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B.E./B.Tech. (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2012

INDUSTRIAL ENGINEERING

SIXTH SEMESTER

15

IE382 – MANUFACTURING AUTOMATION

(REGULATIONS 2004)

Time: 3 hr

Maximum Mark: 100

Answer ALL questions

PART A – (10 x 2 = 20 marks)

1. What are the elements of a production system?
2. Name five typical factory overhead expenses?
3. What are the reasons for using storage buffers in automated production lines?
4. What are the effects of poor quality parts on the performance of an automated assembly system?
5. What is a motion control system?
6. What is a playback robot with point-to-point control?
7. List any 4 benefits of AGVS.
8. What does RFID stand for?
9. What is a control system?
10. What are function block instructions?

PART B – (5 x 16 = 80 marks)

11. i. Give detailed explanation on the ten strategies for automation and process improvement. (12)
ii. Distinguish between production and manufacturing systems. (4)
12. a.i. A 10 station transfer machine has an ideal cycle time of 25 sec. the frequency of line stops is 0.075 stops per cycle. When a line stop occurs, the average downtime is 4.5min. Determine the average production rate in pc/hr. Also determine the line efficiency and downtime. (8)
ii. Explain how control of an automated production line is achieved. (8)
(OR)
b. Discuss on various part delivery system at workstations of an automated assembly system. (16)
13. a. Explain elaborately on the features of CNC. (16)
(OR)
b.i. Describe with suitable sketches the common robot configurations. (10)
ii. Write detailed notes on the sensors used in Robotics. (6)
14. a.i. Explain various applications AGVS. (8)
ii. Explain various categories of Automat Storage and Retrieval System. (8)

(OR)

b.i. Give an overview of automatic identification methods. (10)

ii. Explain why magnetic stripes are not widely used in factory floor operations. (6)

15. a. i. What are the drawbacks of sequence control. (6)

ii. Explain the capabilities of computer control. (10)

(OR)

b.i. Write detailed notes on ladder logic diagrams. (8)

ii. explain the PLC operating cycle. (8)