

Arizona State University (ASU) CEE181 Technological, Social, and Sustainable Systems Final Practice Exam (Sample)

Study Guide



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SAMPLE

Questions

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1. Which of the following best describes the importance of good written communication?
 - A. It is largely irrelevant in today's world
 - B. It's become less important than before
 - C. It is a key investment in future opportunities
 - D. It serves only to fulfill academic requirements
2. Which of the following was NOT an effect of the increased deployment of railroads?
 - A. Increased use of coal
 - B. Development of the light bulb
 - C. Establishment of time zones
 - D. Development of the telegraph
3. What issue may arise for developing countries regarding fossil fuel usage?
 - A. They are urged to reduce fossil fuel use without support
 - B. They have no access to alternative energy sources
 - C. They are not responsible for historical emissions
 - D. They have sufficient technology to transition quickly
4. How do ethical theories like Utilitarianism view capitalism?
 - A. As an outdated system
 - B. As a detrimental influence
 - C. As the correct economic approach
 - D. As lacking moral implications
5. Which of these indicates a perceived urgency related to fresh water resources?
 - A. Increased pollution in water sources
 - B. Wilder weather patterns disrupting supplies
 - C. Concerns over conservation and sustainability
 - D. Population growth creating demand

6. When issues arise in complex systems, what is the best way to approach them?
- A. Consider them as problems to eliminate
 - B. View them as conditions to manage
 - C. Ignore them until they resolve
 - D. Ask authorities for guidance
7. In the context of ethical dilemmas, how might society be influenced by changing human responses?
- A. It will strengthen legal responsibility
 - B. It could diminish debates on moral issues
 - C. It will have no effect on personal ethics
 - D. It will clarify ethical decision-making
8. What does the idea of money illustrate about modern economies?
- A. They are solely based on tangible assets
 - B. They rely entirely on physical currency
 - C. They are fundamentally based on faith
 - D. They depend on historical value
9. What stage of development are cyborg insects currently in?
- A. Fully operational
 - B. In the early experimental stages
 - C. Widely used in military operations
 - D. Passed ethical review
10. What does the concept of technological determinism suggest?
- A. Technology is secondary to cultural growth
 - B. Culture dictates technological advancements
 - C. Technology drives the development of human systems
 - D. Technological change occurs without social impact

Answers

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

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Explanations

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1. Which of the following best describes the importance of good written communication?

- A. It is largely irrelevant in today's world
- B. It's become less important than before
- C. It is a key investment in future opportunities
- D. It serves only to fulfill academic requirements

Good written communication is vital because it serves as a foundational skill that influences future opportunities in both personal and professional contexts. Clear and effective writing can enhance an individual's ability to convey ideas, collaborate with others, and present information persuasively. In today's interconnected world, where digital communication plays a crucial role, the ability to articulate thoughts through written words can differentiate individuals in competitive environments. It communicates professionalism and attention to detail, which can lead to increased trust and credibility with peers, clients, and employers. Moreover, strong written communication skills can open doors to various opportunities, such as job prospects, promotions, and networking. Organizations highly value employees who can clearly document processes, create comprehensive reports, and effectively communicate within teams. Therefore, investing in writing skills is an investment in oneself that can pay dividends over time in career and personal growth.

2. Which of the following was NOT an effect of the increased deployment of railroads?

- A. Increased use of coal
- B. Development of the light bulb
- C. Establishment of time zones
- D. Development of the telegraph

The development of the light bulb was not an effect of the increased deployment of railroads. While railroads were crucial in transforming transportation and communication during their time, the invention of the light bulb was primarily a separate technological advancement driven by the needs for electric lighting and improving daily life in urban areas. In contrast, the increased deployment of railroads had a direct impact on several other aspects. The demand for rail transport significantly boosted the use of coal as it served as the primary fuel for locomotives. The establishment of time zones emerged from the need to create a standardized system for scheduling trains across the vast distances covered by railroads, addressing issues caused by varying local times. Additionally, the development of the telegraph coincided with and supported the railroad expansion, facilitating quicker communication to manage train schedules, safety, and operational efficiency. Understanding these relationships provides insight into how technological advancements are often interlinked, shaping societal structures and daily life.

