



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

B.Tech. (VII Semester) (R20) Semester End Examinations (Regular & Supplementary) - December 2025

TIME TABLE

R20

Time : 10.00 AM to 01.00 PM

A.Y. : 2025-26

Branch	09-12-2025 (Tuesday)	11-12-2025 (Thursday)	13-12-2025 (Saturday)	15-12-2025 (Monday)	17-12-2025 (Wednesday)	19-12-2025 (Friday)	22-12-2025 (Monday)
AI & DS	--	20CS22-Distributed Operating Systems	20CS25-Software Project Management	20CS17-Information Security	20EE83-Utilization of Electrical Energy	20CE82-Disaster Management 20CE81-Basics of Civil Engineering	20HS02-Management Science for Engineers
ASE	--	20AE22-Mechanics of Composites	20AE24-Space Vehicle Propulsion	20AE28-Space Mechanics	20EC85-Systems and Signal Processing	20EE81-Linear Control Systems	20HS02-Management Science for Engineers
CE	<u>Minor Program</u>	--	20CE24-Pre-Stressed Concrete 20CE25-Environmental Pollution Control	20CE29-Green Buildings	20CE30-Repair and Rehabilitation of Structures	20EE83-Utilization of Electrical Energy	20ME84-Elements of Automobile Engineering 20HS02-Management Science for Engineers
CSE	20CSM6 - Introduction to Software Engineering (CE, ECE, EEE & ME)	20CS29-Block Chain Technology	20CS24-Cloud Computing	20AD09-Natural Language Processing 20CS25-Software Project Management	--	20EE83-Utilization of Electrical Energy	20CE81-Basics of Civil Engineering 20HS02-Management Science for Engineers
CSE (AI&ML)	20ADM5 - Introduction to Deep Learning (ASE, CE, ECE & ME)	20CS29-Block Chain Technology	20CS24-Cloud Computing	20AD09-Natural Language Processing	20CS17-Information Security	20EE83-Utilization of Electrical Energy	20CE84-Environmental Sanitation 20CE81-Basics of Civil Engineering 20HS02-Management Science for Engineers
ECE	20ITM5 - Object Oriented Analysis and Design Using UML (ASE, ECE & ME)	--	20EC21-ASIC Design 20EC22-Advanced Digital Signal Processing 20EC23-Optical Communications	20EC26-Wireless Sensor Networks	20EC27-Low Power VLSI Design 20EC29- Cellular and Mobile Communication	20IT84-Cyber Security and Digital Forensics	20AD81-Introduction to Artificial Intelligence 20CE82-Disaster Management 20HS02-Management Science for Engineers
EEE	<u>Honors Program</u> 20ECH4 - VLSI Testing and Verification (ECE)	--	20EE24-Power System Protection 20EE25-Renewable and Distributed Generation Technologies	20EE27-Hybrid Electric Vehicles	20EC31 Embedded Systems 20EE30-Analog and Digital Signal Processing	20IT84-Cyber Security and Digital Forensics 20EC82-Elements of Communication Systems	20ME82-Robotics in Automation 20HS02-Management Science for Engineers
IT	--	20CS29-Block Chain Technology	20AD07-Deep Learning	20AD09-Natural Language Processing	20CS26-Soft Computing	20ME81-Renewable Energy Sources 20EE83-Utilization of Electrical Energy	20CE84-Environmental Sanitation 20CE81-Basics of Civil Engineering 20HS02-Management Science for Engineers
ME	--	20ME24-Refrigeration and Air Conditioning 20ME26-Finite Element Methods	20ME29-Automobile Engineering	20ME32-Power Plant Engineering 20ME35-Total Quality Management	20EE83-Utilization of Electrical Energy	20CE82-Disaster Management	20HS03-Industrial Economics and Management

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

Date: 22-11-2025

Copy to: 1. Vice-Principal, Deans & HoDs 2. T&P cell, Transport co-ordinator & Librarian
3. Canteen. PD. Security & Hostels 4. Coordinator-Disciplinary 5. Notice Boards

CONTROLLER OF EXAMINATIONS

PRINCIPAL

H.T.No

09 DEC 2025

R20

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B.Reddy Nagar:: Mylavaram – 521 230 :: NTR Dist.:: A.P.

B.Tech. (VII Semester) Regular/Supplementary Examinations

20CSM6-INTRODUCTION TO SOFTWARE ENGINEERING

(CE, ECE,EEE&ME)

20/09/25
9/12/25

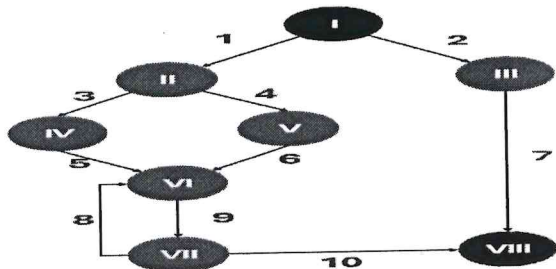
Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Describe the importance of software engineering, with examples.	7M	CO1	L2
(b)	Discuss the key characteristics of legacy software. Explain with suitable examples why organizations continue to use legacy systems despite their limitations.	7M	CO1	L2
(OR)				
2(a)	Explain the changing nature of software with examples.	7M	CO1	L2
(b)	Summarize various Software myths and realities in software engineering.	7M	CO1	L2
3(a)	Differentiate process and product in the context of software engineering.	7M	CO2	L2
(b)	Summarize Umbrella activities in Software engineering.	7M	CO2	L3
(OR)				
4(a)	Describes the Spiral model with advantages and disadvantages.	7M	CO2	L2
(b)	Discuss Unified process model in the context of software process.	7M	CO2	L2
5(a)	Elaborate the software design principles with advantages and disadvantages.	7M	CO3	L3
(b)	Distinguish between functional and non-functional requirements.	7M	CO3	L2
(OR)				
6(a)	Compare a good SRS document with a poorly written SRS. Illustrate how features such as unambiguity, modifiability, and traceability can prevent project failures.	7M	CO3	L2
(b)	Discuss the salient features of Architectural concepts.	7M	CO3	L2
7(a)	Demonstrate different types of relationships in UML.	7M	CO4	L2
(b)	Compare processes and threads in terms of memory, execution time, and communication overhead.	7M	CO4	L2
(OR)				
8(a)	Model the class diagram for point-of-sale system.	7M	CO4	L2
(b)	Develop an activity diagram for online movie booking system.	7M	CO4	L3
9(a)	Elaborate system testing with an example.	7M	CO5	L2
(b)	Draw the component diagram for credit card validation process.	7M	CO5	L3
(OR)				
10(a)	Discriminate boundary value analysis and basis path testing.	7M	CO5	L2
(b)	Determine the Cyclomatic complexity and linearly independent paths of given flow graph.	7M	CO5	L2



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B.Tech. (VII Semester) Regular/Supplementary Examinations

