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Traducción

HW 9

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I. Foundations of Science and Engineering

Task 1

a) *Science and engineering* are related but serve different purposes. Science is concerned with understanding how the natural world works. Scientists observe, experiment, and develop theories to explain phenomena. Engineering, on the other hand, focuses on applying scientific principles to design and build solutions to practical problems. In short, science aims to discover, while engineering aims to create.

b) Yes, it is possible and necessary for both to be ethically and morally responsible for their work. The outcomes of their discoveries and inventions can significantly impact society, the environment, and even future generations. For example, a scientist studying genetics must consider the ethical implications of their findings, and an engineer designing a bridge must ensure it is safe and sustainable.

c1) "La ciencia puede divertirnos y fascinarnos a todos, pero es la ingeniería la que cambia el mundo."

c2) Yes, I agree with Mr. Asimov. While science expands our understanding and can be deeply inspiring, it is engineering that transforms those insights into tangible realities like smartphones, medical devices, clean energy systems, or transportation networks. Engineering is the bridge between knowledge and impact, turning ideas into tools that shape the way we live.

Task 2

a) According to Thomas Kuhn in *The Structure of Scientific Revolutions*, a discipline evolves into "normal science" when a scientific community accepts a paradigm a set of shared assumptions, theories, methods, and standards for what constitutes legitimate research. Before reaching this stage, a field goes through a pre-

paradigmatic phase where there are competing schools of thought. Once a paradigm gains consensus, scientists begin to work within that framework, solving problems and refining knowledge. This stage is what Kuhn calls normal science.

b)The foundations of normal science (defined by the prevailing paradigm) limit the types of questions scientists ask and the kinds of problems they consider worth solving. Since the paradigm dictates what is "normal," scientists focus on solving puzzles that fit within its rules. Anomalies or questions that challenge the paradigm are often ignored or dismissed. This can slow down radical innovation and suppress alternative theories until enough anomalies accumulate, eventually leading to a scientific revolution and the adoption of a new paradigm.

Task 3

a) *Wicked problems* are complex and hard to define. They don't have a clear or unique solution and often involve many stakeholders with different interests, as well as incomplete or contradictory information. Every attempt to solve them may create new problems. Examples include climate change or poverty.

b)   These problems are beyond the scope of normal science because they can't be solved using traditional methods or within a single paradigm. Normal science focuses on well-defined problems with clear solutions, while wicked problems require interdisciplinary, flexible, and collaborative approaches.

II. Elements of Academic Work

Task 4

a) The "academic voice," which typically uses the third-person point of view, is considered the standard in academic writing because it promotes **objectivity, clarity, and formality**. Using third person removes personal bias and focuses attention on the ideas, evidence, and arguments rather than the writer. This helps maintain a neutral and professional tone, which is essential for scholarly communication and critical analysis.

b)

I) Use definite, specific, concrete language: This rule encourages writers to choose words that are **clear and precise** rather than vague or abstract. Specific language helps the reader visualize or understand the subject more effectively.

Example: Instead of saying "The results were bad," a better option would be "The experiment failed to produce measurable growth in the test samples."

II) Omit needless words: This rule emphasizes the importance of **conciseness**. Writers should remove words or phrases that do not add value to the sentence, as unnecessary language can obscure meaning and reduce clarity.

Example: Instead of saying "Due to the fact that the test failed," write "Because the test failed."

Task 5

a) *Why is "academic voice" (third-person point of view) considered to be the standard for academic writing?*
Academic voice is valued because it emphasizes objectivity and professionalism. Writing in third person removes personal bias and helps focus on the evidence and reasoning rather than the writer's personal opinions. This supports the goal of academic writing: to present arguments based on facts, not personal beliefs.

b)

I) *Use definite, specific, concrete language:* This rule means that writers should avoid vague or abstract terms and instead choose clear and detailed language that accurately conveys meaning.

Example:

Vague: "The machine did something strange."

Specific: "The machine overheated and shut down after running for two hours."

b)

II) *Omit needless words.***:** This rule encourages writers to be concise. Unnecessary words can confuse readers and weaken the message. The goal is to make writing clear and direct.

Example:

Wordy: "Due to the fact that the results were inconclusive, the test was repeated."

Concise: "Because the results were inconclusive, the test was repeated."

a) *Why is "good" jargon useful in science and engineering?*

Good jargon allows scientists and engineers to communicate technical ideas efficiently and accurately. It creates a shared language that helps professionals understand complex concepts without lengthy explanations.

b) *Provide a very short example of "bad" jargon.*

Bad jargon: "Leveraging holistic metrics to innovate proactive deliverables."

