***U.S.N*** | | | | | | | | | | |

# P.E.S. College of Engineering, Mandya - 571 401

***(An Autonomous Institution affiliated to VTU, Belagavi)***

**Sixth Semester, B.E. - Mechanical Engineering**

**Semester End Examination; May / June - 2019**

**Computer Integrated Manufacturing**

*Time: 3 hrs* *Max. Marks: 100*

***Note**: Answer **FIVE** full questions, selecting **ONE** full question from each unit.*

## UNIT - I

1 a. Define automation. With a neat sketch, explain three types of automation as a function of production volume and product variety. 11

b. Explain the following methods of work part transport : 9

i) Continuous transfer ii) Intermittent transfer iii) Asynchronous transfer

2 a. Discuss manufacturing lead time and work in process production concepts. 10

b. With a neat sketch, explain the following rotary transfer mechanisms : 10

i) Rack and Pinion ii) Ratchet and Pawl

## UNIT - II

3 a. Explain largest candidate rule and ranked positional weights methods of line balancing. 10

b. Explain the following : 10

i) Upper-bound approach ii) Lower-bound approach

4 a. Discuss briefly the automated flow lines with storage buffers. 10

b. Define the following : 10

i) Precedence diagram ii) Cycle time iii) Balance delay

## UNIT - III

5 a. With a neat sketch, explain the elements of the parts delivery system at an assembly work station. 10

b. Define Material Requirement Planning (MRP). With a block diagram, explain structure of a MRP system. 10

6 a. Explain briefly the general principles of design for assembly. 10

b. With a block diagram, explain general procedure for retrieval computer aided process planning systems. 10

## UNIT - IV

7 a. Discuss the five application groups of automated guided vehicle. 10

b. Write a short note on : 10

i) Sensors ii) Actuators

8 a. With a neat sketch, explain carouse storage systems. 10

b. List the types of conveyors. Explain briefly any two types of conveyors. 10

Contd….2

**UNIT - V**

9 a. With a neat sketch, explain the basic functions of a machine vision system. 10

b. Explain the following :

i) Bar code technology 10

ii) Radio frequency identification

10 a. Sketch and explain the working of cantilever and gantry type of CMM. 10

b. Sketch and explain the scanning laser technique. 10

* * * *