20ADM5-INTRODUCTION TO DEEP LEARNING

(ASE,CE,ECE&ME)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Discuss the concept of conditional probability and illustrate it with a suitable example.	7M	CO1	L2
(b)	Illustrate the following terms: scalars, vectors, tensors and norms	7M	CO1	L2
(OR)				
2(a)	Discuss various types of matrices with an example.	7M	CO1	L2
(b)	Compare Eigen Value Decomposition and Singular Value Decomposition.	7M	CO1	L2
(OR)				
3(a)	Discuss how the XOR learning algorithm works.	7M	CO2	L2
(b)	Describe Bayesian statistics and its applications in ML.	7M	CO2	L2
(OR)				
4(a)	Describe the importance of validation sets and hyper parameter tuning strategies.	7M	CO2	L2
(b)	Discuss the motivation and evolution from traditional ML to deep learning.	7M	CO2	L2
(OR)				
5(a)	Compare and contrast bagging, boosting, and stacking methods when applied to deep neural networks.	7M	CO3	L2
(b)	Describe specific techniques used to achieve noise robustness in semi-supervised deep learning and their impact.	7M	CO3	L2
(OR)				
6(a)	How do early stopping and dropout work together to minimize overfitting in neural network models?	7M	CO3	L2
(b)	Compare various regularization penalties and their optimization.	7M	CO3	L2
(OR)				
7(a)	Discuss how feature extraction varies across 1D, 2D, and 3D convolutional layers.	7M	CO4	L2
(b)	Demonstrate CNN operations with a neat diagram.	7M	CO4	L3
(OR)				
8(a)	Discuss the advantages of Fast Fourier Transformation (FFT) in CNNs.	7M	CO4	L2
(b)	Discuss how convolution, pooling, and fully connected layers are organized within a typical CNN architecture.	7M	CO4	L2
(OR)				
9(a)	Distinguish between recursive and recurrent neural networks.	7M	CO5	L2
(b)	Discuss how LSTM architecture helps optimize RNNs for long-term dependency learning.	7M	CO5	L2
(OR)				
10(a)	Discuss why vanishing and exploding gradients occur in recurrent neural networks.	7M	CO5	L2
(b)	Outline the architecture of an encoder-decoder sequence-to-sequence model.	7M	CO5	L2

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B.Tech. (VII Semester) Regular/Supplementary Examinations

20ITM5-OBJECT ORIENTED ANALYSIS AND DESIGN USING UML

(ASE,ECE&ME)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Illustrate the activity diagram of banking system.	7M	CO1	L2
(b)	List the guidelines for developing effective documentation and uses of documentation.	7M	CO1	L2
(OR)				
2(a)	List the guidelines of identifying the actors and identify the differences between users and actors.	7M	CO1	L2
(b)	Outline the guidelines for finding the usecase and list the steps of object-oriented analysis process.	7M	CO1	L2
(OR)				
3(a)	Discuss about modeling. List the benefits of modeling? List the turban cited advantages of modeling.	7M	CO2	L2
(b)	Illustrate the use case diagram with an example.	7M	CO2	L3
(OR)				
4(a)	Compare static and dynamic models. List the primary goals in the design of the UML.	7M	CO2	L2
(b)	Define the model and discuss the various models available.	7M	CO2	L2
(OR)				
5(a)	Illustrate super-sub class relationships with an example.	7M	CO3	L2
(b)	Discuss about association with an example.	7M	CO3	L2
(OR)				
6(a)	Illustrate the class diagram for the digital library system.	7M	CO3	L3
(b)	Illustrate the usecase diagram and activity diagram for the digital library system.	7M	CO3	L3
(OR)				
7(a)	Summarize the common modeling technique of interaction diagram.	7M	CO4	L2
(b)	Describe transitions, branching, initial state and final state in activity diagram.	7M	CO4	L2
(OR)				
8(a)	Show the interaction diagrams for banking system.	7M	CO4	L3
(b)	Show the state chart diagram for banking system.	7M	CO4	L3
(OR)				
9(a)	Discuss about packages and model organization.	7M	CO5	L2
(b)	Show the deployment diagram for hospital management system.	7M	CO5	L3
(OR)				
10(a)	Discuss various notations of component diagram with an example.	7M	CO5	L2
(b)	Show the steps to draw the component diagram.	7M	CO5	L3

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B.Tech. (VII Semester) Regular/Supplementary Examinations

20ECH4-VLSI TESTING AND VERIFICATION

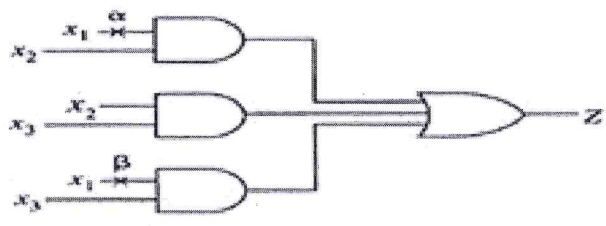
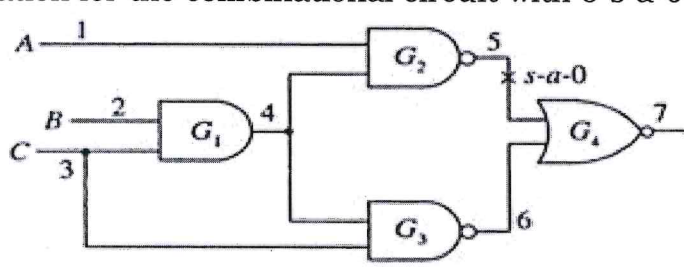
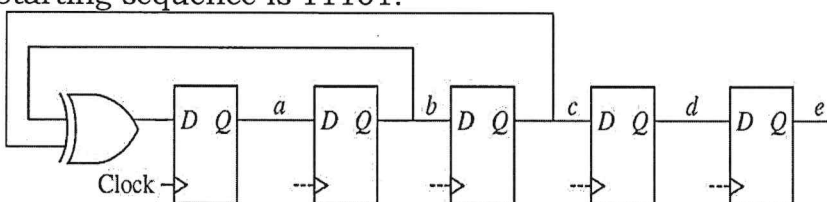
(ECE)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	What is stuck-at fault? Describe how stuck-at faults are identified.	7M	CO1	L2
(b)	Analyze the path sensitization method to detect the test generation for the combinational circuit with a s-a-0 and β s-a-1: 	7M	CO1	L3
(OR)				
2(a)	What do you mean by temporary faults? Explain how temporary faults are identified.	7M	CO1	L2
(b)	By using the PODEM-algorithm, find out the test generation for the combinational circuit with 5 s-a-0: 	7M	CO1	L3
3(a)	Summarize the Ad Hoc design rules for improving testability.	7M	CO2	L2
(b)	Generate all the BIST vectors for the following LFSR circuit. Starting sequence is 11101: 	7M	CO2	L3
(OR)				
4(a)	Describe the Boundary Scan Technique with neat diagram.	7M	CO2	L2

20ECH4-VLSI TESTING AND VERIFICATION

(b)	Develop the Controllability and Observability for Gate-2 in the following circuit: <div style="text-align: center;"> </div>	7M	CO2	L3															
5(a)	Outline the Formal Verification with suitable example.	7M	CO3	L2															
(b)	Design the BIST Techniques for RAM Chips with C1, C2 as control signals for the following modes of operation: <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>C₁</th> <th>C₂</th> <th>Operation Mode</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>Normal</td> </tr> <tr> <td>0</td> <td>1</td> <td>Scan</td> </tr> <tr> <td>1</td> <td>0</td> <td>Not used</td> </tr> <tr> <td>1</td> <td>1</td> <td>Self-test</td> </tr> </tbody> </table>	C ₁	C ₂	Operation Mode	0	0	Normal	0	1	Scan	1	0	Not used	1	1	Self-test	7M	CO3	L3
C ₁	C ₂	Operation Mode																	
0	0	Normal																	
0	1	Scan																	
1	0	Not used																	
1	1	Self-test																	
(OR)																			
6(a)	Outline the Re-convergent paths in verification.	7M	CO3	L2															
(b)	Demonstrate how memory testing is performed using WALKING 0s and 1s algorithm.	7M	CO3	L3															
7(a)	Demonstrate the event based simulations.	7M	CO4	L2															
(b)	Develop the Linting Verilog source code for Encoder.	7M	CO4	L3															
(OR)																			
8(a)	Summarize the verification strategies.	7M	CO4	L2															
(b)	Construct the Event based simulation wave forms for Full-Subtractor.	7M	CO4	L3															
9(a)	Describe the three methodologies used for parasitic extraction.	7M	CO5	L2															
(b)	With an example, illustrate the setup analysis and hold analysis.	7M	CO5	L2															
(OR)																			
10(a)	Summarize the timing models.	7M	CO5	L2															
(b)	Construct the slew of the wave form for the following: <ul style="list-style-type: none"> (i) Lower threshold for fall: 10% Upper threshold for fall: 90% Lower threshold for rise: 10% Upper threshold for rise: 90% (ii) Lower threshold for fall: 20% Upper threshold for fall: 80% Lower threshold for rise: 20% Upper threshold for rise: 80% 	7M	CO5	L3															

