**ARTIFICIAL INTELLIGENCE COURSEWORK**

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# QUESTION 1

# QUESTION 2

The scope of this mechanical engineering knowledge model/ontology is to offer extensive information and assistance to experts, educators, manufacturers, students, and mechanical engineers.

**Competency Questions**

1. What core concepts and standards direct the simulation and design of mechanical systems?
2. How may engineering design be used to optimize product performance?
3. What are the fundamental techniques used in mechanical engineering for semantic search and data integration?
4. In what ways can the acquisition of knowledge facilitate innovation in manufacturing and product design?
5. What are the most important quality requirements and inspection procedures in the manufacture of mechanical engineering?
6. How is the safety and quality of products enhanced by adherence to industrial regulations?
7. What core ideas and standard procedures in mechanical engineering should students as well as professionals be aware of?
8. In what ways may an ontology improve comprehension of best practices and ideas in mechanical engineering?

**References**

1. Craig, K. (n.d.). *Mechanical Design Fundamentals Fundamental Principles of Mechanical Design*. [online] Available at: <https://mae.ufl.edu/designlab/DFMA%20Tips/Fundamental_Design_Principles_KCraig.pdf>.
2. Anon, (2022). *What are quality parameters in manufacturing processes?* [online] Available at: <https://www.infinitiaresearch.com/en/news/what-are-quality-parameters-in-manufacturing-processes/>.
3. Szwed, D. (2023). *The Importance of Quality Control and Inspection in Industrial Manufacturing*. [online] Mechanical Power Inc. Available at: <https://www.mechanicalpower.net/blog/manufacturing/the-importance-of-quality-control-and-inspection-in-industrial-manufacturing/>.
4. Dunbar, D., Hagedorn, T., Blackburn, M., Dzielski, J., Hespelt, S., Kruse, B., Verma, D. and Yu, Z. (2022). *Driving Digital Engineering Integration and Interoperability Through Semantic Integration of Models with Ontologies*. [online] arXiv.org. doi:https://doi.org/10.48550/arXiv.2206.10454.
5. ExtruDesign. (2021). *Mechanical Engineering Standards List*. [online] Available at: <https://extrudesign.com/mechanical-engineering-standards-list/>.
6. English, T. (2020). *Concepts Mechanical Engineers Need to Understand*. [online] interestingengineering.com. Available at: <https://interestingengineering.com/innovation/concepts-mechanical-engineers-need-to-understand>.