

Navy AT(O) - Aviation Electronics Technician (Ordinance) Second Class Advancement Practice Exam (Sample)

Study Guide



Everything you need from our exam experts!

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SAMPLE

Questions

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- 1. What is the proper color code for a 100 ohm resistor with a 10 percent tolerance?**
 - A. Red, Red, Brown, Gold**
 - B. Brown, Black, Brown, Silver**
 - C. Brown, Black, Brown, Gold**
 - D. Brown, Black, Brown, Silver**
- 2. Where should you first look for wire replacement information?**
 - A. Aircraft's wiring diagram**
 - B. Aircraft's MIM (maintenance instructions manual)**
 - C. Aircraft's servicing manual**
 - D. Aircraft's operations guide**
- 3. What are the two main factors that affect the velocity of sound in seawater?**
 - A. Temperature and Salinity**
 - B. Pressure and Density**
 - C. Wave frequency and Amplitude**
 - D. Current and Depth**
- 4. What interaction is responsible for energy traveling down a waveguide?**
 - A. Combination of wave frequencies**
 - B. Interaction of electric and magnetic fields**
 - C. Electromagnetic interference**
 - D. Acoustic resonance**
- 5. How does invisible light convert to visible light in a fluorescent light?**
 - A. Through chemical reactions only.**
 - B. By heating the tube to high temperatures.**
 - C. Invisible light photons bombard phosphor atoms, which emit visible light photons.**
 - D. By using an electric current alone.**

- 6. What are the major differences between magnetic tape units?**
- A. The material composition of the tape**
 - B. The color of the tape**
 - C. The speed at which the tape is moved past the read/write head and the density of the recorded information**
 - D. The total size of the tape unit**
- 7. What is the purpose of performing continuity tests?**
- A. To measure the voltage across components**
 - B. To check for opens or to see if a circuit is complete or continuous**
 - C. To assess the frequency response of a circuit**
 - D. To determine the power consumption**
- 8. What does the acronym IFF stand for?**
- A. Identification Friend or Foe**
 - B. Intelligence Flight Forecast**
 - C. Interference Frequency Filter**
 - D. Integrated Field Function**
- 9. What is a fundamental approach the Navy takes towards energy efficiency?**
- A. Focusing on minimizing all energy sources**
 - B. Improving energy resource use without compromising military readiness**
 - C. Shifting entirely to renewable energy**
 - D. Increased reliance on fossil fuels**
- 10. After data is processed in the arithmetic/logic section, where is it returned?**
- A. External storage**
 - B. Control section**
 - C. Internal storage**
 - D. Output devices**

Answers

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

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Explanations

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1. What is the proper color code for a 100 ohm resistor with a 10 percent tolerance?

- A. Red, Red, Brown, Gold**
- B. Brown, Black, Brown, Silver**
- C. Brown, Black, Brown, Gold**
- D. Brown, Black, Brown, Silver**

The correct color code for a 100 ohm resistor with a 10 percent tolerance is represented as Brown, Black, Brown, Gold. The first two colors indicate the significant digits of the resistance value: Brown represents 1 and Black represents 0. Thus, they combine to form the value 10. The third color, which is also Brown, indicates a multiplier of 10, meaning that 10 multiplied by 10 gives us 100 ohms. The tolerance is indicated by the final color, which in this case is Gold, signifying a tolerance of 10 percent. This means that the actual resistance value can vary within 10 percent above or below 100 ohms. Understanding this color coding system is crucial for identifying and utilizing resistors correctly in various electronic applications.

2. Where should you first look for wire replacement information?

- A. Aircraft's wiring diagram**
- B. Aircraft's MIM (maintenance instructions manual)**
- C. Aircraft's servicing manual**
- D. Aircraft's operations guide**

The best resource for wire replacement information is the aircraft's Maintenance Instructions Manual (MIM). This manual is specifically designed to provide detailed procedures, maintenance guidelines, and technical instructions that are necessary for the repair and replacement of components, including wiring. The MIM focuses on the maintenance aspects of the aircraft, ensuring that technicians have the most accurate and comprehensive instructions for working on various systems, including electrical and electronic components. It contains schematics, troubleshooting procedures, and specific wire types and specifications, which are essential when dealing with wire replacement. In contrast, while the aircraft's wiring diagram provides a visual representation of the wiring layout and connections, it does not typically include detailed instructions for replacement or repair. The servicing manual may cover general maintenance procedures but is less focused on specific wiring issues. The operations guide is primarily for operational procedures and safety information, not for in-depth maintenance or repair tasks. Thus, for precise and clear guidance on wire replacement, the MIM is the most appropriate choice.