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B.Tech. (VII Semester) Regular/Supplementary Examinations

20CS29-BLOCK CHAIN TECHNOLOGY

(CSE,CSE(AI&ML) and IT)

Bosey
9/12/25

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Discuss how block chain technology has overcome the shortcomings of current transaction systems.	7M	CO1	L2
(b)	Describe the features of a distributed ledger.	7M	CO1	L2
(OR)				
2(a)	Summarize the fundamental role of cryptography in ensuring the security and integrity of data within a block chain network.	7M	CO1	L2
(b)	Describe how block chain changes the landscape of digitization.	7M	CO1	L2
3(a)	Define Private Block chain. Write about the advantages and disadvantages of it.	7M	CO2	L2
(b)	How Block chain technology changes the perspective of business and life?	7M	CO2	L2
(OR)				
4(a)	Explain the importance of neutrality in block chain consensus mechanisms.	7M	CO2	L2
(b)	Discuss any one Use Case of a Public Block chain.	7M	CO2	L2
5(a)	Demonstrate how Bitcoin Scripting Language is used for locking and unlocking of a transaction.	7M	CO3	L3
(b)	Illustrate with an example how block chain incorporates fundamental genomics concepts for secure data handling.	7M	CO3	L3
(OR)				
6(a)	How proof-of-work (PoW) and proof-of-stake (PoS) consensus mechanisms works? What are the advantages and disadvantages of each?	7M	CO3	L3
(b)	Demonstrate how block chain-based incentive systems can encourage participants to contribute computational power for protein-folding simulations.	7M	CO3	L3
7(a)	Compare and contrast Hyperledger Fabric with other enterprise block chain platforms, such as Ethereum.	7M	CO4	L3
(b)	Analyse the impact of the number of faulty generals or malicious nodes on the difficulty of achieving consensus in a distributed network.	7M	CO4	L4
(OR)				
8(a)	Differentiate how IOTA's Tangle architecture enables feeless transactions and compare it with traditional block chain fee models.	7M	CO4	L3
(b)	Examine the security, privacy, and governance challenges involved in implementing Campus Coins within a university environment.	7M	CO4	L3
9(a)	Demonstrate with an example how Proof of Work and Proof of Stake handle security challenges differently.	7M	CO5	L3
(b)	Determine how block chain technology can be used to improve transparency and accountability in land registration.	7M	CO5	L3
(OR)				
10(a)	Identify the major challenges of Block chain technology and provide the solutions for any one challenge.	7M	CO5	L3
(b)	Derive the solution for business model challenges commonly associated with block chain technology.	7M	CO5	L3

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B.Tech. (VII Semester) Regular/Supplementary Examinations

20CS22-DISTRIBUTED OPERATING SYSTEMS

(AI&DS)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Explain the goals and challenges of distributed systems with suitable examples.	7M	CO1	L2
(b)	Discuss hardware and software concepts used in distributed systems.	7M	CO1	L2
(OR)				
2(a)	Analyze the design issues in distributed systems and their impact on performance.	7M	CO1	L4
(b)	Describe the layered protocol architecture used in distributed communication.	7M	CO1	L2
3.	Explain the concept of threads and their role in distributed systems.	14M	CO2	L2
(OR)				
4(a)	Analyze various processor allocation algorithms.	7M	CO2	L4
(b)	Discuss system models used to represent distributed environments.	7M	CO2	L2
5(a)	Explain clock synchronization algorithms with examples.	7M	CO3	L2
(b)	Analyze Ricart-Agrawala and Lamport's algorithms.	7M	CO3	L4
(OR)				
6.	Discuss mutual exclusion in distributed systems. Compare two algorithms.	14M	CO3	L4
7(a)	Explain the architecture of Distributed Shared Memory.	7M	CO4	L2
(b)	Discuss consistency models with examples.	7M	CO4	L3
(OR)				
8(a)	Explain page-based DSM and its operations.	7M	CO4	L2
(b)	Discuss shared-variable DSM mechanisms.	7M	CO4	L3
9(a)	Explain the architecture of a Distributed File System.	7M	CO5	L2
(b)	Discuss naming and transparency in DFS.	7M	CO5	L3
(OR)				
10(a)	Analyze file sharing semantics in distributed systems.	7M	CO5	L4
(b)	Explain DFS implementation issues.	7M	CO5	L2

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B.Tech. (VII Semester) Regular/ Supplementary Examinations

20AE22-MECHANICS OF COMPOSITES

(ASE)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Discuss the applications of composite materials in Aerospace industry.	7M	CO1	L2
(b)	Classify the metal matrix composites and discuss the importance of MMC's.	7M	CO1	L2
(OR)				
2.	Starting from generalized Hooke's law, derive the material stiffness matrix Q for a fiber reinforced lamina in terms of elastic constants in principal material direction.	14M	CO1	L3
3(a)	Illustrate the importance of bounding techniques of elasticity that are used in Elasticity approach to stiffness.	7M	CO2	L3
(b)	Calculate the ratio of fiber stress to matrix stress and matrix stress to composite stress for $V_f=40\%$ and 60% Take $E_f = 250$ Gpa and $E_m = 15$ Gpa.	7M	CO2	L3
(OR)				
4.	Evaluate the stiffness matrix for an angle ply graphite epoxy lamina containing 60% volume of fibers. Take the following engineering constants for the composite. $E_f = 230$ Gpa, $E_m = 3.5$ GPa, $\mu_f = 0.2$ $\mu_m = 0.3$ Consider the fiber orientation angles of 0° and 45° .	14M	CO2	L4
5.	Analyze the laminate and Evaluate [A], [B] and [D] matrix of the laminate $[0/90/0]$ with the thickness of each ply is 2 mm. $[\bar{Q}_{ij}]_0$ is given as $[\bar{Q}_{ij}]_0 = \begin{bmatrix} 126.68 & 3.1 & 0 \\ 3.1 & 11.07 & 0 \\ 0 & 0 & 6.6 \end{bmatrix} \text{ Gpa}$	14M	CO3	L4
(OR)				
6(a)	Describe the following Laminates with example (i) Unidirectional laminate (ii) Angle ply laminate (iii) Cross ply laminate (iv) Symmetric laminate.	7M	CO3	L2
(b)	Prove that the coupling stiffness matrix [B] is zero for symmetric laminate.	7M	CO3	L3
7(a)	Describe the design requirements for structural sandwich panel.	7M	CO4	L2
(b)	Explain the various Core failure modes of sandwich panels with neat sketches.	7M	CO4	L2
(OR)				
8(a)	Mention few engineering applications of sandwich construction structures.	7M	CO4	L2
(b)	Differentiate sandwich structure from single entity composite structures.	7M	CO4	L2
9(a)	Illustrate the importance of processing of composites by autoclave.	7M	CO5	L2
(b)	Describe the Vacuum Bagging process with neat sketch.	7M	CO5	L2
(OR)				
10(a)	Explain centrifugal casting process and mention few engineering applications of it.	7M	CO5	L2
(b)	With help of neat sketch Describe working principle of pressure bagging process.	7M	CO5	L2

