First Semester M.Tech. Degree Examination, December 2011
Industrial Automation

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions.*

1 a. What are the various approaches for dealing with automation projects? Discuss any one approach in detail. **(10 Marks)**
   b. What are the factors that influence the design of the material handling system? Explain them briefly. **(10 Marks)**

2 a. Enumerate the principles of material handling to improve the performance of material handling systems. **(10 Marks)**
   b. Explain the following vehicle guidance technology for AGVs :
     i)   Imbedded guide wires
     ii)   Self-guided vehicles. **(10 Marks)**

3 a. Explain briefly the various measures used to assess the performance of a storage system. **(10 Marks)**
   b. Write a note on following material handling equipments :
     i)   Industrial trucks
     ii)   Conveyor systems. **(10 Marks)**

4 a. Discuss about bar code technologies as an automated data capturing system. **(06 Marks)**
   b. Describe the following ADC technologies :
     i)   Magnetic stripes.
     ii)   Optical character recognition. **(06 Marks)**
   c. What are the components of manufacturing system? Explain them. **(08 Marks)**

5 a. What are the features of parts classification and coding systems? **(06 Marks)**
   b. List the applications of group technology. **(06 Marks)**
   c. What is an FMS? Mention the benefits of FMS. **(08 Marks)**

6 a. Explain the basic functions of a machine vision system. **(10 Marks)**
   b. Explain any two optical inspection techniques. **(10 Marks)**

7 a. Explain the concept of SCADA system with a neat block diagram. **(10 Marks)**
   b. With a neat block diagram, explain remote terminal unit (RTU). **(10 Marks)**

8 a. Explain the procedure of building mathematical model of a plant. **(08 Marks)**
   b. Discuss the comparison between continuous and discrete control. **(06 Marks)**
   c. What are the functional requirements of a process control system? **(06 Marks)**

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