Code No: **R42034** **R10** **Set No. 1**

IV B.Tech II Semester Supplementary Examinations, April/May - 2019

AUTOMATION IN MANUFATURING

(Common to Mechanical Engineering and Automobile Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks
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1. a) Define Automation. List out the reasons for automating. [8]
   b) Explain the role of pneumatic and hydraulic components in Automation. [7]

2. a) Sketch and explain various linear transfer mechanisms in automation. [8]
   b) What are the different types of control function that are required in an automated flow line? Discuss them briefly. [7]

3. a) Explain the efficiency of flow line when flow line is having storage buffers with infinite capacity. [8]
   b) Discuss the analysis of the performance of a partially automated flow line without buffer storage. [7]

4. a) Briefly explain ranked position weights method of line balancing with suitable example. [8]
   b) Enumerate the differences between flexible assembly lines and manual assembly lines. [7]

5. a) What is material handling? Describe the different types of cranes used for material handling. [8]
   b) What is cart-on-track conveyor? How it differs from belt conveyor? [7]

6. a) Explain the following performance criteria by which the performance of automated storage systems can be measured:
   (i) Storage capacity (ii) System through put
   (iii) Utilization (iv) Uptime reliability. [8]
   b) Explain the reasons that justify the installation of an automated storage system for work-in-process. [7]

7. a) What are the sources of variability in machining, where adaptive control can be most advantageously applied? [8]
   b) Explain the process of adaptive control constraint (ACC). [7]

8. a) How the machine vision technologies improve the accuracy of automatic inspection? Explain. [8]
   b) Write a short note on CMM operation and programming. [7]