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B.Tech. (VII Semester) Regular/Supplementary Examinations

20CE24-PRE-STRESSED CONCRETE

(CE)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Note: IS Code 1343-1980/2012 Book is Permitted

Q.No	Questions	Marks	CO	BL
1(a)	Why is the high strength of concrete and high grade of steel required for prestressed concrete?	7M	CO1	L2
(b)	Write about: (i) Permissible stress (ii) Relaxation of stress (iii) Stress corrosion (iv) Prestressed Concrete.	7M	CO1	L2
(OR)				
2(a)	Discuss different types of anchorages used in pre stressing systems.	7M	CO1	L2
(b)	List the general principles of prestressing.	7M	CO1	L2
3(a)	Explain any two methods of prestressing system.	7M	CO2	L2
(b)	A beam is of simply supported span 8 m. The size of the beam is 350 mm × 700 mm. A prestressing force of 1000 kN was applied. The cable is parabolic with an eccentricity of 100 mm at the centre and zero at the supports. It is subjected to a udl of 25 kN/m. Compute the extreme stresses at midspan.	7M	CO2	L3
(OR)				
4(a)	Explain stress concept.	7M	CO2	L2
(b)	A prestressed concrete beam is of size 500 mm × 900 mm. The beam is simply supported on a span of 8 m. It is subjected to a central concentrated load of 1500 kN. The beam carries a dead load of 10 kN/m. A bent tendon is provided at an eccentricity of 100 mm below the centroidal axis and 50 mm below the centroidal axis at the ends. Compute the extreme stresses at midspan of the beam.	7M	CO2	L3
5(a)	What do you mean by loss of prestress?	7M	CO3	L2
(b)	A prestressed concrete beam 200 × 300 mm deep is prestressed with wires (area = 320 mm ²) located at 50 mm from the bottom carrying an initial stress of 1000N/mm ² . The span of the beam is 10 m. Calculate the percentage loss of prestress in wires when the beam is post-tensioned. Assume $E_s = 210 \text{ kN/mm}^2$, $E_c = 35 \text{ kN/mm}^2$. Relaxation of steel stress = 5% initial stress, shrinkage of concrete = 200×10^{-6} , creep coefficient = 1.6, slip at anchorage = 1 mm, friction coefficient = 0.0015 per meter.	7M	CO3	L3
(OR)				
6(a)	Illustrate the influencing factors for the shrinkage loss .	7M	CO3	L2

20CE24-PRE-STRESSED CONCRETE

(b)	A rectangular concrete beam 100×300 mm is prestressed by means of eight 5 mm wires located 65 mm from the bottom and two 5 mm wires located 35 mm from the top of the beam. If the wires are tensioned to a stress of 900N/mm^2 , calculate the percentage loss of stress in steel immediately after transfer allowing for the loss of stress due to elastic deformation of concrete only. Given, $E_s = 210\text{kN/mm}^2$ and $E_c = 31.5\text{ kN/mm}^2$	7M	CO3	L3
7(a)	Describe the factors affecting long-term deflections.	7M	CO4	L2
(b)	A rectangular beam 250×500 mm in section is simply-supported over a span of 10m. It is prestressed with a parabolic cable which has a maximum eccentricity of 200mm at midspan and 40 mm at support sections. Effective prestressing force is 1450 kN. Concrete grade is M40. Determine the deflection due to prestress and self weight.	7M	CO4	L3
(OR)				
8(a)	Explain the procedure for computing short-term and long-term deflection of PSC beams.	7M	CO4	L2
(b)	A concrete beam having a rectangular section 100×300 mm is prestressed by a parabolic cable with an initial prestressing force of 240 kN. The cable has an eccentricity of 50 mm at the centre and concentric at the supports. If the span of the beam is 10m and subjected to a live load of 2kN/m . Calculate the short-term deflection at midspan. Assume $E_c = 38\text{ kN/mm}^2$, creep coefficient = 2, loss of prestress = 20%. Estimate the long-term deflection.	7M	CO4	L3
9(a)	How will you improve the shear resistance of structural concrete members by applying prestressing technique?	7M	CO5	L2
(b)	Illustrate the codal provisions of bending, shear and torsion.	7M	CO5	L2
(OR)				
10(a)	A prestressed concrete beam having unsymmetrical I-section has a fibre stress distribution of 13 N/mm^2 (compression) at the top edge linearly reducing to zero at the bottom. The top flange width and thickness are 2400 mm and 400 mm respectively. The bottom flange width and thickness are 1200 mm and 900 mm respectively and the depth and web thickness are 1000 mm and 600 mm respectively. The total shear force is 2350 kN. Compute and compare the principal stresses at the centroidal axis and the junction of web with lower flange.	7M	CO5	L3
(b)	How do prestressed concrete beams behave in torsion?	7M	CO5	L2

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L. B. Reddy Nagar: Mylavaram – 521 230: NTR Dist.: A.P.

B.Tech. (VII Semester) Regular/Supplementary Examinations

20CS24-CLOUD COMPUTING

(CSE and CSE(AI&ML))

Time : 3 hours

Max. Marks: 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1.	Briefly explain the following terms associated with network threats or security in distributed systems: (i) DoS (ii) Trojan horse (iii) Network worm (iv) Service spoofing (v) Authorization (vi) Authentication (vii) Data integrity (viii) Confidentiality.	14M	CO1	L2
(OR)				
2(a)	Describe the evolution of cloud computing.	7M	CO1	L2
(b)	Write design objectives for cloud computing.	7M	CO1	L2
3(a)	Explain Type-1 and Type-2 hypervisors and describe their basic differences with a neat diagram.	7M	CO2	L2
(b)	What is cluster? Explain about virtual clusters.	7M	CO2	L2
(OR)				
4(a)	Explain para virtualization architecture with a neat diagram.	7M	CO2	L2
(b)	What is hypervisor? Explain Xen architecture with a neat diagram.	7M	CO2	L2
5(a)	Analyze the working model of Google App Engine and evaluate. How its architectural features simplify application development?	7M	CO3	L4
(b)	Evaluate various cloud services and compare the major providers such as AWS, Azure, and Google Cloud.	7M	CO3	L4
(OR)				
6(a)	Evaluate the role of each layer in cloud architecture in providing interoperability and efficient service delivery.	7M	CO3	L4
(b)	Examine and evaluate the strengths and weaknesses of Microsoft Azure architecture for enterprise-level cloud computing.	7M	CO3	L4
7(a)	Apply the concept of scheduling in cloud computing to explain Start-Time Fair Queuing (SFQ) with a suitable example.	7M	CO4	L3
(b)	Analyze how control theory concepts are applied to optimize cloud computing resource behavior.	7M	CO4	L3
(OR)				
8(a)	Analyze the various policies used in cloud resource management and explain how each policy influences system performance.	7M	CO4	L3
(b)	Analyze the applications of control theory in cloud task scheduling and explain how it avoids overload conditions.	7M	CO4	L3
9(a)	Analyze how the architecture of GFS (Google File System), including the master server, chunk servers, works together to ensure high availability.	7M	CO5	L4
(b)	Evaluate the NFS client-server architecture and analyze how its stateless design affects performance and reliability.	7M	CO5	L4
(OR)				
10(a)	Evaluate different storage models used in file systems (e.g., block storage, journal storage, cell storage) and analyze how each model impacts file operations.	7M	CO5	L4
(b)	Analyze how general parallel file systems improve throughput compared to traditional file systems.	7M	CO5	L4

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B.Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.:: A.P.

