PVP 14

Code: ME8T2B

IV B.Tech - II Semester – Regular / Supplementary Examinations
March 2019

AUTOMATION IN MANUFACTURING
(MECHANICAL ENGINEERING)

Duration: 3 hours Max. Marks: 70

PART – A

Answer ***all*** the questions. All questions carry equal marks

11x 2 = 22 M

1.

a) What is automation?
b) What is the difference between open loop and closed loop control systems?
c) What is automated flow line?
d) Name the methods of transporting work-piece.
e) What is meant by automated assembly?
f) Mention the different types of conveyors used in material handling.
g) Define automated storage/retrieval system.
h) What is adoptive control?
i) What is index of performance in adaptive control?
j) Mention the objective of inspection in manufacturing.
k) What is a CMM?

PART – B

Answer any ***THREE*** questions. All questions carry equal marks.

3 x 16 = 48 M

2. a) Discuss the reasons for Automation. 8 M

b) Explain various automation strategies. 8 M

3. a) Explain the analysis of transfer lines with and without buffer storage. 8 M

b) An 8-station in-line assembly machine has a 10s ideal cycle time. The base part is automatically loaded prior to the first station, and components are added at each of the stations. The fraction defect rate at each of the 8 stations is q=0.02, and the probability that the defect will jam is m=0.5. When a jam occurs, the average downtime is 3 min. Determine the average production rate, the yield of good assemblies, and the uptime efficiency of the assembly machine. 8 M

4. a) What are the different types of material handling equipment? Explain them briefly. 8 M

b) Explain about Automated Guided Vehicle System (AGVS). 8 M

5. a) Explain with a neat sketch Adaptive control with constraints. 8 M

b) Explain the three functions of Adaptive control. 8 M

6. a) What are the advantages of CMM? 8 M

b) Discuss about machine vision. 8 M