



**LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)**

L.B. Reddy Nagar :: Mylavaram-521 230 :: NTR Dist. :: A.P
Approved by AICTE, New Delhi. Affiliated to JNTUK, Kakinada

M.Tech. (III Semester) (R23) Semester End Examinations (Regular & Supplementary) - January 2026

TIME TABLE

R23

Time : 10.00 AM to 01.00 PM

A.Y. : 2025-26

Specialization	20-01-2026 (Tuesday)	22-01-2026 (Thursday)
	Program Elective-V	Open Elective
Data Science	23DS19 - Cyber Security	23PE82 - Renewable Energy Systems
Power Electronics and Electrical Drives	23PE19 - Advanced Power Semiconductor Devices & their Protection	23DS81 - Introduction to Artificial Intelligence
VLSI and Embedded Systems Design	23VE19 - Low Power VLSI Design	23DS81 - Introduction to Artificial Intelligence

Note: Any omissions or clashes in the time table may please be informed to the Controller of Examinations immediately.

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Date: 02-01-2026

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CONTROLLER OF EXAMINATIONS

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PRINCIPAL

Copy to: 1. Vice-Principal, Deans & HoDs
3. Canteen, PD, Security & Hostels

2. T&P cell, Transport Coordinator & Librarian
4. Coordinator-Disciplinary 5. Notice Boards

20 JAN 2026

H.T.No

R23

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING(AUTONOMOUS)

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M.Tech. (III Semester) Regular/Supplementary Examinations

23DS19-CYBER SECURITY

(DS)

Time : 3 hours

Max. Marks : 60

Answer one question from each unit

All questions carry equal marks

Q.No	All questions carry equal marks	Marks	CO	BL
1(a)	Summarize the various methods cybercriminals use to compromise systems.	6M	CO1	L3
(b)	Analyze the potential vulnerabilities in a system that only focuses on confidentiality but neglects integrity and availability.	6M	CO1	L3
(OR)				
2(a)	Classify different types of viruses, worms.	6M	CO1	L2
(b)	If your organization is using a system with known common vulnerabilities, how would you apply the appropriate security patches or mitigations?	6M	CO1	L3
3.	Illustrate various network security components.	12M	CO2	L3
(OR)				
4(a)	How would an attacker exploit vulnerability in data at rest, data in motion, and data in use?	6M	CO2	L2
(b)	Discuss about various data privacy attacks.	6M	CO2	L2
5(a)	How to enhance Data Leakage prevention (DLP)?	6M	CO3	L2
(b)	Illustrate basic techniques for Content Discovering techniques.	6M	CO3	L3
(OR)				
6(a)	Apply prevention and mitigation strategies against Injection Attacks.	6M	CO3	L3
(b)	Categorize different network sniffers & tools used in cyber security.	6M	CO3	L2
7(a)	Outline benefits of an effective Log management process.	6M	CO4	L3
(b)	Discuss IIS Log files used in cyber security.	6M	CO4	L3
(OR)				
8(a)	Discuss the importance of log analysis in the log management process.	6M	CO4	L2
(b)	How Continuous Data Protection (CDP) works and why It's considered the Most reliable backup method for critical systems.	6M	CO4	L2
9(a)	Outline the working principles of any one of the password cracking and Brute-force tools.	6M	CO5	L2
(b)	Elaborate defensive techniques to prevent SQL injection attacks.	6M	CO5	L2
(OR)				
10(a)	How to identify security weaknesses in web applications with Zed Attack proxy.	6M	CO5	L2
(b)	Interpret Effect of Brute-force attacks in cyber security.	6M	CO5	L3

20 JAN 2026

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M.Tech. (III Semester) Regular/Supplementary Examinations

Answered
20/1/26

23PE19-ADVANCED POWER SEMICONDUCTOR DEVICES & THEIR PROTECTION
(PE&ED)

Time : 3 hours

Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	All questions carry equal marks	Marks	CO	BL
1.	Discuss the following (i) Breakdown voltages of BJT (ii) Second Breakdown of BJT (iii) On-state losses (iv) Safe operating Area(SOA).	12M	CO1	L2
(OR)				
2(a)	Draw the basic structure of vertical Power MOSFET and describe it's the operation.	6 M	CO1	L2
(b)	Discuss I-V characteristics of n-channel enhance mode MOSFET with neat diagram.	6 M	CO1	L2
3.	Draw and explain the cross sectional view of an IGBT and also draw the equivalent circuit of an IGBT.	12 M	CO1	L2
(OR)				
4(a)	Discuss I-V Characteristics of IGBT.	6 M	CO1	L2
(b)	Explain about device limits and safe operating area of an IGCT.	6 M	CO1	L2
5(a)	Explain the structure and I-V characteristics of field controlled thyristor.	6 M	CO3	L2
(b)	Discuss some new semiconductor materials.	6 M	CO3	L2
(OR)				
6(a)	What are MOS controlled thyristors? Discuss their constructional details.	6 M	CO3	L2
(b)	Explain the Power Integrated circuits.	6 M	CO3	L2
7(a)	How the Resistor and Capacitor are used in noise reduction level? Explain.	6 M	CO4	L2
(b)	What is the cause for noise generation? Explain about Common sources of noise in SMPS.	6 M	CO4	L2
(OR)				
8(a)	What are the EMI standards and write about EMI shielding?	6 M	CO4	L2
(b)	Explain the different sources of noise.	6 M	CO4	L2
9(a)	Discuss about Thermal modelling of power switching devices.	6 M	CO2	L2
(b)	Discuss the design procedure for developing heat sinks.	6 M	CO2	L2
(OR)				
10(a)	What is snubber? Explain about voltage snubber.	6 M	CO2	L2
(b)	Explain the reverse recovery transients for the power electronic devices.	6 M	CO2	L2