B.Tech. (VII Semester) Regular/Supplementary Examinations

20EC21-ASIC DESIGN

(ECE)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Classify different categories of ASICs and describe their advantages.	7M	CO1	L2
(b)	Explain the role of mixed mode and analog ASICs in real world applications such as communication systems.	7M	CO1	L2
(OR)				
2(a)	Illustrate with a block diagram how a standard cell based ASIC is implemented.	7M	CO1	L3
(b)	Construct the logic diagram of 4X1 MUX using a PLA device.	7M	CO1	L3
(OR)				
3(a)	Explain the concept of Design for Testability and describe two techniques used in DFT.	7M	CO2	L2
(b)	Compare and contrast the top-down and bottom-up design methodologies used in ASIC development.	7M	CO2	L2
(OR)				
4(a)	List and describe the main tools used in the ASIC design flow from specification to layout.	7M	CO2	L2
(b)	Explain how scan chains work and their role in testability for ASICs.	7M	CO2	L2
(OR)				
5(a)	Explain the primary purpose of the Xilinx Vivado or ISE design tool in FPGA development.	7M	CO3	L2
(b)	How would you design a 4-bit adder using Verilog HDL and implement it on an FPGA using Xilinx Vivado?	7M	CO3	L3
(OR)				
6(a)	Summarize different features of Verilog HDL and VHDL in ASIC Design flow.	7M	CO3	L2
(b)	How can a 4-bit counter be coded in VHDL and analyzed for synthesis, timing, and optimization using FPGA design tools?	7M	CO3	L3
(OR)				
7(a)	How is fault simulation used to detect stuck-at faults in a digital circuit, and what is the role of ATPG in this process?	7M	CO4	L3
(b)	Analyze how boundary scan testing can be applied to detect faults in a complex PCB.	7M	CO4	L3
(OR)				
8(a)	Summarize the various types of simulations commonly used in digital circuit design.	7M	CO4	L2
(b)	Explain the purpose of ATPG in digital circuit testing.	7M	CO4	L2
(OR)				
9(a)	Illustrate the main design issues in the ASIC physical design flow.	7M	CO2	L2
(b)	Explain what partitioning is in ASIC physical design and why it is needed.	7M	CO2	L2
(OR)				
10(a)	How would you design clock and power routes to minimize skew and voltage drop?	7M	CO3	L3
(b)	Examine the purpose of routing in ASIC design and name the major routing stages.	7M	CO3	L3

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B.Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.: A.P.

B.Tech. (VII Semester) Regular/Supplementary Examinations

20EC22-ADVANCED DIGITAL SIGNAL PROCESSING

(ECE)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Derive expressions for the mean, variance, and autocorrelation of a random process.	7M	CO1	L2
(b)	Define a random process. Explain the difference between stationary and non-stationary random processes with examples.	7M	CO1	L2
(OR)				
2(a)	Explain the properties of autocorrelation function and relate to the power spectral density.	7M	CO2	L2
(b)	Calculate the mean, mean square, and variance of the autocorrelation function given by a stationary random process X(t) $R_{XX}(\tau) = 36 + \frac{16}{1+8\tau^2}$	7M	CO2	L2
3(a)	Describe the representation of a stationary random process by rational power spectra.	7M	CO1	L2
(b)	Explain the relationship between the filter coefficients and autocorrelation sequences.	7M	CO1	L2
(OR)				
4(a)	Discuss backward linear prediction. Derive the expression for backward prediction error.	7M	CO2	L3
(b)	Consider a random process X(t)=A cos(ωt) where ω is a constant and A is a random variable uniformly distributed over (0,1). Find the autocorrelation and autocovariance of X(t).	7M	CO1	L3
5(a)	Derive the solution of the normal equations for linear prediction.	7M	CO3	L2
(b)	Explain the Levinson–Durbin algorithm with the Toeplitz matrix structure.	7M	CO3	L3
(OR)				
6(a)	Design an FIR Wiener Filter and explain how the minimum MSE is achieved.	7M	CO3	L3
(b)	Derive the filter coefficients from the Orthogonality Principle in Linear Mean-Square Estimation.	7M	CO3	L3
7(a)	Explain the averaging periodograms using the Bartlett method for power spectrum estimation.	7M	CO4	L3
(b)	Describe the modified averaging periodograms using the Welch method in detail.	7M	CO4	L3
(OR)				
8(a)	Explain how to smooth the periodogram using the Blackman–Tukey method.	7M	CO4	L3
(b)	Discuss the performance characteristics of nonparametric spectrum estimators.	7M	CO4	L3
9(a)	Describe power spectrum estimation using the parametric methods.	7M	CO4	L2
(b)	Explain the relationship between the autocorrelation function and AR model parameters.	7M	CO4	L2
(OR)				
10(a)	Estimate AR model parameters using Yule–Walker equations.	7M	CO4	L3
(b)	Explain how AR model parameters can be estimated using the Unconstrained Least Squares technique.	7M	CO4	L3

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.:: A.P.

B.Tech. (VII Semester) Regular/Supplementary Examinations

20EE24-POWER SYSTEM PROTECTION

(EEE)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL														
1(a)	Discuss the construction and working of Directional over-current relays.	7M	CO1	L2														
(b)	Draw and explain the schematic diagram of Induction cup type electromagnetic relays.	7M	CO1	L2														
(OR)																		
2(a)	Describe with a block diagram how a static relay works compared to an electromagnetic relay.	7M	CO1	L2														
(b)	The current rating of an over current relay is 5A. The relay has a plug setting of 150% and Time multiplier setting of (TMS) of 0.4. The CT ratio is 400/5. Determine the operating time of the relay for a fault current of 6000A. At TMS-1 operating time for various PSM are given in the Table.	7M	CO1	L3														
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>PSM</td> <td>2</td> <td>4</td> <td>5</td> <td>8</td> <td>10</td> <td>20</td> </tr> <tr> <td>Operating time(sec)</td> <td>10</td> <td>5</td> <td>4</td> <td>3</td> <td>2.8</td> <td>2.4</td> </tr> </table>	PSM	2	4	5	8	10	20	Operating time(sec)	10	5	4	3	2.8	2.4			
PSM	2	4	5	8	10	20												
Operating time(sec)	10	5	4	3	2.8	2.4												
3(a)	Illustrate how the self-balance system responds during an external fault.	7M	CO2	L3														
(b)	An 11 kV, 100 MVA alternator is provided with differential protection. The percentage of winding to be protected against phase to ground fault is 85%. The relay is set to operate when there is 20% out of balance current. Determine the value of the resistance to be placed in the neutral to ground connection.	7M	CO2	L3														
(OR)																		
4(a)	A 25 MVA, 132/33 kV transformer is protected by a percentage differential relay. If CT ratios are 200/1 on the HV side and 800/1 on the LV side, Explain how CT ratio mismatch is compensated in the differential protection scheme.	7M	CO2	L3														
(b)	Demonstrate the working principle of Buchholz's relay and explain its action during incipient faults.	7M	CO2	L3														
5(a)	Examine how directional relays are used for the protection of parallel feeders.	7M	CO3	L3														
(b)	Illustrate the principle and operation of protection of radial feeders. What are the limitations of this scheme?	7M	CO3	L3														
(OR)																		