3. What issue may arise for developing countries regarding fossil fuel usage?

A. They are urged to reduce fossil fuel use without support

B. They have no access to alternative energy sources

C. They are not responsible for historical emissions

D. They have sufficient technology to transition quickly

The issue that may arise for developing countries regarding fossil fuel usage primarily revolves around the pressure to reduce fossil fuel consumption without receiving adequate support from developed nations. Many developing countries face the challenge of economic growth and energy needs while also being urged to adhere to international commitments aimed at climate change mitigation. This creates a dilemma because fossil fuels are often the most accessible and affordable energy sources available to them. Furthermore, these countries may lack the financial resources, technology, and infrastructure to transition to cleaner energy alternatives, making the call for reductions potentially harmful to their economic development and energy security. The emphasis on reducing fossil fuel usage without providing necessary support can lead to social and economic instability, as these countries struggle to balance energy needs with environmental responsibilities. While access to alternative energy sources (mentioned in one of the other options) might be limited, and historical emissions are a concern, the primary issue highlighted is the lack of comprehensive support and resources to facilitate this transition, making it challenging for developing nations.

4. How do ethical theories like Utilitarianism view capitalism?

A. As an outdated system

B. As a detrimental influence

C. As the correct economic approach

D. As lacking moral implications

Utilitarianism, an ethical theory that focuses on maximizing overall happiness and minimizing suffering, tends to view capitalism favorably, particularly when it fosters innovation, efficiency, and wealth creation that can contribute to greater societal well-being. Supporters of capitalism argue that it allows individuals to pursue their interests, which can lead to improvements in living standards and economic growth. This alignment with utilitarian principles suggests that if capitalism leads to increased prosperity for the majority, then it can be seen as the correct economic approach. In the context of utilitarianism, the emphasis is on the outcomes of economic systems—if capitalism effectively enhances quality of life and utility for a broad population, it is likely to be endorsed by utilitarian thinkers. Therefore, the view of capitalism as the correct economic approach aligns with the fundamental utilitarian perspective of evaluating systems based on their consequences for overall happiness.

5. Which of these indicates a perceived urgency related to fresh water resources?

- A. Increased pollution in water sources
- B. Wilder weather patterns disrupting supplies
- C. Concerns over conservation and sustainability
- D. Population growth creating demand

The perceived urgency related to fresh water resources is strongly indicated by population growth creating demand. As populations increase, the demand for fresh water also escalates, leading to greater competition for limited water supplies. This rise in demand can strain existing water systems, result in over-extraction of resources, and prompt concerns regarding the long-term availability of fresh water. Communities may face challenges in providing adequate water for drinking, sanitation, and agriculture, making it essential to address these issues urgently. While increased pollution, climate change, and conservation concerns are important factors in the overall water sustainability discourse, they stem from or are exacerbated by population growth. The direct link between a rising population and an increased need for fresh water resources highlights why this particular choice expresses a more immediate urgency regarding water availability.

6. When issues arise in complex systems, what is the best way to approach them?

- A. Consider them as problems to eliminate
- B. View them as conditions to manage
- C. Ignore them until they resolve
- D. Ask authorities for guidance

Viewing issues in complex systems as conditions to manage is essential for a nuanced understanding and effective intervention. Complex systems often exhibit behaviors that are unpredictable and interdependent, meaning that issues are rarely simple problems that can be solved outright. Instead, they should be understood as dynamic challenges that require continuous adaptation and management. When considering issues as conditions to manage, it emphasizes the importance of monitoring the system's behavior, understanding the relationships within the system, and adapting strategies accordingly. This approach acknowledges that complexity is inherent and that solutions may not be straightforward; rather, they often involve multiple stakeholders and require iterative processes. In contrast to simply trying to eliminate problems—an approach that may overlook underlying causes or lead to unintended consequences—managing conditions involves ongoing evaluation and responsive planning. This mindset also allows for flexibility and resilience in the face of changing circumstances, enabling systems to evolve positively rather than being forced into rigid solutions. Thus, approaching issues as conditions to manage is fundamental to successfully navigating the complexities inherent in technological, social, and sustainable systems.

