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

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

(An Autonomous Institution affiliated to VTU, Belgaum)

Seventh Semester, B.E. - Mechanical Engineering

Semester End Examination; Dec - 2016/Jan - 2017

Computer Integrated Manufacturing

Time: 3 hrs *Max. Marks: 100*

***Note**: i) Answer **FIVE** full questions, selecting **ONE** full question from each unit.*
ii) Assume suitably missing data, if any.

UNIT - I

1 a. Define automation. Explain different types of automation. 10

b. The average part produced in a certain batch manufacturing plant must be processed through an average of six machines. There are 20 new batches of parts launched each week. Other pertinent data are as follows: Average operation time 6 min, Average setup time 5 hours, Average batch size 25 parts, Average non operation time per batch 10 hour. There are 18 machines in the plant operates on average of 70 production hours/week. Determine; i) MLT ii) Plant capacity iii) Plant utilization. 10

2 a. Discuss with examples types of automated flow lines also list the objectives of automated flow line. 10

b. Sketch and explain the working of Geneva wheel mechanism. 10

UNIT - II

3 a. Explain with examples upper bound and lower bound approaches to analyse automated flow line 10

b. The ideal cycle time of a 16 station transfer line is 1.4 min, the average down time per line will be 6 min and the probability of breakdowns /cycle is equal for all cycle and is equal to 0.004. Determine production rate and line efficiency by considering both upper and lower bound approaches. 10

4 a. Explain the following terms :

i) Balance delay ii) Cycle time 10

iii) Precedence diagram iv) Minimum rational work element.

b. Explain with mathematical expressions different terms in line balancing. 10

UNIT - III

5 a. Explain with neat sketch the following part feeding devices of automated assembly system,

i) Escapement and placement devices 12

ii) Vibratory bowl

b. Discuss the principles used in product design to facilitate automated assembly. 8

Contd….2

6 a.	With a block diagram, explain the general procedure in a retrieval computer aided process planning system.	10
b.	Discuss the fundamental concepts and input to the MRP system.	10

UNIT - IV

7 a.	Explain a type of AGV's used for automated manufacturing system.	10
b.	Explain different material handling systems.	10
8 a.	Explain briefly : i) Sensors ii) Actuators.	10
b.	Explain types of automated storage and retrieval system.	10

UNIT - V

9 a.	Explain Radio frequency identification method.	10
b.	Explain Bar code Technology.	10
10 a.	Explain different structures of CMM with the help of simple sketches.	15
b.	Differentiate between Contact and Non-contact type of inspection methods.	5

* * *