Engineering Economics and Management, Laws and Ethics Practice Test (Sample)

Study Guide

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Questions

1. Which of the following is not considered practice of aeronautical engineering?

- **A. Designing an aircraft structure**
- **B. Teaching Aerodynamics**
- **C. Flying an Airplane**
- **D. None of the above**

2. The ethical principle of responsibility specifically involves which of the following?

- **A. Commitment to community**
- **B. Accurate reporting of findings**
- **C. Accountability for one's actions**
- **D. Promotion of teamwork**

3. In terms of project management, what does organizing involve?

- **A. Financial oversight**
- **B. Setting goals**
- **C. Delineating authority and responsibility**
- **D. Performance evaluation**

4. An FAA Form 337 is used to record and document _____.

- **A. preventive and unscheduled maintenance and special inspections**
- **B. major and minor repairs and alterations**
- **C. major repairs and major alterations**
- **D. minor inspections**

5. Who issues the type certificate of an aircraft?

- **A. An approved JAR-21 organization**
- **B. An approved JAR-145 organization**
- **C. The national Civil Aviation Authority**
- **D. An approved JAR-25 organization**

6. Who signed the Presidential Decree 1570?

A. Gloria Arroyo

B. Elpidio Quirino

C. Corazon Aquino

D. Ferdinand Marcos

7. In the context of aviation management, what does the term 'qualified personnel' refer to?

A. Individuals with minimum educational requirements

B. Individuals who have undergone designated training

C. Individuals with years of experience only

D. Individuals certified by an external agency

8. What is the key element necessary for aircraft operation based on the regulatory framework?

A. Flight experience of crew

B. Maintenance of airworthiness

C. Operational costs reductions

D. Market analysis of passenger demand

9. The code of ethics regarding optimum efficiency and economy in the execution of work is related to which relationship?

A. Relation with the public

B. Relation with the engineers

C. Relation with the clients and employee

D. Relation with the state

10. Which part of aeronautical regulations deals with the governance of mechanical operations?

A. 14 CFR 43

B. 14 CFR 65

C. 14 CFR 91

D. AC 43.13-3

Answers

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

Explanations

1. Which of the following is not considered practice of aeronautical engineering?

A. Designing an aircraft structure

B. Teaching Aerodynamics

C. Flying an Airplane

D. None of the above

The practice of aeronautical engineering encompasses a variety of activities directly related to the design, development, and testing of aircraft and spacecraft. Each of the activities listed informs how engineers operate within the field. Designing an aircraft structure is a fundamental aspect of aeronautical engineering, as it involves applying engineering principles to ensure the safety, durability, and performance of the aircraft under various conditions. Teaching Aerodynamics also falls under the purview of aeronautical engineering because it involves imparting knowledge about the principles and behaviors of airflows affecting aircraft, which is crucial for understanding and advancing aeronautical practices. Flying an airplane, however, is considered a piloting skill rather than an engineering practice. While understanding how to operate aircraft is important for engineers, the act of flying does not involve the engineering design and analysis processes that characterize aeronautical engineering. Thus, it is distinct from the engineering practice itself. In summary, the correct choice identifies an activity that, while related to aviation, does not encompass the technical and design elements intrinsic to aeronautical engineering.

2. The ethical principle of responsibility specifically involves which of the following?

A. Commitment to community

B. Accurate reporting of findings

C. Accountability for one's actions

D. Promotion of teamwork

The ethical principle of responsibility is fundamentally about accountability for one's actions. This concept implies that individuals or organizations are obligated to consider the consequences of their choices and are expected to own up to the results, whether positive or negative. It encompasses the idea that professionals should be transparent and reliable in their decisions and conduct, admitting mistakes and addressing them appropriately. In the context of engineering and management, this principle is particularly crucial, as it not only affects one's own work but also impacts colleagues, clients, and the community at large. Upholding responsibility ensures that ethical standards are maintained, fostering trust and integrity within the professional environment. While commitment to community, accurate reporting of findings, and promotion of teamwork are important values, they do not fully encapsulate the essence of the principle of responsibility in the same way that accountability does. Responsibility is broader and is directly tied to one's moral obligations to society and their professional practice, making accountability for one's actions the most fitting choice in this scenario.

