VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
M.E. I Year (Mech.) I-Semester (Make Up) Examinations, March-2016
(Advanced Design & Manufacturing)
Flexible Manufacturing Systems

Time: 3 hours

Max. Marks: 70

Note: Answer ALL questions in Part-A and any FIVE questions from Part-B

Part-A (10 X 2=20 Marks)

1. Differentiate between cellular and flexible manufacturing.
2. Discuss the role of supervisor in manufacturing system.
3. Define just-in-time manufacturing.
4. Describe the part classification codes of group technology.
5. Discuss the features of machining centers.
6. What is the role of work holding equipment in the design of flexible manufacturing systems?
7. Explain the application of AGVs in automated storage and retrieval system.
8. List out various auxiliary equipment used in automated storage and retrieval.
9. Explain the importance of chip disposal in automated movement.
10. Give the general functions of communication networks of flexible manufacturing systems.

Part-B (5 X 10=50 Marks)
(All bits carry equal marks)

11. a) Explain the concept of manufacturing cell. State the reasons for adoption of single station automated cell.
    b) State the applications of single station automated cell. How do you arrive at the number of workstations required in manufacturing cell?

12. a) Draw Group Technology layout and compare with process layout. State the benefits of GT system.
    b) How the inventory of raw materials and purchased parts be reduced in Just-in-time production?

13. a) How the computers are implemented to plan, monitor, control and manage in FMS?
    b) Discuss the different types of data associated with FMS.

14. a) Classify various methods of transporting work pieces on flow lines.
    b) Explain the guidelines used in planning of material handling in FMS.

15. a) What are the various material handling equipments used in practice and mention their relative advantages?
    b) What are the various applications of "Automated guided vehicle systems"? Explain the methods of vehicle guidance and routing.

16. In a manufacturing organization, the process planning department has identified machines for machining the different parts in the following manner.
    a) Machine 1 is used for machining parts A and E
    b) Machine 2 is used for machining parts D and F
    c) Machine 3 is used for machining parts A and B
    d) Machine 4 is used for machining parts C and D
    e) Machine 5 is used for machining parts B and E
    f) Machine 6 is used for machining parts C, D and F

By using the rank order clustering technique, identify the logical part families and machine groups in each cell.

17. a) Explain the use of programmable logic controllers in flexible manufacturing systems.
    b) What is tool monitoring? Explain how it is useful for fault detection.

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