20EE24-POWER SYSTEM PROTECTION

6(a)	A 220 kV transmission line between Station A and Station B experiences a fault at 60% of its length. Explain how carrier current protection ensures simultaneous tripping at both ends. Discuss the role of the carrier signal during internal and external faults.	7M	CO3	L3
(b)	Explain the three-zone distance protection scheme used for transmission line protection. Describe the reach, purpose, and time grading of Zone-1, Zone-2, and Zone-3. Why are multiple zones required.	7M	CO3	L3
(OR)				
7(a)	Summarize the causes of over voltages in power systems. Discuss the internal and external causes of over voltages.	7M	CO4	L2
(b)	What is BIL? Discuss impulse ratio and its significance in insulating materials.	7M	CO4	L2
(OR)				
8(a)	Demonstrate how solid grounding improves system safety.	7M	CO4	L2
(b)	A 33 kV, 3 phase 50 Hz, overhead line 60 km long has a capacitance to ground of each line equal to 0.015 mF per km. Compute the inductance and kVA rating of the Peterson coil.	7M	CO4	L3
(OR)				
9(a)	Summarize the operation of microprocessor based overcurrent relay.	7M	CO5	L2
(b)	Describe the operation of microprocessor based reactance relay.	7M	CO5	L2
(OR)				
10(a)	Discuss the differential equation method used in numerical relays.	7M	CO5	L2
(b)	Illustrate how numerical relays perform distance protection.	7M	CO5	L2

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.:: A.P.

B.Tech. (VII Semester) Regular/Supplementary Examinations

20EE25-RENEWABLE AND DISTRIBUTED GENERATION TECHNOLOGIES

(EEE)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Discuss the various forms of renewable energy sources for power generation.	7M	CO1	L1
(b)	Summarize the Radiation on tilted surfaces, solar energy collection.	7M	CO1	L2
(OR)				
2(a)	Discuss the Effect of Transmissivity and Absorptivity product on collector efficiency factor.	7M	CO1	L1
(b)	Describe the following with neat sketch (i) Solar Azimuth angle (ii) Declination angle.	7M	CO1	L2
(OR)				
3(a)	Describe the V-I characteristics of a solar cell and represent the equivalent circuit.	7M	CO1	L1
(b)	Explain the Balance of system components between PV Modules, Battery and Load.	7M	CO1	L2
(OR)				
4(a)	Explain the method of Incremental conduction technique for maximum power point tracking during the solar PV power Generation.	7M	CO1	L2
(b)	Illustrate the Sizing of Battery for a given Solar PV and LED lamp load system.	7M	CO1	L2
(OR)				
5(a)	Describe with neat sketch types of wind turbines with their applications.	7M	CO2	L1
(b)	Explain the Off-shore and On-shore wind farms also mention their advantages and disadvantages.	7M	CO2	L2
(OR)				
6(a)	Discuss the concepts of Kinetic energy of wind, Betz coefficient and Tip-speed ratio.	7M	CO2	L2
(b)	Explain how the wind power generation of different ratings is transmitted to the utility grid.	7M	CO2	L2
(OR)				
7(a)	Describe the siting and sizing of DGs in distribution system.	7M	CO3	L1
(b)	Describe the planning of distributed generation with respect to adequacy of supply and delivery of network security.	7M	CO3	L2
(OR)				
8(a)	Discuss the current scenario of capacity of distributed generation with respect to the High voltage transmission, medium voltage sub-transmission point of view.	7M	CO3	L2
(b)	Illustrate the need for Distributed generation in power system.	7M	CO3	L2
(OR)				
9(a)	Illustrate Deregulation of electricity trading market in power system.	7M	CO3	L2
(b)	Describe the configuration of battery energy storage system.	7M	CO3	L1
(OR)				
10(a)	Discuss the need of energy storages devices like flywheels and ultra-capacitors.	7M	CO3	L2
(b)	Discuss the impact of DG on Deregulation.	7M	CO3	L2

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.:: A.P.

B.Tech. (VII Semester) Regular/ Supplementary Examinations

20AD07-DEEP LEARNING

(IT)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Discuss the following with example (i) Trace of matr.ix (ii) Symmetric matrix (iii)Skew-symmetric matrix.	7M	CO1	L2
(b)	Show that the vectors $X_1=(1 \ 2 \ 4)$ $X_2=(2 \ 3 \ 4)$ $X_3=(3 \ 5 \ 7)$ are linearly dependent and find the relation between them.	7M	CO1	L3
(OR)				
2(a)	Find the determinant of a matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 6 \\ 3 & 6 & 9 \end{bmatrix}$	7M	CO1	L3
(b)	Compute eigenvalues and eigenvectors of a 2×2 matrix $A = \begin{bmatrix} 1 & 3 \\ 4 & 2 \end{bmatrix}$	7M	CO1	L3
3(a)	What is a Sigmoid function? Describe the issues of sigmoid.	7M	CO2	L2
(b)	Illustrate the derivative function used in gradient descent algorithm.	7M	CO2	L3
(OR)				
4(a)	Compare gradient descent, stochastic gradient descent, and mini-batch gradient descent.	7M	CO2	L3
(b)	Explain the architecture of a basic neural network and describe the function of its major components.	7M	CO2	L2
5.	Illustrate the LeNet-5 architecture by applying your understanding of how each layer operates, and specify the parameters used at every stage.	14M	CO3	L3
(OR)				
6(a)	Illustrate the pooling state in Convolutional Neural Network.	7M	CO3	L3
(b)	Define the term Stride. Give an example to explain the influence of stride in the convolution operation.	7M	CO3	L2
7.	Demonstrate the working of an LSTM network by describing its key components and computational block, and illustrate your explanation with a neat diagram.	14M	CO4	L3
(OR)				
8(a)	Distinguish between Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs).	7M	CO4	L2
(b)	Illustrate the working principles of the Word2Vec algorithm.	7M	CO4	L3
9(a)	Illustrate the role of the encoder-decoder layers with a suitable example.	7M	CO5	L3
(b)	Demonstrate how any two regularization strategies can be used in a deep learning model and explain their effects.	7M	CO5	L3
(OR)				
10(a)	Apply the idea of sparse autoencoders and describe their strengths and limitations.	7M	CO5	L3
(b)	Apply the autoencoder architecture concept to describe information flow from input to reconstruction with a neat diagram.	7M	CO5	L3

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.:: A.P.