3. In terms of project management, what does organizing involve?

A. Financial oversight

B. Setting goals

C. Delineating authority and responsibility

D. Performance evaluation

In project management, organizing specifically refers to the process of delineating authority and responsibility among team members and stakeholders. This involves defining the roles, tasks, and relationships that will allow the project team to operate effectively and efficiently. By establishing clear lines of authority and responsibility, project managers can ensure that everyone involved knows their specific duties, who they report to, and how their work contributes to the overall objectives of the project. This clarity helps to avoid confusion, reduce overlap of tasks, and improve coordination among team members, which is essential for the successful completion of a project. While financial oversight, setting goals, and performance evaluation are all important aspects of project management, they pertain to other phases of the project lifecycle. Financial oversight involves monitoring budgets and expenditures, setting goals relates to defining what the project aims to achieve, and performance evaluation focuses on assessing how well the project is progressing and whether it is meeting its objectives. Therefore, organizing specifically targets the structuring of the team's workflow and clarifying roles, making it pivotal for effective project management.

4. An FAA Form 337 is used to record and document _____.

A. preventive and unscheduled maintenance and special inspections

B. major and minor repairs and alterations

C. major repairs and major alterations

D. minor inspections

The FAA Form 337 is specifically used to record major repairs and major alterations on aircraft. These can include significant modifications or enhancements that affect the aircraft's structure, performance, or operational capabilities. This form not only documents the work performed but also provides a traceable history of modifications for regulatory compliance and safety assessments, which is crucial in aviation maintenance practices. In the context of aviation regulations, it distinguishes between "major" and "minor" alterations and repairs, where major adjustments typically require more thorough documentation and inspection processes. The distinction is essential because major repairs or alterations often necessitate certain standards to ensure the continued airworthiness of the aircraft, which is a key focus of the FAA's oversight. The other options incorrectly identify the scope of the form's use. Preventive maintenance and unscheduled maintenance are generally recorded separately and do not require a Form 337. Minor inspections, which involve routine checks that do not significantly alter the aircraft, also fall outside the need for such comprehensive documentation. Hence, the specific focus of the FAA Form 337 on major repairs and alterations makes option C the accurate choice.

5. Who issues the type certificate of an aircraft?

A. An approved JAR-21 organization

B. An approved JAR-145 organization

C. The national Civil Aviation Authority

D. An approved JAR-25 organization

The type certificate of an aircraft is issued by the national Civil Aviation Authority (CAA) because it is the regulatory body responsible for ensuring that aircraft meet safety and performance standards. The CAA conducts thorough evaluations of the aircraft design, manufacturing processes, and compliance with aviation regulations before granting certification. This process ensures that all aircraft operating within a country's airspace adhere to the necessary safety and operational standards, allowing for the safe operation of aircraft. Organizations like JAR-21, JAR-145, and JAR-25 are involved in different aspects of aircraft certification and maintenance. JAR-21 pertains to the certification of aircraft and components, JAR-145 deals with the maintenance organizations, and JAR-25 focuses on the requirements for transport category aircraft. However, the ultimate authority and responsibility for issuing the type certificate rests with the national Civil Aviation Authority, as they enforce compliance with national and international regulations.

6. Who signed the Presidential Decree 1570?

A. Gloria Arroyo

B. Elpidio Quirino

C. Corazon Aquino

D. Ferdinand Marcos

Presidential Decree 1570 was signed by Ferdinand Marcos, who was the President of the Philippines from 1965 to 1986. This decree was significant in establishing a framework for the budgeting and funding of a unique initiative within the country, and it reflects Marcos' administration's broader economic and social policies during his time in office. The decree aimed to implement certain governmental programs that were aligned with the aims of the Marcos regime. Understanding the historical context is crucial here. Marcos' presidency is often noted for its focus on infrastructure development and economic reforms. Presidential Decree 1570 fits into this narrative as it helped to institutionalize some of the government initiatives that were meant to drive development forward, showcasing the types of economic strategies pursued during that era. This decree is part of a larger series of policies and declarations made by Marcos that influenced the governance and socioeconomic landscape of the Philippines during his rule.

