

Code No: 127AR**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B.Tech IV Year I Semester Examinations, September - 2021****AUTOMATION IN MANUFACTURING****(Mechanical Engineering)****Time: 3 Hours****Max. Marks: 75****Answer any Five Questions
All Questions Carry Equal Marks**

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1. List and explain the ten Strategies of Automation and their effects on the operation time, work – handling time, fraction defect rate, etc. [15]
2. Describe the pneumatic and hydraulic components circuits used in Automated machine tools, and compare their relative merits and limitations. [15]
3. A 16 – station Automatic transfer line has the following operating characteristics $T_c = 0.75$ min; $T_d = 3$ min; $p = 0.01$ for all the workstations. A proposal has been submitted to place a storage buffer between the stations 8 and 9 to improve the overall efficiency of the transfer line. What is the current line efficiency (use the upper – bound approach), and what is the maximum possible efficiency that would result from the use of a storage buffer? [15]
4. Analyze a two – stage automatic flow line, and discuss the results. [15]
5. Explain in detail the following terms with respect to Line balancing Workstation process time, Cycle time, Precedence constraints, and Precedence diagram. [15]
6. Describe the three methods used in industry to accomplish the assembly processes. [15]
7. Describe the different types of AGV's and their applications. [15]
- 8.a) Explain the principles of Business Process Reengineering.
b) What is Rapid Proto typing? Explain the principle, process, advantages and limitations of Selective Laser Sintering. [7+8]

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