3. What are the two main factors that affect the velocity of sound in seawater?

- A. Temperature and Salinity**
- B. Pressure and Density**
- C. Wave frequency and Amplitude**
- D. Current and Depth**

The correct choice identifies the two main factors that significantly influence the velocity of sound in seawater: temperature and salinity. Temperature affects sound velocity because as water temperature increases, its molecules move more rapidly, allowing sound waves to travel faster. This increased molecular activity enhances the propagation of sound through the water. The relationship is not linear, but generally, a rise in temperature correlates with an increase in sound velocity. Salinity also plays a crucial role; as salinity increases, the density of seawater increases, which can also contribute to an increase in sound velocity. The higher concentration of dissolved salts affects the physical properties of water, altering how sound waves move through it. While pressure and density are relevant in discussing sound in fluids, the direct impact of salinity and temperature is more pronounced with regard to sound velocity in seawater. Other factors like wave frequency and amplitude relate more to the characteristics of sound waves rather than their speed, and current and depth can have indirect influences but aren't primary factors in determining the basic velocity of sound in the marine environment.

4. What interaction is responsible for energy traveling down a waveguide?

- A. Combination of wave frequencies**
- B. Interaction of electric and magnetic fields**
- C. Electromagnetic interference**
- D. Acoustic resonance**

The correct choice revolves around the interaction of electric and magnetic fields, which is fundamental to the operation of waveguides. A waveguide functions based on the principles of electromagnetic theory, where the propagation of energy occurs through the combined effects of electric (E) and magnetic (H) fields. This interaction allows electromagnetic waves to travel efficiently along the guide, with the boundaries of the waveguide controlling the modes of propagation. In a waveguide, as electromagnetic waves travel, the changing electric field produces a corresponding magnetic field, and vice versa. This perpetuating linkage between the electric and magnetic fields is what enables the transfer of energy along the structure, maintaining a stable and guided signal transmission. Understanding this interaction helps in grasping the fundamental operational principles governing waveguides in various applications such as communications and radar systems, where effective transmission of radio frequency signals is crucial.

5. How does invisible light convert to visible light in a fluorescent light?

A. Through chemical reactions only.

B. By heating the tube to high temperatures.

C. Invisible light photons bombard phosphor atoms, which emit visible light photons.

D. By using an electric current alone.

In fluorescent lighting, invisible light is converted to visible light through a process involving phosphor materials within the tube. When the fluorescent lamp is energized, an electric current passes through the gas inside the tube, generating invisible ultraviolet (UV) light. This UV light then interacts with the phosphor coating on the inside of the bulb. The invisible UV photons bombard the phosphor atoms, which have the unique property of absorbing this UV energy. In response to this energy absorption, the phosphors become excited and subsequently emit visible light photons. This phenomenon is a direct result of the interaction between the invisible light and the phosphor, making it possible for us to see the light emitted from the bulb. This conversion process is efficient and effective in transforming energy from one form to another, playing a vital role in how fluorescent lights function to illuminate spaces.

6. What are the major differences between magnetic tape units?

A. The material composition of the tape

B. The color of the tape

C. The speed at which the tape is moved past the read/write head and the density of the recorded information

D. The total size of the tape unit

The correct answer highlights the significant differences in performance and functionality of magnetic tape units, primarily focusing on the speed at which the tape moves past the read/write head and the density of the information recorded on it. These factors are crucial because they directly affect data transfer rates and storage capacity. In magnetic tape technology, the speed influences how quickly data can be read from or written to the tape. A higher speed can enhance the overall efficiency of data handling, making it beneficial for applications requiring rapid access to large amounts of information. Similarly, the density of recorded information refers to how much data can be stored in a given length of tape. Higher density allows for more data storage without increasing physical tape size, which is essential for optimizing storage solutions. Options related to material composition and tape color, while they might influence durability or operational characteristics, do not primarily define performance differences in the same critical way that speed and data density do. The total size of the tape unit might inform about storage capacity but is not as vital in distinguishing capabilities or operational efficiency among different magnetic tape units.