7. In the context of ethical dilemmas, how might society be influenced by changing human responses?

- A. It will strengthen legal responsibility
- B. It could diminish debates on moral issues
- C. It will have no effect on personal ethics
- D. It will clarify ethical decision-making

Changing human responses can significantly impact how society approaches ethical dilemmas. When individuals become desensitized or when prevailing attitudes shift dramatically—due to factors such as cultural trends, social media influence, or economic pressures—the complexity of moral debates may be lessened. This could lead to a tendency to bypass rigorous discussions about ethical considerations, as society may prioritize convenience, efficiency, or consensus over the exploration of diverse moral viewpoints. In contrast, legal and personal ethics would continue to evolve, but it is the potential attenuation of debate that stands out as a consequence of changing human responses. As people become accustomed to new norms, they might engage less critically with issues that were once considered morally contentious. Thus, the richness of dialogue surrounding moral issues could be diminished, fostering a more passive acceptance of prevalent societal views instead of robust, challenging discussions based on ethical reasoning.

8. What does the idea of money illustrate about modern economies?

- A. They are solely based on tangible assets
- B. They rely entirely on physical currency
- C. They are fundamentally based on faith
- D. They depend on historical value

The idea of money primarily illustrates that modern economies are fundamentally based on faith. This concept acknowledges that the value of money is not derived from the physical attributes of the currency itself but from the trust and confidence that individuals and institutions place in it. People accept money in exchange for goods and services because they believe that others will also accept it in the future, creating a cycle of trust. This reliance on faith extends beyond just physical currency to include digital forms of money and credit systems. Economic stability depends upon the collective belief in the currency's value, the government's ability to maintain that value, and the regulatory frameworks surrounding it. Thus, the functioning of modern economies is closely tied to the confidence that individuals have in the stability and reliability of their financial systems.

9. What stage of development are cyborg insects currently in?

- A. Fully operational
- B. In the early experimental stages
- C. Widely used in military operations
- D. Passed ethical review

Cyborg insects are indeed in the early experimental stages of development. Researchers have been working on integrating electronic systems with living insects to create what are often referred to as "biobots" or "cyborg insects." This involves implanting devices that enable researchers to control the insect's movement or gather data, making it a promising field for applications such as environmental monitoring or search and rescue operations. The early experimental stage means that while there are prototypes and proof-of-concept demonstrations, the technology is not yet refined for widespread use or deployment in real-world scenarios. Ongoing research is focused on improving the technology's reliability, functionality, and ethical considerations surrounding the use of living organisms in this manner. Therefore, saying that cyborg insects are in the early experimental stages accurately reflects the current status of this innovative but nascent field of study.

10. What does the concept of technological determinism suggest?

- A. Technology is secondary to cultural growth
- B. Culture dictates technological advancements
- C. Technology drives the development of human systems
- D. Technological change occurs without social impact

The concept of technological determinism posits that technology is a primary force shaping society and driving the development of human systems. This perspective suggests that advancements in technology influence social structures, culture, and individual behaviors. Under this view, the introduction and evolution of technological tools and systems lead to significant changes in various aspects of life, including economic systems, communication, and even social interactions. Technological determinism emphasizes that technology is not merely a tool used by humans, but rather a driving force that shapes human experience and societal development. This perspective highlights the profound impact that innovations have on facilitating change and influencing the way societies operate, often prioritizing the role of technology over other factors such as cultural influences or social considerations. In contrast, other viewpoints like cultural determinism argue that it is culture that shapes technological development, portraying a more reciprocal relationship instead of a one-way influence from technology to society. Understanding technological determinism is key in exploring the interplay between technology and social systems and recognizing the extent to which technology influences various facets of human experience.