensuring safety for individuals working in those areas. Gas analysis typically involves the use of specific instruments that can detect and quantify gases, providing real-time data about the atmospheric conditions and enabling appropriate safety measures to be implemented. The reliability and specificity of gas analysis make it an essential tool for monitoring air quality and ensuring compliance with safety regulations. In contrast, light tests, colorimetric analysis, and thermal imaging each serve different purposes or are used in different contexts and are not primarily focused on gas detection in the atmosphere. While they may have applications in various fields, they do not provide the same level of accuracy or specificity for atmospheric testing as gas analysis does.**

## 7. What size trunk is typically used with the RAMFAN?

**A. 8 inch**

**B. 10 inch**

**C. 12 inch**

**D. 14 inch**

**The typical trunk size used with the RAMFAN is 10 inches. This size is important because it is designed to optimize airflow and maintain the efficiency of the ventilating system when connected to the fan. Using a 10-inch trunk allows for the proper balance between flexibility and airflow capacity, ensuring that the RAMFAN operates effectively in smoke and fume removal scenarios. A trunk that is too small would restrict airflow, reducing the overall performance. Conversely, if the trunk were excessively large, it could lead to inefficiencies and potential air loss. Therefore, the 10-inch size is specifically chosen to match the fan's output capabilities, ensuring optimal performance in emergency and ventilation operations.**

## 8. What is the primary purpose of an EEBD?

**A. For fighting fires**

**B. For escaping a space**

**C. For medical emergencies**

**D. For underwater breathing**

**The primary purpose of an Emergency Escape Breathing Device (EEBD) is to facilitate escape from a space that has become hazardous, typically due to smoke or toxic fumes. It is designed to provide breathable air for a limited duration, allowing individuals to safely navigate away from danger zones in situations such as fires or chemical leaks. The device typically has a simple operation, enabling quick donning to ensure rapid escape. While other options may involve emergency situations, they do not align with the specific function of an EEBD. For instance, it is not intended for firefighting, although its use may be critical in a fire scenario for safe evacuation. Additionally, an EEBD is not used for medical emergencies or underwater breathing; those situations have different specialized equipment and protocols. Thus, the focus of an EEBD is squarely on aiding escape during hazardous conditions, making the correct understanding of its purpose essential for safety procedures.**

## 9. Why is CO2 recommended for Class C fires?

**A. It is environmentally friendly**

**B. It removes flammable gases**

**C. It is non-conductive and leaves no residue**

**D. It is the most economical option**

**Class C fires involve electrical equipment, and CO2 is particularly effective for this type of fire because it is non-conductive, which means it can be used safely on live electrical apparatus without causing short circuits or further fire hazards. Additionally, CO2 leaves no residue after being discharged, which is crucial in environments where sensitive equipment might be damaged by other extinguishing agents, such as water or foam. The lack of residue simplifies cleanup and minimizes additional risks that might arise from using other extinguishing agents. Therefore, the characteristics of CO2 make it the preferred choice for extinguishing Class C fires, ensuring both safety and efficiency.**

## 10. In which situation would closures and fittings be opened by personnel without special permission?

**A. Circle Yoke**

**B. Circle Zebra**

**C. Circle X-Ray**

**D. Circle William**

**In the context of this question, Circle X-Ray represents a situation where closures and fittings can be opened by personnel without requiring special permission. This typically pertains to operational procedures that are considered safe and routine, where personnel are authorized to perform specific tasks without needing additional approvals. Opening closures and fittings in Circle X-Ray usually involves areas where the risk is minimal, and employees are trained and aware of the protocols related to safety and equipment handling. This streamlined approach facilitates timely responses in certain operational circumstances, allowing for effective maintenance or inspection without unnecessary delays. The other circles, such as Circle Yoke, Circle Zebra, and Circle William, generally indicate more restrictive conditions where special permissions are necessary due to the potential hazards or complexities involved in those areas.**