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M.Tech. (III Semester) Regular/Supplementary Examinations

23VE19-LOW POWER VLSI DESIGN
(VLSI&ESD)

Time : 3 hours

Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

*Answered
20/1/26*

Q.No	Questions	Marks	CO	BL
1(a)	How does technology scaling affect power dissipation in digital CMOS devices?	6M	CO1	L3
(b)	Given the trend of scaling down the feature sizes, how would you modify a CMOS design to mitigate the increased power density?	6M	CO2	L3
(OR)				
2(a)	How has the innovation of new materials and device architectures impacted power dissipation in VLSI circuits?	6M	CO1	L3
(b)	If you were designing a low power VLSI chip for a mobile application, what specific technologies or innovations would you use to minimize power consumption?	6M	CO3	L3
3 (a)	Explain the significance of gate-level capacitance in power estimation. How does the capacitance of logic gates impact the overall power consumption of a circuit?	6M	CO3	L3
(b)	Describe the concept of signal entropy in probabilistic power analysis. How does the entropy of signals in a circuit influence the accuracy of power estimation?	6M	CO2	L3
(OR)				
4(a)	What is the purpose of using Monte Carlo simulation in probabilistic power analysis, and how does it help in estimating power consumption in circuits with random logic signals?	6M	CO2	L3
(b)	Explain how architecture-level analysis differs from gate-level analysis in power estimation. What are the advantages of performing power analysis at the architecture level?	6M	CO2	L3
5(a)	What is the role of flip-flops and latches in digital circuits, and how do they impact power consumption?	6M	CO2	L3
(b)	Explain the concept of high capacitance nodes and their effect on power dissipation in digital circuits.	6M	CO2	L2
(OR)				
6(a)	How do low-power digital cell libraries help reduce power consumption in CMOS circuits?	6M	CO4	L3
(b)	What is signal gating, and how can it be used to reduce dynamic power consumption in digital circuits?	6M	CO3	L3
7(a)	Explain how chip and package co-design can optimize clock network efficiency in terms of both power and performance.	6M	CO4	L3
(b)	Why is clock network design critical in ensuring low power dissipation while maintaining timing integrity?	6M	CO4	L2
(OR)				
8(a)	How can the clock tree synthesis (CTS) process be optimized for lower power consumption in high-performance circuits?	6M	CO4	L3
(b)	What challenges are faced when designing low-power clock networks for multi-core processors?	6M	CO4	L2
9(a)	What is the primary goal of algorithmic-level optimization in low power VLSI design?	6M	CO5	L2
(b)	Explain how algorithmic transformations can lead to power savings in VLSI systems. Provide one example of such a transformation.	6M	CO5	L3
(OR)				
10(a)	Describe the role of data-flow graphs in analyzing and optimizing algorithms for low power consumption.	6M	CO5	L2
(b)	How does the choice of algorithm impact the power consumption of a VLSI design? Explain with a specific example.	6M	CO5	L2

22 JAN 2026

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M.Tech. (III Semester) Regular/Supplementary Examinations

Answered
22/1/26

23PE82-RENEWABLE ENERGY SYSTEMS

(DS)

Time : 3 hours

Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	All questions carry equal marks	Marks	CO	BL
1(a)	What are the main applications of solar pond? Describe briefly.	6M	CO1	L1
(b)	Explain the principle of operation of solar ponds.	6M	CO1	L2
(OR)				
2(a)	Draw and explain the electrical equivalent circuit of a PV module also draw the characteristics.	6M	CO1	L2
(b)	List the advantages and disadvantages of photo voltaic solar energy conversion.	6M	CO1	L1
3.	Explain basic components of WECS.	12M	CO2	L2
(OR)				
4(a)	Write the advantages & disadvantages of WECS.	6M	CO2	L2
(b)	Classify the wind energy conversion systems.	6M	CO2	L3
5(a)	List the various types of geo thermal power plant.	6M	CO3	L1
(b)	Summarize the basic types of geo thermal reservoirs.	6M	CO3	L2
(OR)				
6(a)	Describe the process of direct combustion.	6M	CO3	L2
(b)	Illustrate the production of biogas in detail.	6M	CO3	L3
7(a)	What is meant by tidal power and what are the components of tidal energy?	6M	CO4	L3
(b)	What are the types of tide formation systems?	6M	CO4	L2
(OR)				
8(a)	Analyse the OTEC system.	6M	CO4	L3
(b)	Describe the component of tidal energy.	6M	CO4	L2
9.	Classify the energy storage systems and analyze them.	12M	CO5	L3
(OR)				
10(a)	Discuss the types of fuel cells , mention the advantages and disadvantages.	6M	CO5	L2
(b)	Outline the working of fuel cell.	6M	CO5	L2

