Sixth Semester B.E. Degree Examination, June/July 2013
Computer Integrated Manufacturing

Time: 3 hrs.   Max. Marks:100

**Note: *Answer FIVE full questions, selecting
at least TWO questions from each part.***

PART – A

1 a. What do you mean by automation? With suitable examples, distinguish between fixed and programmable automation. **(09 Marks)**
   b. Discuss briefly the arguments in favour of automation. **(05 Marks)**
   c. A production machine is operated 65 hr/week at full capacity, its production rate is 20 units/hour. During a certain week, the machine produced 1000 good parts and was idle in the remaining time.
      i) Determine the production capacity of machine.
      ii) What was the utilization of the machine during the week under consideration?
      (06 Marks)

2 a. Enlisting the objectives of automated flow lines, Discuss the two configurations used in practice. **(08 Marks)**
   b. Explain three main functions that are utilized to control the operation of an automatic transfer system. **(07 Marks)**
   c. Differentiate between intermittent verses power and free transfer methods of transport. **(05 Marks)**

3 a. A 20 station transfer line is divided into two stages of stations and each has an ideal cycle time of 1.2 mins. The probability of station breakdown per cycle is equal for all stations and P = 0.005 breakdowns/cycle downtime constant Td = 8.0 min compute the following for the buffer capacities: b = 0 and b = ∞.
      i) Frequency of line stop per cycle.
      ii) Average actual production rate.
      iii) Line efficiency. **(08 Marks)**
   b. What is the purpose of buffer storage? Mention two extreme cases of buffer effectiveness in automated flow lines. **(04 Marks)**
   c. What are the two reasons for partial automation? Analyze the performance of partial automation along with suitable assumptions. **(08 Marks)**

4 a. Explain with mathematical expressions, different terms in line balancing. **(04 Marks)**
   b. With suitable example explain the method of computing balance delay using KILBRIDGE and WESTER method and ranked positional weight method. **(16 Marks)**

PART – B

5 a. Explain different types of automated assembly system based on physical configuration.
                                                                                            (08 Marks)
   b. Explain briefly the automated guided vehicle system (AGV's).   (05 Marks)
   c. Explain briefly the recommendations and principles that can be applied in product design to facilitate automated assembly.   (07 Marks)

6 a. With a neat sketch, explain variant CAPP system.   (07 Marks)
   b. List out the benefits of CAPP.   (05 Marks)
   c. What do you mean by MRP? What are the MRP outputs and benefits?   (08 Marks)

7 a. Describe the salient features of CNC systems.   (10 Marks)
   b. Discuss the classification of CNC machine tools, with block diagrams.   (10 Marks)

8 a. With a neat sketch, explain the common robot configurations.   (12 Marks)
   b. Explain four types of programming methods.   (08 Marks)

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