B.Tech. (VII Semester) Regular/Supplementary Examinations

20ME24-REFRIGERATION AND AIR CONDITIONING

(ME)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL																						
1(a)	What is meant by refrigeration? List out the applications of refrigeration and discuss about the air expansion refrigeration.	7M	CO1	L2																						
(b)	A refrigerator works on the Carnot cycle in temperature between -7°C and 27°C . It makes 500 kg of ice per hour at -5°C from water at 14°C . Find power required to drive the compressor and C.O.P. of the cycle. Take specific heat of ice as 2.1 kJ/kg-k and latent heat as 336 kJ/kg .	7M	CO2	L3																						
(OR)																										
2(a)	How do you classify the refrigerants? Discuss about the nomenclature of refrigerants with suitable example.	7M	CO3	L2																						
(b)	Differentiate between physical and thermodynamic properties of a refrigerant. Explain which more important properties are giving specific examples.	7M	CO3	L2																						
(OR)																										
3(a)	Demonstrate the working principle of simple vapour compression refrigeration system with the help of T-S and p-h diagrams.	7M	CO1	L2																						
(b)	A vapour compression refrigerator works between the pressure limits of 60 bar and 25 bar. The working fluid is dry saturated at the end of the compression and there is no under cooling of the liquid before the expansion. Estimate: i) COP of the cycle and ii) Capacity of the refrigerator if the fluid flow is at the rate of 5 kg/min.	7M	CO2	L3																						
	<table border="1"> <thead> <tr> <th rowspan="2">Pressure (bar)</th> <th rowspan="2">Saturation Temp (K)</th> <th colspan="2">Enthalpy (kJ/kg)</th> <th colspan="2">Entropy (kJ/kg.K)</th> </tr> <tr> <th>Liquid</th> <th>Vapour</th> <th>Liquid</th> <th>Vapour</th> </tr> </thead> <tbody> <tr> <td>60</td> <td>295</td> <td>151.9</td> <td>293.29</td> <td>0.554</td> <td>1.0332</td> </tr> <tr> <td>25</td> <td>261</td> <td>56.32</td> <td>322.58</td> <td>0.226</td> <td>1.2464</td> </tr> </tbody> </table>	Pressure (bar)	Saturation Temp (K)	Enthalpy (kJ/kg)		Entropy (kJ/kg.K)		Liquid	Vapour	Liquid	Vapour	60	295	151.9	293.29	0.554	1.0332	25	261	56.32	322.58	0.226	1.2464			
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25	261	56.32	322.58	0.226	1.2464																					
(OR)																										
4(a)	Illustrate the working of Capillary tube and state its merits and demerits.	7M	CO1	L2																						
(b)	Classify the condensers and explain the working of shell and tube condenser with a suitable sketch.	7M	CO1	L2																						
(OR)																										
5(a)	Determine the maximum COP of a vapour absorption refrigeration system when the temperature of generator is 120°C , the temperature of the condenser is 30°C and the temperature of the evaporator is -20°C .	7M	CO2	L3																						
(b)	Construct the Lithium bromide -Water Vapour absorption refrigeration system and explain its working principle.	7M	CO1	L2																						
(OR)																										

20ME24-REFRIGERATION AND AIR CONDITIONING

6(a)	Illustrate the working principle of steam jet refrigeration system. List out its merits and demerits.	7M	CO1	L2
(b)	List the various non-conventional refrigeration systems and discuss about the vortex tube refrigeration.	7M	CO1	L2
7(a)	Explain the various psychrometric processes used in air conditioning systems, and describe each process with the help of psychrometric chart.	7M	CO4	L2
(b)	Air in a room has DBT=26 °C, RH=50%. Using psychrometric chart, determine: (i) Wet Bulb Temperature, (ii) Specific humidity, (iii) Dew point Temperature, (iv) Enthalpy.	7M	CO4	L3
(OR)				
8(a)	Sketch the psychrometric chart and explain the properties of moist air and its representation on psychrometric chart.	7M	CO4	L2
(b)	900 kg/hr of return air at 24 °C DBT and 60% RH is mixed with 100 kg/hr of fresh air at 40 °C DBT and 30% RH. Evaluate the final conditions of the mixture.	7M	CO4	L3
9(a)	What is the need of air conditioning system? List the detailed classification of air conditioning systems.	7M	CO5	L2
(b)	Illustrate the working principle of summer air conditioning system with neat sketch.	7M	CO5	L2
(OR)				
10(a)	Discuss about the different types of heat loads which have taken into account in order to estimate the total heat load of a large restaurant for summer air conditioning.	7M	CO5	L2
(b)	Differentiate between the unitary and central air conditioning systems.	7M	CO5	L2

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

L.B.Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.:: A.P.

B.Tech. (VII Semester) Regular/Supplementary Examinations
20CS25-SOFTWARE PROJECT MANAGEMENT
(AI&DS and CSE)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Explain about waterfall model.	7M	CO1	L2
(b)	Discuss the role of software cost estimation in software project management. How do pragmatic cost estimation techniques influence the management of software projects?	7M	CO1	L2
(OR)				
2(a)	What are the key principles of conventional software engineering?	7M	CO1	L2
(b)	Compare and contrast the principles of conventional software management with modern software management approaches.	7M	CO1	L2
(OR)				
3(a)	Explain the essential activities of the Inception and Elaboration phases.	7M	CO3	L2
(b)	Why artifact sets are classified into engineering and management sets?	7M	CO3	L2
(OR)				
4(a)	What is the impact of iterative development on artifact evolution?	7M	CO3	L2
(b)	Explain about model-based architecture in a management perspective.	7M	CO3	L2
(OR)				
5(a)	Discuss about the cost and schedule estimating process in iterative process planning.	7M	CO4	L2
(b)	What is a Work Breakdown Structure? Discuss the challenges associated with using a conventional WBS in project management.	7M	CO4	L1
(OR)				
6(a)	What is workflow? Explain in detail the process work flows.	7M	CO4	L2
(b)	Explain the typical Minor Milestones in the life cycle iterations.	7M	CO4	L2
(OR)				
7(a)	What is Round Trip Engineering? Explain	7M	CO5	L2
(b)	Illustrate the software project team evolution over the life cycle.	7M	CO5	L4
(OR)				
8.	Explain the responsibilities of the four component teams in a line of business organization with a neat diagram.	14M	CO5	L2
(OR)				
9(a)	What are software management best practices? Explain.	7M	CO2	L2
(b)	Explain culture shifts for modern process transitions.	7M	CO2	L2
(OR)				
10	Write short note on (i) Next generation software economics (ii) Future software project management.	14M	CO2	L2

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L. B. Reddy Nagar:: Mylavaram – 521 230 :: Krishna Dist.:: A.P.

B.Tech. (VII Semester) Regular/Supplementary Examinations

Ramesh
13/12/25

20AE24-SPACE VEHICLE PROPULSION

(ASE)

Time : 3 hours

Max. Marks: 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL																				
1(a)	Explain the operating principle of a ramjet engine with a neat diagram. Why is it classified as an air-breathing propulsion system?	7M	CO1	L2																				
(b)	With suitable sketches, compare sub-critical, critical, and supercritical operating conditions of a ramjet and explain how shock formation plays a role.	7M	CO1	L2																				
(OR)																								
2(a)	Explain the role and necessity of isolators in scramjet engines. How do they prevent inlet-combustor interaction?	7M	CO1	L2																				
(b)	Describe the basic working principle of a supersonic ramjet. How does it differ from a conventional ramjet?	7M	CO1	L2																				
3(a)	Discuss the concept of specific impulse in rocket propulsion. Why is it considered a measure of engine efficiency?	4M	CO2	L2																				
(b)	<p>A four-stage rocket is used to put up a satellite of 40 kg mass in a Low Earth Orbit (LEO). The approximate values of mass of the propellant, mass of structure and jet velocity for each stage are given below:</p> <table border="1" style="margin-left: 20px; border-collapse: collapse; width: 80%;"> <thead> <tr> <th style="text-align: left;">STAGE</th> <th style="text-align: center;">I</th> <th style="text-align: center;">II</th> <th style="text-align: center;">III</th> <th style="text-align: center;">IV</th> </tr> </thead> <tbody> <tr> <td>Mass of Propellant, (kg)</td> <td style="text-align: center;">9,000</td> <td style="text-align: center;">3,500</td> <td style="text-align: center;">1,700</td> <td style="text-align: center;">260</td> </tr> <tr> <td>Mass of structure including inerts, (kg)</td> <td style="text-align: center;">1,500</td> <td style="text-align: center;">550</td> <td style="text-align: center;">250</td> <td style="text-align: center;">40</td> </tr> <tr> <td>VJ, (m/s)</td> <td style="text-align: center;">2,200</td> <td style="text-align: center;">2,400</td> <td style="text-align: center;">2,500</td> <td style="text-align: center;">2,750</td> </tr> </tbody> </table> <p>Determine:</p> <p>(i) The payload mass fraction of the total rocket (Satellite launch vehicle) (ii) Structural mass fraction of each stage. (iii) The ideal ΔV provided by each stage and the total ΔV. (iv) If the first stage fires for a period of 50 seconds and the rate of mass depletion can be assumed to be constant, what would be the acceleration of the rocket at take off?</p>	STAGE	I	II	III	IV	Mass of Propellant, (kg)	9,000	3,500	1,700	260	Mass of structure including inerts, (kg)	1,500	550	250	40	VJ, (m/s)	2,200	2,400	2,500	2,750	10M	CO2	L3
STAGE	I	II	III	IV																				
Mass of Propellant, (kg)	9,000	3,500	1,700	260																				
Mass of structure including inerts, (kg)	1,500	550	250	40																				
VJ, (m/s)	2,200	2,400	2,500	2,750																				
(OR)																								
4(a)	A single stage rocket is used as a sounding rocket to make measurements in the Earth's atmosphere. It carries sensors and electronic packages which can withstand a maximum acceleration of 10g. It develops a constant thrust of 6kN and has a total impulse of 90kN-s. It is launched vertically. If the mass of the empty rocket is 40kg, what is the payload that the sounding rocket can carry so that its acceleration does not exceed 10g.	7M	CO2	L3																				

