

AUTOMATION IN MANUFACTURING (AM)

UNIT – 1

1. What are the types of automation? Discuss them briefly?
2. What are the important components used in automated systems?
3. Draw the general structure of a hydraulic circuit and explain important components involved in it.
4. Describe the function and working of the following automated machine tools.
 - a. transfer machine
 - b. single station machine
5. What are the important mechanical feeding devices used in automated systems?

UNIT – 2

1. Explain the salient factors on which the most appropriate type of transport system for a given application depends?
2. Discuss the efficiency of automated flow lines with storage buffer?
3. What are the three important categories of work part transport methods? Explain each method briefly.
4. Explain the differences between intermittent transfer mechanism and power-and-free transfer mechanism?
5. Illustrate the working of walking beam transfer system with the help of neat sketch?
6. Draw the neat sketch of Ratchet and Pawl mechanism and discuss briefly.
7. Explain briefly Cam mechanism for material transfer with the help of neat sketch?
8. Explain the use of buffer storage zones in automated flow lines?
9. What are the different types of control functions that are required in automated flow lines?
10. Briefly discuss the following two alternative control strategies used in automated flow lines
 - a. Instantaneous control
 - b. memory control

11. Discuss the important general terminology used in the analysis of automated flow lines?
12. What are the two basic approaches used in the analysis of transfer lines without storage? Explain them briefly?

UNIT – 3

1. Discuss the inventory buffers between stations for improving the performance of the line balance?
2. Explain the flexible assembly lines?
3. Explain briefly following assembly systems
 - a. Manual single-stations assembly system
 - b. Automated assembly system
4. Explain the following terms related to line balancing
 - a. station time
 - b. cycle time
 - c. line efficiency
 - d. balance delay
5. Explain the steps used in solving the line balancing problem by using largest-candidate rule method?
6. What are the considerations to be made in assembly line design?
7. Enumerate the difference between flexible assembly lines and manual assembly lines?

UNIT – 4

1. Explain types of material handling equipment?
2. Discuss the important factors to be considered in material handling system design?
3. Discuss the important features of conveyors and their applications?
4. Describe the following conveyor used in material transport systems
 - a. Roller and skate wheel conveyors
 - b. belt conveyors
5. What is automated guiding vehicle system? explain
6. Discuss the use automated work-in-process storage systems?

7. Explain the various problems encountered in interfacing handling and storage systems with manufacturing units?

UNIT – 5

1. Enumerate differences between ACO and ACC? Types of adaptive control?
2. Draw the block diagram of Adoptive control with optimization system for milling and explain each block in detail/
3. List out various operation parameters that can be measured in turning operation to using adoptive control systems?
4. List out the variable parameters that can be measured in grinding process to using Adoptive control systems?
5. What are the advantages of using Adoptive control systems in turning operations ?

UNIT – 6

1. Define accuracy precision and sensitivity if an automated inspection system?
2. Name the different types of contact inspection techniques and explain any one technique?
3. Distinguish between contact inspection and non-contact inspection methods?