(36)

Roll No.: | | | | | | | | |

B.E/B.Tech. (FT) DEGREE END SEMESTER ARREAR EXAMINATION OCT 2011

INDUSTRIAL ENGINEERING BRANCH

VISEMESTER

IE382 –Manufacturing Automation

(REGULATION 2004)

**Time: 3 hr** **Max Marks: 100**

**Answer All Questions**

**PART 'A' (10 x 2 = 20 Mark)**

1. What are the types of production systems?
2. Give some applications of break even analysis
3. Enumerate the reasons for usage of storage buffers in production lines.
4. What do you mean by starving and blocking with respect to transfer lines
5. Compare DNC and CNC
6. What do you mean by adaptive control? Give its applications.
7. Give some Automatic data capturing technologies.
8. What is a carousel storage system? Give few applications of it.
9. Give the symbols for common logic and sequence elements used in ladder logic diagrams.
10. What are the basic components of PLC?

**PART 'B' (5 x 16 = 80 Marks)**

11. Explain in detail definition, objective, basic components, types, controls, specific features and applications of AS/RS system.

12. (a). Describe the advanced automation functions and various levels of automation.

**(Or)**

(b). A piece of automated production equipment has a first cost of Rs. 100,000. The service life is 6 years, the anticipated salvage value is Rs. 10, 000, and the annual maintenance costs are Rs 3000. The equipment will produce at the rate of 10 units/h, each unit worth Rs 2 in added revenue. One operator is required full time to tend the machine at a rate of Rs 10/h. Assume that no overhead rates are applicable. Raw material costs equals Rs 0.2/unit. Use rate of return 20%. Compute the profit breakeven point. Also compute how many hours of operation are required to produce the numbers of units required to produce the breakeven point

13. (a). (i).Explain various work part transfer mechanism in detail (10)

(ii). A rotary worktable is driven by a Geneva mechanism with six slots. The driver rotates at 30 rev/min. Determine the cycle time, available process time and indexing time. (6)

**(Or)**

(b)Explain in detail Design for Automated Assembly.

14. (a).Explain various types of gripper mechanisms used in robots.

**(Or)**

(b).Explain the basic components of NC system and also explain the various motion control systems used in NC in detail

15. (a).Explain in detail the various types, vehicle guidance technology and safety aspects of Automated guided Vehicle systems

**(Or)**

(b).Discuss the various capabilities of PLC and the methods of programming the PLC.