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State Exam questions
Mechanical Engineering MSc
Production Engineering specialization

Obligatory:

Production Process Optimization and Design of Material Handling and Storage Systems

1. Introduce the five main principles of Lean Management.
2. Introduce the structure of the Toyota Production System (TPS). What are the types of waste in the production processes (MUDA, MURA,MURI)? Explain with examples.
3. Introduce the main characteristics of the ’Push’ and the ’Pull’ Production Systems.
4. Define the meaning of SMED. What are the main steps of development process? Explain the following concepts: jidoka, heijunka, poke-yoke, kanban.
5. Introduce the following tools and methods: A3, 5 Why, 8D analysis, FMEA, Ishikawa diagram.
6. Introduce the unit load concept in materials handling. Review the definition, advantages/disadvantages, processes and equipment of load unitization.
7. Review the classification of materials handling equipment, introduce the characteristics of each one of groups.
8. Introduce the classification, operation and constructional features of industrial vehicles/trucks.
9. Introduce the definition/description, types, operation and constructional features of the following conveyors: belt conveyors, roller conveyors, screw conveyors.
10. Introduce the definition/description, types, operation and constructional features of the following hoisting equipment: hoists, winches, bucket elevators, cranes.