This type of language is unclear, overly complex, and excludes non-experts, making it hard to understand and less ethical in communication.

III. Survey of Real-World Technical Documents

Task 6

a) What are the organizational benefits from using SOPs?

Standard Operating Procedures (SOPs) offer several key benefits for organizations:

1. Consistency: SOPs ensure tasks are performed the same way every time, reducing errors.

2. Efficiency: Clear steps save time and avoid confusion.

3. Training: SOPs are useful tools for onboarding and training new staff.

4. Quality Control: They help maintain high standards across processes.

5. Compliance: SOPs assist in meeting legal, safety, or industry regulations.

6. Accountability: They clarify roles and responsibilities within a process.

b) Traducción del fragmento del SOP:

Los sitios que alteren más de 5,000 pies cuadrados están sujetos a la Sección 438 de la Ley Federal de Independencia y Seguridad Energética de 2007, la cual establece estrictos requisitos para el manejo del agua pluvial en proyectos de desarrollo y reurbanización de instalaciones federales. La sección establece: "El patrocinador de cualquier proyecto de desarrollo o reurbanización que involucre una instalación federal con una huella que exceda los 5,000 pies cuadrados deberá utilizar estrategias de planificación del sitio, diseño, construcción y mantenimiento para mantener o restaurar, en la máxima medida técnicamente posible, la hidrología previa al desarrollo de la propiedad con respecto a la temperatura, velocidad, volumen y duración del flujo." La implementación de la Sección 438 debe realizarse mediante el uso de métodos de infraestructura verde/desarrollo de bajo impacto (GI/LID por sus siglas en inglés), que utilicen o imiten procesos naturales para: 1) infiltrar y recargar, 2) evapotranspirar, y/o 3) recolectar y utilizar la precipitación cerca del lugar donde cae. Ejemplos apropiados de GI/LID incluyen:

- green roofs

- trees and tree boxes

- rain gardens

- vegetated swales

- pocket wetlands

- infiltration planters

- porous and permeable pavements

- vegetated strips

- reforestation and revegetation

- protection of riparian buffers and floodplains

- rain barrels and cisterns

TASK 7

a) RFPs are typically used by **large organizations** such as **government agencies**, **non-profits**, **multinational corporations**, and **international organizations** like the UN or the World Bank. These entities often have **complex, large-scale projects** that require specialized services or products from contractors. The use of an RFP ensures that these organizations can **compare proposals from different bidders**, evaluate qualifications, and select the best offer based on criteria such as expertise, price, and delivery timelines.

b) *Translation of the excerpt from an RFP posted by the United Nations Fund for Population Activities (UNFPA):*

REQUEST FOR PROPOSAL (RFP)

The United Nations Population Fund (UNFPA), an international development agency, seeks qualified bids for the provision of services for "Programming a digital platform for a demographic indicators system to monitor adolescent pregnancy in the State of Mexico and the states of the Central-East subcommission, and Validation of the Youth Human Development Index for monitoring adolescent pregnancy in the State of Mexico." Hereby, your company is invited to submit your best financial and technical proposal for the required service. Your proposal could form the basis of a professional services contract (CPS) between your company and UNFPA.

Task 8

Research Papers vs. White Papers

1. Purpose:

- Research Papers are primarily aimed at presenting original research, advancing knowledge in a specific field, and contributing to the academic or scientific community. They aim to inform, explain, and discuss findings in detail.

- White Papers are more focused on solving specific problems or addressing particular challenges. They are often used to inform and persuade a specific audience (such as industry professionals, policymakers, or stakeholders) to act or consider a particular solution.

2. Audience:

- Research Papers are mainly written for academic or scientific audiences, such as scholars, researchers, and experts in the field. They are often published in academic journals and undergo peer review.

- White Papers are typically written for a broader, non-academic audience, including decision-makers, businesses, or the public, depending on the topic. They may be distributed by companies, organizations, or government entities.

3. Structure and Format:

- Research Papers have a rigid structure, typically including sections like introduction, literature review, methodology, results, discussion, and conclusion. The writing is highly formal and evidence-based, with a focus on presenting data and analysis.

- White Papers have a more flexible structure but often include an executive summary, problem definition, proposed solution, benefits, and recommendations. The language is more accessible than in research papers, aiming to explain complex issues in simpler terms for a wider audience.

4. Content:

- Research Papers involve original data collection, experiments, or theoretical analysis, and the content is often focused on answering a specific research question or hypothesis.

- White Papers typically present existing knowledge or case studies related to a particular issue, along with detailed solutions or recommendations. They may not involve original research but could incorporate data from other sources**.**

5. Citations and References:

- Research Papers require extensive citations of primary and secondary sources, supporting every claim with evidence from peer-reviewed literature.

