

IV B.Tech II Semester Supplementary Examinations, Apr/May 2006
AUTOMATION IN MANUFACTURE
(Production Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Discuss the following automation strategies:
 - i. Combined Operations
 - ii. On-line inspection
 - iii. Plant Operation Control
 - iv. Process Control and Optimization(b) List out the various hydraulic components that can be used in automated manufacturing systems. Explain them briefly. [8+8]
2. (a) Explain the following rotary transfer mechanisms with the help of neat sketches:
 - i. Geneva Mechanism
 - ii. Ratchet and Pawl Mechanism(b) Explain the differences between intermittent transfer mechanism and power-and-free transfer mechanism. [10+6]
3. (a) Discuss the analysis of the performance of a partially automated flow line without buffer storage.
(b) What are the reasons for the implementation of automated flow lines in the production units? Explain briefly. [8+8]
4. (a) What are the different manual methods for solving the line balancing problems? Briefly discuss any one method.
(b) Discuss the following ways for improving the performance of the line balance:
 - i. Dividing work elements
 - ii. Pre assembly of components
 - iii. Inventory Buffers between stations [8+8]
5. (a) Explain the advantages of implementing various principles of material handling.
(b) Describe the following conveyors used in material transport systems:
 - i. In-floor tow-line conveyor
 - ii. Overhead trolley conveyor. [8+8]
6. (a) Explain the following components of an AS/RS:
 - i. Storage/Retrieval machine
 - ii. Storage modules.

- (b) “The work-in-process storage systems are a systematic method for managing work-in-process in batch production factories”-Explain the reasons. [8+8]
7. Draw the block diagram of Adaptive Control with Optimization system for milling and explain each block in detail. [16]
8. (a) Which type of Rapid Prototyping systems use a liquid as starting material? Discuss any one such RP system.
- (b) Define ‘Business Process Reengineering’. Discuss how the Business Process Reengineering tool will enhance the performance of companies to survive in the emerging competitive environment. [8+8]

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