

CODE: 22MCM1013**SET-1**
ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech II Semester Regular Examinations, July,2025
INTELLIGENT MANUFACTURING
(COMPUTER INTEGRATED MANUFACTURING)

Time: 3 Hours**Max Marks:60**

Answer any FIVE questionsp
All questions carry EQUAL marks

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| 1. | a) Explain the concept of Computer Integrated Manufacturing (CIM). | 6M |
| | b) Discuss the benefits of CIM. | 6M |
| 2. | a) Explain the basic components of a Knowledge-Based System. | 6M |
| | b) Describe the process of Knowledge Acquisition and its challenges. | 6M |
| 3. | a) Describe different types of Neural Networks and their specific applications in manufacturing. | 6M |
| | b) compare a Biological Neuron with an Artificial Neuron. | 6M |
| 4. | a) Discuss the impact of artificial intelligent in manufacturing. | 6M |
| | b) Application of AI in manufacturing areas. | 6M |
| 5. | Explain the different approaches commonly used in CAPP systems and bring out their advantages and limitations? | 12M |
| 6. | a) Discuss the Route sheet analysis used in GT. | 6M |
| | b) Explain Opitz coding system. | 6M |
| 7. | a) Write a short note on the Rank Order Clustering (ROC) Algorithm. | 6M |
| | b) Explain the Extended CI Method. | 6M |
| 8. | a) Discuss the types of information stored in the Data Base component of a Knowledge-Based System for Group Technology. | 6M |
| | b) Explain the key advantages of integrating Group Technology (GT) with Knowledge-Based Systems. | 6M |

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

1. a) Explain the principle of prestressing in concrete and how it enhances structural performance. 7
b) Compare the Gifford–Udall system with the Freyssinet system of prestressing. 5
2. a) Explain with sketches the process of post-tensioning and its practical applications. 7
b) Write a brief note on the anchorage devices used in Magnel Blaton and Freyssinet systems. 5
3. a) List various losses in post tensioned concrete members? 4
b) A concrete beam has a prestressing force of 120 kN applied through straight tendons with an eccentricity of 40 mm. The cross-sectional area of concrete is $250 \times 500 \text{ mm}^2$. Calculate the stress loss in steel due to elastic shortening if the area of steel is 300 mm^2 . Take $E_c=30 \text{ kN/mm}^2$, $E_s=200 \text{ kN/mm}^2$. 8
4. A prestressed concrete beam of rectangular cross-section, 300 mm wide and 600 mm deep, spans 10 metres and is prestressed using a parabolic tendon with a maximum eccentricity of 200 mm at the midspan and zero eccentricity at the supports. The effective prestressing force applied is 150 kN. The beam carries a uniformly distributed live load of 3000 N/m. Assume the unit weight of concrete is 24 kN/m^3 . Determine the self-weight of the beam per metre and calculate the bending moment at midspan due to prestress, self-weight, and live load. Then, draw the stress distribution diagram at the midspan section for the following cases: (i) Prestress + self-weight, and (ii) Prestress + self-weight + live load. 12
5. a) A pretensioned prestressed concrete beam having a rectangular section with a width of 150 mm and overall depth of 350 mm is prestressed by tendons of effective area 461 mm^2 at an effective depth of 300 mm. Assuming the characteristic strength of concrete and steel as 40 and 1600 N/mm^2 , estimate the ultimate flexural strength of the section using the provisions of the Indian Standard Code. 6
b) What is meant by transmission length in prestressed concrete? How is it calculated as per IS 1343? 6

6. A composite T-beam is formed by casting a flange over a prestressed rectangular beam. The beam dimensions are $100 \text{ mm} \times 200 \text{ mm}$, and the flange is 400 mm wide and 100 mm thick. The beam carries a live load of 2 kN/m . Calculate the resultant stresses in both precast and cast-in-situ concrete. 12
7. a) What are the factors influencing deflections in prestressed concrete beams? How can they be controlled? 5
- b) A prestressed concrete beam having a cross-sectional area (A) of $5 \times 10^4 \text{ mm}^2$ is simply supported over a span of 10 m . It supports a uniformly distributed imposed load of 3 kN/m , half of which is non-permanent. The tendon follows a trapezoidal profile with an eccentricity of 100 mm within the middle-third of the span and varies linearly from the third-span points to zero at the supports. The area of tendons, $A_p = 350 \text{ mm}^2$, have effective prestress of 1290 N/mm^2 immediately after transfer. Using the following data, calculate 7
- (a) The short-term deflections.
- (b) The long-term deflections.
8. a) Explain: i) Primary and secondary moments ii) Resultant moment in continuous prestressed beams. 6
- b) What are the advantages of continuous members in prestressed concrete structures? 6