7. What is the purpose of performing continuity tests?

- A. To measure the voltage across components
- B. To check for opens or to see if a circuit is complete or continuous**
- C. To assess the frequency response of a circuit
- D. To determine the power consumption

Performing continuity tests is primarily aimed at checking for opens in the circuit and ensuring that a circuit is complete or continuous. In practical terms, a continuity test verifies that there is a complete path for current to flow within the electrical circuit. This is crucial for troubleshooting because if a circuit has an open, electrical signals cannot travel to their intended destinations, which could result in equipment malfunction. By using a multimeter or a continuity tester, a technician can quickly determine if a wire or connection is intact or if there's a break somewhere in the circuit. This process helps technicians locate faults in wiring, connectors, and components, ensuring reliable operation of electrical and electronic systems. The other answer choices touch on various electrical concepts, but they do not align with the specific purpose of continuity testing. Measuring voltage across components assesses how much voltage is present, frequency response analysis looks at how circuits respond to different frequencies, and determining power consumption involves calculating the total energy used by a circuit or component over time. Each of these tasks serves a different function within electronic testing and diagnostics, but they do not fulfill the primary role of continuity testing.

8. What does the acronym IFF stand for?

- A. Identification Friend or Foe**
- B. Intelligence Flight Forecast
- C. Interference Frequency Filter
- D. Integrated Field Function

The acronym IFF stands for Identification Friend or Foe. This system is crucial in military aviation as it helps in distinguishing between friendly and hostile forces. IFF transponders on aircraft respond to radar signals, sending back an identification code that indicates whether the aircraft is friendly. This capability significantly enhances situational awareness and reduces the risk of friendly fire incidents during complex operations. Understanding the purpose and functionality of IFF is essential for aviation electronics technicians because it impacts the safety and effectiveness of air operations. The other options, while they might seem plausible at first glance, do not relate to this critical identification technology used in military aviation.

9. What is a fundamental approach the Navy takes towards energy efficiency?

A. Focusing on minimizing all energy sources

B. Improving energy resource use without compromising military readiness

C. Shifting entirely to renewable energy

D. Increased reliance on fossil fuels

The Navy's approach towards energy efficiency emphasizes improving energy resource use while ensuring that military readiness remains uncompromised. This strategy recognizes the critical importance of operational capability and preparedness in military operations, which can be influenced by energy availability and usage. By focusing on enhancing the efficiency of energy resources, the Navy is able to optimize its operations, reduce costs, and minimize environmental impacts without sacrificing the ability to respond to threats or maintain mission effectiveness. This balanced approach allows the Navy to adopt innovative technologies and practices that lead to better energy use, contributing to both operational efficiency and sustainability while ensuring that they remain ready to fulfill their defense responsibilities. This philosophy reflects a broader commitment to integrating energy management into operational planning and execution, which is essential for modern military operations. It also supports national security objectives by seeking solutions that enhance resilience and reduce dependence on any single source of energy.

10. After data is processed in the arithmetic/logic section, where is it returned?

A. External storage

B. Control section

C. Internal storage

D. Output devices

The correct answer is internal storage because, after data is processed in the arithmetic/logic section of a computer or processing unit, the results of that processing need to be stored temporarily for further use or immediate access by other parts of the system. Internal storage, often found in the registers or memory, is specifically designed for fast data access, which is crucial during processing tasks. This allows the data to be easily retrieved for future calculations, comparisons, or operations by the control section, which orchestrates the overall functioning of the system. In essence, internal storage acts as the immediate workspace for the processor, holding the data it needs to perform its operations efficiently. The other options, while related to data handling, do not serve the purpose of storing processed information as directly or effectively as internal storage does.