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M.Tech. (III Semester) Regular/Supplementary Examinations

23DS81-INTRODUCTION TO ARTIFICIAL INTELLIGENCE

(PE&ED and VLSI&ESD)

23/01/26
22/1/26

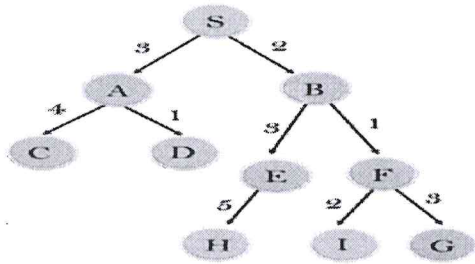
Time : 3 hours

Max. Marks : 60

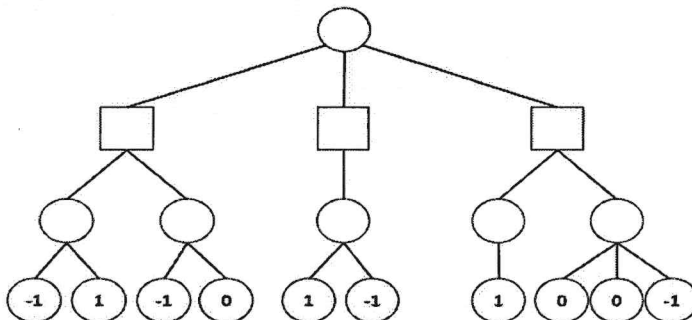
Answer one question from each unit

All questions carry equal marks

Q.No	All questions carry equal marks	Marks	CO	BL
1(a)	Discuss the model based and utility-based agents in detail with neat sketch.	6M	CO1	L2
(b)	Discuss the simple reflex agent and goal-based agents in detail with neat sketch.	6M	CO1	L2
(OR)				
2(a)	Develop a PEAS description of the task environment: (i) Medical diagnosis system (ii) Refinery controller (iii) Part picking robot.	6M	CO1	L3
(b)	Discuss the structure of the AI agent with example.	6M	CO1	L3
3.	Draw the state space diagram for the hill climbing strategy and describe the Steepest-Ascent hill-climbing algorithm.	12M	CO2	L3
(OR)				
4(a)	Outline the means and ends analysis with example.	6M	CO2	L2
(b)	Discuss the following toy problems with example. i) N-queens ii) Missionaries cannibals	6M	CO2	L3
5(a)	Describe the uniform cost search and Depth limited iterative search with example. and write the algorithm for each one.	6M	CO3	L2
(b)	Make use of Best first search algorithm for the following tree.	6M	CO3	L3
(OR)				
6(a)	Explain the concept of simulated annealing, providing a detailed example to illustrate how it works and its application.	6M	CO3	L3
(b)	How does BFS guarantee finding the shortest path in an unweighted graph? Explain with an example.	6M	CO3	L3
7(a)	Apply the Minimax algorithm to compute the minimax value at each node for the game tree below.	6M	CO4	L3



node	H (n)
A	12
B	4
C	7
D	3
E	8
F	2
H	4
I	9
S	13
G	0



23DS81-INTRODUCTION TO ARTIFICIAL INTELLIGENCE

(b)	Demonstrate the following approaches to knowledge representation with example. (i) Simple relational knowledge (ii) Inferential knowledge	6M	CO4	L2
(OR)				
8.	Consider the following sentences and Prove that John likes peanuts using resolution technique. <ul style="list-style-type: none"> • John likes all kind of food. • Apple and vegetable are food • Anything anyone eats and not killed is food. • Anil eats peanuts and still alive • Harry eats everything that Anil eats. • John likes peanuts. 	12M	CO4	L3
9(a)	Explain the concept of "mental events" in relation to human cognition and how they can be modeled in a knowledge-based system.	6M	CO5	L2
(b)	What are "events" in knowledge representation, and how do they differ from other objects?	6M	CO5	L2
(OR)				
10(a)	How does propositional logic work as a simple form of logic? Explain with an example.	6M	CO5	L2
(b)	What role does ontological engineering play in organizing knowledge for artificial intelligence systems?	6M	CO5	L2