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CODE: 22MPE1018 **SET-1**
ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

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

FACTS AND CUSTOM POWER DEVICES
(POWER ELECTRONIC DRIVES)

Time: 3 Hours

Max Marks:60

Answer any FIVE questions
All questions carry EQUAL marks

1. a) Explain various loading capability limits in power flow systems. 6M
b) Explain the power flow considerations of a transmission interconnected systems. 6M
2. a) Discuss the operation of STATCOM with a neat diagram and characteristics 6M
b) Write a comparison between STATCOM and SVC in the following 6M
(i) V-I characteristics (ii) transient stability.
3. a) Explain the concept of end of line voltage support to prevent voltage stability in shunt compensation. 6M
b) Obtain transfer function of static VAR compensator and mention its compensation effect on stability. 6M
4. a) Enumerate the basic operating control schemes of TSSC and TCSC. 6M
b) Explain the operation of basic GTO-controlled series capacitor. 6M
5. Discuss improvement of transient stability using series compensation on transmission systems. 12M
6. Describe the various transmission control capabilities of UPFC. 12M
7. a) Discuss the variation of real and reactive powers in IPFC schemes. 6M
b) Compare between UPFC with IPFC. 6M
8. List the different compensative types of custom power devices and also explain in detail about the load compensation using any one of the custom power device along with its applications. 12M

CODE: 22MVL1019**SET-1**
ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech. II Semester Supplementary Examinations, July,2025
SYSTEM MODELING & SIMULATION
(VLSID)

Time: 3 Hours**Max Marks:60**

Answer any FIVE questions
All questions carry EQUAL marks

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| 1. | a) | Define system. Explain its properties with appropriate block diagrams | 6M |
| | b) | Draw simulation diagrams for simulation of single server queuing systems | 6M |
| 2. | a) | Explain object-oriented simulation | 6M |
| | b) | Compare simulation packages with programming languages. | 6M |
| 3. | | Discuss the techniques for increasing model validity and credibility | 12M |
| 4. | a) | Distinguish between continuous- time Markov chain and discrete time Markov processes. | 6M |
| | b) | Explain petri net and its analysis | 6M |
| 5. | a) | Simulate M/M/M/2 queuing model for estimating the average waiting time in the system | 6M |
| | b) | Explain in detail about Exponential Distribution | 6M |
| 6. | a) | Explain about Alpha/Beta tracker using a neat sketch | 6M |
| | b) | Explain the correlation between the scientific method and simulation Methodology by using flow chart. | 6M |
| 7. | a) | State and explain the guide lines for determining the level of model detail | 6M |
| | b) | Explain simulating Queuing theory | 6M |
| 8. | a) | Brief about Multi-dimensional optimization | 6M |
| | b) | State and explain desirable features of simulation languages. | 6M |

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

1. a) What are the different models of testing, and how do they influence software quality? [6]
b) Discuss the consequences of software bugs and their impact on real-world applications. [6]
2. a) Define taxonomy of bugs and describe its role in software validation. [6]
b) What is path sensitizing? Explain its importance in path testing. [6]
3. a) Explain the role of transaction flows in software testing. [6]
b) Discuss different transaction flow testing techniques. [6]
4. a) Explain the concept of domain testing with real-world applications. [6]
b) How do domains and interfaces impact software quality? Discuss with examples. [6]
5. a) Define testability and explain how it influences software design and maintenance. [6]
b) How does logic-based testing ensure complete validation of software functionality? Provide real-world examples. [6]
6. a) Explain the concept of path products and path expressions in software testing. How do they help in analyzing control flow? [6]
b) Discuss various applications of path products in detecting software anomalies. Provide examples where path expressions can be useful. [6]
7. a) Explain node reduction algorithm with suitable example. [6]
b) Define matrix of graph and explain about power of a matrix. [6]
8. a) What is a state graph? Explain its significance in transition testing with examples. [6]
b) Explain the concept of state transition testing. How does it help in identifying software failures? [6]