

MEC-E7001 Examination 23.2.2021

Write full sentences using clear and readable fonts

1. Describe how and why the following factors affect products' throughput time in production:
 - a) System utilization rate
 - b) Processing time variation
 - c) Batch size
2. Describe the following optimization problem types, especially from the difficulty of optimal solving point of view. Which solving methods can be used for each?
 - a) Linear problem
 - b) Linear integer problem
 - c) Convex nonlinear problem
 - d) Nonlinear non-convex problem with integer constraints
3. Describe production control of a job shop using priority rules. Describe typical rules. Why are they used? What are the advantages and disadvantages of such a system compared to real optimization when making production scheduling decisions?
4. How can
 - a) average throughput time,
 - b) maximum tardiness,
 - c) number of tardy products,
 - d) total tardinessbe minimized for a single machine? You do not need to specify models in detail, just describe principle. Describe the assumptions you make concerning your system.