7. In the context of aviation management, what does the term 'qualified personnel' refer to?

A. Individuals with minimum educational requirements

B. Individuals who have undergone designated training

C. Individuals with years of experience only

D. Individuals certified by an external agency

The term 'qualified personnel' in aviation management specifically emphasizes the importance of individuals who have undergone designated training. This training is critical in ensuring that personnel possess the necessary skills and knowledge to perform their tasks safely and effectively in the aviation environment. Aviation involves strict regulations and standards due to the potential hazards associated with the industry, making specialized training essential. Such training includes not only theoretical knowledge but also practical skills tailored to the specific roles within aviation, ranging from piloting to maintenance and safety management. While other factors such as educational background, years of experience, or certification by an external agency might contribute to an individual's qualification, they do not encapsulate the comprehensive preparation required in the aviation field. Designated training ensures that individuals are up to date with the latest industry practices, technologies, and safety protocols, making it the primary basis for being considered 'qualified' in this context.

8. What is the key element necessary for aircraft operation based on the regulatory framework?

A. Flight experience of crew

B. Maintenance of airworthiness

C. Operational costs reductions

D. Market analysis of passenger demand

The pivotal element necessary for aircraft operation within the regulatory framework is the maintenance of airworthiness. Airworthiness refers to the condition of an aircraft being safe and fit for flight, which is fundamental to ensuring public safety and compliance with aviation regulations. Regulators, such as the Federal Aviation Administration (FAA) in the United States, impose stringent standards for the design, maintenance, and operation of aircraft to ensure they meet safety and performance criteria. When an aircraft is deemed airworthy, it indicates that it has passed inspections and meets all necessary maintenance requirements. This encompasses everything from routine checks and repairs to ensuring that all components function correctly and comply with regulatory standards. Without maintaining airworthiness, the ability to operate an aircraft safely is compromised, which can lead to accidents and violations of aviation laws. While the flight experience of the crew, operational cost reductions, and market analysis of passenger demand are important aspects of operating an airline, they do not directly address compliance with safety regulations mandated by aviation authorities. Thus, while these factors can impact the overall efficiency and profitability of airline operations, they are secondary to ensuring that the aircraft itself remains safe and compliant to operate. Therefore, maintaining airworthiness is deemed the key element necessary for the aircraft's operational framework.

9. The code of ethics regarding optimum efficiency and economy in the execution of work is related to which relationship?

A. Relation with the public

B. Relation with the engineers

C. Relation with the clients and employee

D. Relation with the state

The code of ethics regarding optimum efficiency and economy in the execution of work is fundamentally connected to the relationship with the state. This aspect emphasizes the importance of engineers and professionals adhering to standards that not only ensure effective use of resources but also align with public welfare and regulatory compliance. In this context, the relationship with the state involves a commitment to uphold laws and regulations that govern engineering practices, which includes notions of public safety, environmental stewardship, and adherence to communal standards of practice. By promoting optimum efficiency, professionals contribute to responsible stewardship of public resources, ensuring that government-funded projects and services deliver maximum value to the community. Other relationships, while significant, are more focused on interactions and obligations between engineers, clients, and the public at large, rather than on the regulatory and ethical obligations that directly align with state interests and policies. Thus, the emphasis on efficiency and economy resonates strongly within the framework of maintaining a productive and ethical relationship with governmental authorities and societal regulations.

10. Which part of aeronautical regulations deals with the governance of mechanical operations?

A. 14 CFR 43

B. 14 CFR 65

C. 14 CFR 91

D. AC 43.13-3

The section of aeronautical regulations that governs mechanical operations is 14 CFR 43. This regulation outlines the maintenance, preventive maintenance, and alterations of aircraft and their components, establishing the required standards for these activities. It covers the general rules governing the maintenance of civil aircraft, ensuring safety, airworthiness, and compliance with federal aviation regulations. While the other options also have their relevance in the realm of aviation regulations, they focus on different aspects. For instance, 14 CFR 65 pertains to certification of airmen and aviation maintenance technicians, detailing qualifications and responsibilities rather than direct governance of mechanical operations. 14 CFR 91 addresses general operating and flight rules, governing operational flying activities more broadly than specific mechanical procedures. AC 43.13-3 serves as guidance material offering acceptable methods for maintenance and alterations, complementing the standards set by 14 CFR 43 but not serving as a regulatory standard in itself. Thus, 14 CFR 43 is the direct regulation that covers the governance of mechanical operations in aeronautics.