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Question Paper Code: 12015

M.E. DEGREE EXAMINATION, DECEMBER 2013.

First Semester

CAD / CAM

01PCD104 - COMPETITIVE MANUFACTURING SYSTEMS

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. Mention any two reasons for which the manufacturing processes are automated.
2. What are the characteristics of 'flexible fixtures'?
3. Indicate the digital sequence of Opitz classification system.
4. List the components of Flexible Manufacturing System (FMS).
5. Name any two software packages used in FMS.
6. What are the principal data files that are required for operating a FMS?
7. Expand the acronym PQCDMS.
8. The daily operating time available for producing an electrical motor in a company is 400 minutes. It is required to produce 200 electrical motors daily in this company to meet the customer demand. What is the Takt time of producing this electrical motor in the above company?
9. What are the four simple rules followed in just In Time (JIT) production?
10. What is meant by 'flexible work force'?

PART - B (5 x 14 = 70 Marks)

11. (a) (i) Enumerate any six general characteristics of jobs for which adoption of Numerical Control is most appropriate. (6)
- (ii) Describe the basic components of a numerical control system. (8)

Or

- (b) (i) Describe the benefits of adaptive control in machining. (6)
- (ii) With the aid of a schematic diagram, describe the construction and working of an adaptive control machining system. (8)
12. (a) (i) Enumerate any six major benefits of a well designed classification and Coding system of Group Technology. (6)
- (ii) What is meant by part family? What are the three methods followed to create part families in industrial environment? (8)

Or

- (b) Explain any six control strategies of supervisory computer control. (14)
13. (a) (i) Describe the system issues considered while designing a FMS. (6)
- (ii) Describe the method of applying simulation while designing a FMS. (8)

Or

- (b) (i) Describe the CAD/CAM features considered while developing a FMS. (6)
- (ii) Describe the steps followed to carry out FMS database planning. (8)
14. (a) (i) With the aid of a block diagram, describe the visual management principles. (6)
- (ii) What is meant by 'standardised work'? What are the benefits? (8)

Or

- (b) (i) Enumerate the six big losses considered while implementing Total Productive Maintenance (TPM) in manufacturing industries. (8)
- (ii) Describe the method of implementing *Poka-Yoke* in a manufacturing Industries. (6)

15. (a) (i) What is meant by 'pull system'? How it is accomplished in manufacturing industries? (6)
- (ii) Describe the method of achieving 'small lot sizes' in lean manufacturing environment. (8)

Or

- (b) With the aid of sketches, explain the working of *Kanban* system. (14)

PART - C (1 x 10 = 10 Marks)

16. (a) (i) With the aid of a sketch, describe the six degrees of freedom considered in the design of an industrial robot. (6)
- (ii) Explain the conditions under which industrial robots are utilised. (4)

Or

- (b) Explain elaborately the 5S system used in manufacturing industry. (10)
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