- White Papers also reference external sources, but the references are less extensive, focusing more on practical applications and expert opinions rather than the depth of academic sources.

6. Length:

- Research Papers can be lengthy, ranging from several pages to over 20 pages, depending on the depth of research and complexity of the topic.

- White Papers are typically shorter, usually between 5 to 10 pages, but can vary based on the subject and the amount of detail needed.

IV. Contemporary Topics in Engineering and Science

TASK 9

a) Describe at least three of the new features expected for 6G communication.

1. Ultra-Low Latency:

   6G is expected to offer near-instantaneous communication with latency as low as 1 millisecond or even less. This will allow for real-time interaction in applications like autonomous driving, remote surgery, and virtual reality, where delays can be critical.

2. Terahertz Band (THz) Frequency:

   Unlike 5G, which uses millimeter-wave frequencies, 6G will utilize the terahertz frequency band. This will allow for extremely high data transfer speeds (possibly up to 1 Tbps) and enable massive data transmission, facilitating applications such as ultra-high-definition holographic communication.

3. Intelligent Networks with AI Integration:

   6G will integrate artificial intelligence (AI) and machine learning into its architecture, enabling networks to be self-organizing and self-optimizing. This will enhance network efficiency, adaptiveness, and

reliability, allowing the system to autonomously manage congestion, optimize traffic, and dynamically adjust to user demands.

b) What are your thoughts on living in a 6G world?

Living in a 6G world would bring **ultra-fast connectivity** and enable breakthroughs in fields like **virtual reality**, **smart cities**, and **autonomous systems**. The integration of **AI** into networks could make communication more efficient and adaptive. However, challenges such as **privacy concerns**, **data security**, and **environmental impact** would need to be addressed to ensure it benefits society responsibly.

V. Elements of Professional Consulting

Task 10

a) Why will Git coupled with GitHub help meet ISO 9001 standards?

Git, coupled with GitHub, is an excellent tool for meeting ISO 9001 document control standards for several reasons:

1. **Approval Before Issue (i):**

    Git allows for version control of documents, meaning that any change made to a document can be tracked and controlled. Before a document is shared or distributed, it can be reviewed and approved by stakeholders via GitHub's pull request system, ensuring that only the approved version is issued.

2. **Review and Update Documents (ii):**

    GitHub provides a robust system for reviewing and updating documents. Each update to a document is recorded as a commit, and previous versions are preserved. When a document needs to be updated, it can be edited, reviewed, and re-approved in a controlled manner, with all changes clearly documented and visible in the commit history.

3. **Identifying Changes and Revision Status (iii):**

    Git automatically tracks changes made to documents, and each commit comes with a description of what

was changed. GitHub allows users to compare different versions of a document, making it easy to identify changes. Furthermore, GitHub provides a clear view of the current revision status of a document, with version tags and commit histories.

4. **Availability of Relevant Versions (iv):**

   GitHub ensures that the latest version of the document is easily accessible to all authorized users. The platform allows users to access specific versions of documents at any time, ensuring that only the relevant and approved versions are used at points of need. This is especially useful for teams that require the most up-to-date documents for their work.

By using Git and GitHub, organizations can ensure compliance with ISO 9001's document control requirements, while benefiting from efficient collaboration, transparency, and traceability of document changes.

Task 11

a) Do you see this type of partnership as a viable future for the translation industry? Explain why or why not.

Yes, this type of partnership between **AI-powered translation systems and human translators** is a viable and promising future for the translation industry. Here's why:

1. **Efficiency and Speed**:

   Machine translation can handle large volumes of text quickly, significantly reducing the time needed for initial drafts. This is especially useful in industries where **fast turnaround** is essential.

2. **Human Quality Assurance**:

   While AI can produce grammatically correct output, it still struggles with **nuance, tone, context, and cultural sensitivity**. Human translators ensure that the final product maintains **accuracy and naturalness**, especially in specialized or creative content.

3. **Cost-Effectiveness**:

   Using AI for the initial translation and humans for post-editing can reduce costs for clients while still delivering **high-quality results**, making professional translation services more accessible.

4. **Real-World Adoption**:

   Many language service providers (LSPs) are already integrating **MTPE (Machine Translation Post-Editing)** into their workflows. This hybrid model is becoming a **standard practice**, especially for technical, legal, and user-generated content.

In conclusion, the collaboration between machines and humans in translation is not only viable—it is already reshaping the industry, offering a balance between **speed, cost, and quality**. The key is leveraging the strengths of both.