

AR22

CODE: 22MCM1008 **SET-1**
ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

I M.Tech II Semester Regular Examinations, July,2025
COMPUTER INTEGRATED MANUFACTURING
(COMPUTER INTEGRATED MANUFACTURING)

Time: 3 Hours

Max Marks:60

Answer any FIVE questions
All questions carry EQUAL marks

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|----|----|--|-----|
| 1. | a) | Explain the internal and external challenges faced by a manufacturing enterprise. | 6M |
| | b) | Discuss the structure and functional areas of a typical CIM system. | 6M |
| 2. | | Discuss Just-in-Time (JIT) production systems and their integration with CIM. | 12M |
| 3. | | Distinguish between Variant and Generative approaches to CAPP. Elaborate both. | 12M |
| 4. | | Describe the role of data communication technologies in CIM. | 12M |
| 5. | | Explain the concept of Flexible Manufacturing System (FMS). Discuss its key components. | 12M |
| 6. | | Compare and contrast Lean Manufacturing, Just-in-Time (JIT), and Kanban Systems. | 12M |
| 7. | a) | Enumerate the Elements of a Typical Manufacturing Organization. | 6M |
| | b) | Define ERP and explain its role in modern manufacturing enterprises. | 6M |
| 8. | | Explain Automated Material Handling Systems (AMHS) and Automated Storage and Retrieval Systems (ASRS). | 12M |

AR22

CODE: 22MVL1010 **SET-2**
ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

I M.Tech. II Semester Supplementary Examinations, July,2025

DESIGN OF FAULT TOLERANT SYSTEMS **(VLSID)**

Time: 3 Hours

Max Marks:60

Answer any FIVE questions
All questions carry EQUAL marks

1. a) Derive the reliability of a system in terms of reliabilities of the subsystems used to build it. (6M)
b) Define Maintainability and Availability and explain them clearly with relevance to a system. (6M)
2. a) Discuss about Sift-out redundancy technique with necessary diagrams (6M)
b) Explain the importance of fault tolerance. (6M)
3. a) Discuss about Self purging redundancy (6M)
b) Explain the use of error correcting codes. (6M)
4. Design a self checking checker using Berger code with an example (12M)
5. Design a sequential circuit for fail-safe design using partition theory. (12M)
6. a) Explain theory and operation of LFSR (6M)
b) Explain the operation of Multiple-input Signature register (6M)
7. a) Explain with example OR-AND-OR Design for Testable Combinational logic Circuits (6M)
b) Explain with example Design of Testable Combinational logic Circuits, using control logic. (6M)
8. a) Discuss Reliability of series, Parallel and Parallel-Series combinational Circuits. (6M)
b) Discuss various test pattern generations for BIST exhaustive testing with example. (6M)

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CODE: 22MCS1010

SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

I M.Tech. II Semester Regular & Supplementary Examinations, July,2025

**Object Oriented Software Engineering
(COMPUTER SCIENCE AND ENGINEERING)**

Time: 3 Hours

Max Marks:60

**Answer any FIVE questions
All questions carry EQUAL marks**

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|----|----|---|----|
| 1. | a) | Explain briefly about Object oriented Concepts. | 6M |
| | b) | Discuss polymorphism with an example. | 6M |
| 2. | a) | Explain classes and objects with an example. | 6M |
| | b) | Discuss about Inheritance with an example. | 6M |
| 3. | a) | Discuss about Generic Components of OOA model | 6M |
| | b) | Explain the object relationship model. | 6M |
| 4. | a) | Discuss about the System design process. | 6M |
| | b) | Describe about Object design process. | 6M |
| 5. | a) | Explain object-oriented testing strategies. | 6M |
| | b) | Discuss about Test case design for OO software. | 6M |
| 6. | a) | Discuss about Metrics for the OO Design model | 6M |
| | b) | Explain about Class-Oriented metrics. | 6M |
| 7. | a) | Explain briefly about Structural patterns. | 6M |
| | b) | Discuss about patterns and Software Architecture. | 6M |
| 8. | a) | Discuss about OOA Process. | 6M |
| | b) | Write in detail about Object Behavior Model. | 6M |

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)****I M.Tech. II Semester Regular & Supplementary Examinations, July, 2025****Structural Dynamics****(STRUCTURAL ENGINEERING)****Time: 3 Hours****Max Marks: 60****Answer any FIVE questions
All questions carry EQUAL marks**

1. a) Define and differentiate between free, forced, damped, and undamped vibrations with examples. 6M
b) Explain the significance of degrees of freedom in vibratory systems with an example. 6M
2. A mass-spring-damper system has mass = 300 kg, stiffness = 10,000 N/m, damping factor $\zeta = 0.3$, and is subjected to 200 N at 10 Hz. Find: 12M
 - a) Natural frequency
 - b) Amplitude
 - c) Transmissibility
 - d) Phase angle
3. A base-excited system with mass 500 kg and stiffness 10,000 N/m is subjected to ground motion $a_g(t) = 0.3\cos(5t)$ m/s². Determine the equation of motion and steady-state response. 12M
4. a) Derive the equation of motion for a free undamped SDOF system using Newton's law. 6M
b) Use Duhamel's integral to compute the response of an undamped system ($m = 10$ kg, $k = 1000$ N/m) subjected to a step force of 100 N at $t = 0$. 6M
5. a) Write the expression for the mass matrix of a 2-storey shear building. Assume uniform storey mass. 6M
b) Explain the dynamic effects of wind loading on tall structures. How are they analyzed approximately? 6M
6. Derive the equation of response of SDOF system in undamped free vibration. 12M
7. Using Duhamel's integral, derive the response of undamped SDOF system subject to impulse force. 12M
8. Explain how rigid base translation influences dynamic behaviour. Also explain how dynamic effects due to earthquakes are incorporated in analysis. 12M

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CODE: 22MPE1010
ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

SET-2

I M.Tech. II Semester Supplementary Examinations, July,2025

SWITCHED MODE POWER CONVERTERS
(POWER ELECTRONIC DRIVES)

Time: 3 Hours

Max Marks:60

Answer any FIVE questions
All questions carry EQUAL marks

1. Explain the operation of Forward converter and requirement of isolation transformer in it. 12M
2. Analyze the steady state operation of Half bridge converter and utilization of magnetic circuit in it. 12M
3. Formulate the dynamic equation state space averaging representation of boost converter. 12M
4. Explain the small-signal modelling of buck converter. 12M
5. a) Explain how to analyse the stability of system using phase and gain margins in bode plot. 6M
b) Compare the controller parameter of proportional (P), proportional plus integral (PI), proportional plus integral plus integral controller (PID). 6M
6. Analyse the operation of parallel resonant circuit with necessary equations. 12M
7. Explain various modes of operation of M type and zero current switching for boost converter with neat circuit diagram? 12M
8. Explain various modes of operation of L type and zero voltage switching for buck converter with neat circuit diagram? 12M