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Total Number of Pages : 02

B.Tech.
PME6J002

6th Semester Regular Examination 2017-18
COMPUTER INTEGRATED MANUFACTURING FMS
BRANCH : MECH
Time : 3 Hours
Max Marks : 100
Q.CODE : C374

Answer Question No.1 and 2 which are compulsory and any four from the rest.
The figures in the right hand margin indicate marks.

Q1. Answer the following questions: *multiple type or dash fill up type* : (2 x 10)

- a) Concurrent Engineering deals with carrying out the following activities at the same time while designing the product :
 - a) Design and Sales
 - b) Manufacturing and Sales
 - c) Design and Re-engineering
 - d) Design and Manufacturing
- b) Computer will perform the data processing functions in
 - a) NC
 - b) CNC
 - c) DNC
 - d) None of the mentioned
- c) CAM is a component of CIM, which facilitates what activities?
 - a) Controls the functions of AGVs
 - b) Controls the functions of AGVs
 - c) Design of production processes
 - d) Both (b) and (c)
- d) An industrial robot's end effector can be changed to perform different tasks, including which of the following?
 - a) Spray painting
 - b) Spot welding
 - c) Materials handling
 - d) All of the above
- e) Flexible manufacturing systems (FMS) are reported to have a number of benefits. Which is NOT a reported benefit of FMS?
 - a) Increased quality
 - b) Lead time and throughput time reduction
 - c) More flexible than the manufacturing systems they replace
 - d) Increased utilisation
- f) Benefit of CAPP
 - a) Minimum error
 - b) Cost Reduction
 - c) Time Reduction
 - d) All
- g) The part has dissimilar in geometric shape & size but similar machining operation is known as
 - a) Group Technology
 - b) Part Family
 - c) Machine Cell Design
 - d) Manufacturing Attributes
- h) A _____ consists of two or three processing workstations plus a parts handling system.
 - a) Flexible manufacturing cell
 - b) Flexible manufacturing system
 - c) Single machine cell
 - d) both FMC & FMS
- i) An _____ is a general purpose, programmable machine processing certain anthropomorphic characteristics.
 - a) Industrial robot
 - b) FMS
 - c) FMC
 - d) AGVs
- j) An FMS possesses the characteristic architecture of a
 - a) Distributed Numerical control system
 - b) Numerical control system
 - c) Computer Numerical control system
 - d) All

- Q2. Answer the following questions: *Short answer type* :** **(2 x 10)**
- a) Explain about the manufacturing support system.
 - b) Write about the two basic types of manufacturing processes.
 - c) What do you mean by manufacturing lead time?
 - d) Role of CIM in manufacturing, explain.
 - e) Name the basic components of a NC system.
 - f) Difference between the world coordinate system and tool coordinate system.
 - g) What are the components of FMS?
 - h) Name the different attributes of part similarities.
 - i) What are the advantages of group technology?
 - j) State the functional difference between sensor and actuator.
- Q3. a)** Explain in the detail the reasons for automating the manufacturing system. **(10)**
- b)** Describe briefly the basic types of automated manufacturing system. **(5)**
- Q4. a)** Explain the advanced automation functions to enhance the performance and safety of the equipment. **(10)**
- b)** The mean time between failures for a certain production machine is 250 hours and the mean time to repair is 6 hours. Determine the availability of the machine. **(5)**
- Q5. a)** Discuss about the Direct NC and Distributed NC system with its configuration diagram. **(10)**
- b)** Explain different types of robot configurations with diagram. **(5)**
- Q6. a)** Describe with suitable example the variety of material handling equipment commercially available. **(10)**
- b)** Explain about the components of the PLC. **(5)**
- Q7. a)** Explain in detail the principal components and sequential steps in automatic data capturing system. **(10)**
- b)** Explain different types of classification and coding systems. **(5)**
- Q8. a)** Describe the concept of cellular manufacturing and design of machine cells in detail. **(10)**
- b)** Discuss about the applications of group technology. **(5)**
- Q9. a)** Explain about the different factors influence the planning and implementation of a fully automated FMS. **(10)**
- b)** Write the objectives of the computer aided quality control. **(5)**