

**BACHELOR OF TECHNOLOGY IN  
MECHANICAL ENGINEERING  
(COMPUTER INTEGRATED  
MANUFACTURING)**

**Term-End Examination**

**June, 2008**

**BME-012 : MANUFACTURING SYSTEMS,  
INTEGRATION AND CONTROL**

*Time : 3 hours*

*Maximum Marks : 70*

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**Note :** *Attempt any seven questions of the following.  
Use of calculator is allowed. Assume any missing  
data.*

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1. Why are computerised control systems important in manufacturing automation ? Define control architecture. Discuss in brief hierarchical control architecture.  $3+2+5=10$
2. What is Materials Requirement Planning (MRP) ? Describe in detail different components of MRP with the help of block diagram and examples.  $2+8=10$
3. (a) How can system approach be used to integrate a manufacturing enterprise ? Describe.  
(b) Describe different parts of decision support system as used for Computer Integrated Manufacturing.  $5+5=10$

4. (a) What is Bionic Manufacturing System ? Explain it with the help of example.
- (b) What is Holon ? List different types of Holons. Explain communication protocols applicable in Holonic Manufacturing System.  $5+5=10$
5. (a) Explain the concept of Concurrent Engineering.
- (b) What is Rapid Response Manufacturing (RRM) ? Explain any one technique that can be used for obtaining RRM.  $5+5=10$
6. (a) Explain with the help of neat diagram different components of a Coordinate Measuring machine.
- (b) What is AGV scheduling ? Explain features of AGV scheduling.  $5+5=10$
7. (a) Define Supply Chain Management. Discuss the role of information technology in enabling supply chain integration.
- (b) Explain characteristics of a computer controlled scheduling with the help of neat diagrams.  $5+5=10$
8. (a) Online scheduling has proved to be a better option than offline scheduling on the shop floor. Explain why. Discuss some new approaches of online scheduling.
- (b) Explain various paradigms of virtual manufacturing system.  $5+5=10$

9. How will you identify deadlock in Integrated manufacturing system ? Discuss, how the deadlock can be prevented. Explain different types of deadlock.  $3+2+5=10$

10. Write brief notes on any **two** of the following :  $5+5=10$

- (a) E-enabled supply chains
- (b) Dynamic machine routing
- (c) Automated quality control system
- (d) Discrete event dynamic system