20AE24-SPACE VEHICLE PROPULSION

(b)	Discuss the future development trends in rocket propulsion technology-reusable launch vehicles, green propellants, and advanced nozzle configurations.	7M	CO2	L2
(OR)				
5(a)	List out the different parts of a liquid rocket engine with a neat diagram.	4M	CO3	L1
(b)	Discuss commonly used liquid fuels such as kerosene, LH ₂ , hydrazine derivatives. Compare them in terms of density, performance and safety.	10M	CO3	L2
(OR)				
6(a)	Explain the common physical hazards that must be understood before we can start working with the liquid propellants.	7M	CO3	L2
(b)	Describe the principle and working of cryogenic rocket propulsion. Why is it preferred for upper stages?	7M	CO3	L2
(OR)				
7(a)	Classify the Solid Propellants based on the type of ingredients used.	7M	CO3	L2
(b)	What are hybrid rockets? Explain their working principle, fuel-oxidizer combinations, advantages, and challenges.	7M	CO3	L2
(OR)				
8(a)	Explain as to how to determine the burn rate for any solid propellant rocket grain. Mention the factors that affect the burn rate and how we can tailor the burn rate as per the mission requirements.	7M	CO3	L2
(b)	Explain the selection criteria for solid propellants based on mechanical, chemical, thermal, and ballistic requirements.	7M	CO3	L2
(OR)				
9(a)	Classify the different types of Electric propulsion engines with a tree diagram.	4M	CO4	L2
(b)	Explain the need for advanced propulsion systems beyond chemical rockets. Discuss performance limitations of conventional propulsion.	10M	CO4	L2
(OR)				
10(a)	Discuss in detail with a neat sketch about the type of nuclear propulsion used in Galileo and Cassini missions to power the Space probes.	7M	CO4	L2
(b)	Explain the acceleration mechanism of ions in an electrostatic propulsion system. Discuss potential and grid spacing effects.	7M	CO4	L2

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.: A.P.

B.Tech. (VII Semester) Regular/Supplementary Examinations

20CE29-GREEN BUILDINGS

(CE)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	List the factors affecting natural ventilation. Mention the advantages of daylighting in buildings.	7M	CO1	L2
(b)	Discuss the environmental and economic benefits of green buildings.	7M	CO1	L2
(OR)				
2(a)	Differentiate between green and brown field site selection.	5M	CO1	L2
(b)	Define Green Buildings concept. Mention its typical features.	9M	CO1	L2
(OR)				
3(a)	Discuss the causes of indoor air pollution.	5M	CO2	L2
(b)	Illustrate the effect of ambient temperature, wind, precipitation and sky cover on the design of green buildings.	9M	CO2	L2
(OR)				
4(a)	Discuss the Inclination of Solar radiation on ground and buildings.	7M	CO2	L2
(b)	What is air change? Mention the required standards of air change for various types of green building types.	7M	CO2	L2
(OR)				
5(a)	Discuss mechanical properties of timber.	7M	CO3	L2
(b)	List different agro-waste produced. Mention their application in green buildings as a recyclable material.	7M	CO3	L2
(OR)				
6(a)	Discuss about types of wood products used in engineering applications along with their applications.	7M	CO3	L2
(b)	Illustrate various types of green roof alternatives.	7M	CO3	L2
(OR)				
7(a)	Define building envelope. Discuss types in buildings envelope.	7M	CO4	L2
(b)	Discuss the energy used in transportation and construction processes.	7M	CO4	L2
(OR)				
8(a)	Discuss different types of water conservation systems in green buildings.	7M	CO4	L2
(b)	List the sound insulation materials and their features.	7M	CO4	L2
(OR)				
9(a)	Explain the Green Rating system for Integrated Habitat Assessment of green buildings.	7M	CO1	L2
(b)	Explain geothermal energy usage in green buildings.	7M	CO1	L2
(OR)				
10(a)	Discuss Solar energy potential in India.	7M	CO1	L2
(b)	Discuss about IGBC rating concept of Green Buildings.	7M	CO1	L2

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

L.B.Reddy Nagar :: Mylavaram - 521 230 :: NTR Dist.:: A.P.

B.Tech. (VII Semester) Regular/Supplementary Examinations

20AD09-NATURAL LANGUAGE PROCESSING
(CSE,CSE(AI&ML) and IT)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit
All questions carry equal marks

*800/500
13/12/25*

Q.No	Questions	Marks	CO	BL
1(a)	Explain capture groups and named capture groups in regular expression with example.	7M	CO1	L2
(b)	Write the regular expression following languages (i) matching time in hh:mm format (ii) regular expression to matching the 10 digit mobile number.	7M	CO1	L3
(OR)				
2(a)	Discuss the different applications of Natural Language Processing.	7M	CO1	L2
(b)	Explain Levenshtein minimum edit distance algorithm in detailed with example.	7M	CO1	L3
3.	What is an N-gram model? Explain the differences between unigram, bigram, and trigram models with examples.	14M	CO2	L2
(OR)				
4(a)	Outline the role of smoothing in N-gram models? How Laplace smoothing help to overcome issues with unseen n-grams?	7M	CO2	L2
(b)	Discuss about backoff and Interpolation in language model.	7M	CO2	L2
5(a)	What is POS Tagging? Explain different types of POS tagging.	7M	CO3	L2
(b)	Differentiate between stemming and lemmatization. Illustrate with example.	7M	CO3	L2
(OR)				
6(a)	How does the NLTK library handle stopword removal during text preprocessing? Demonstrate how you can remove stopwords from a given text using NLTK.	7M	CO3	L3
(b)	Explain sentence and word tokenization using the NLTK library. Provide examples demonstrating how to perform both sentence and word tokenization with NLTK.	7M	CO3	L3
7(a)	Explain about Semi supervised relation extraction via Distant Supervision.	7M	CO4	L2
(b)	Explain about relation extraction via supervised learning.	7M	CO4	L2
(OR)				
8.	Outline the steps involved in extracting events and their associated times from text, with an illustrative example.	14M	CO4	L2
9(a)	Write short note on Word Sense Disambiguation.	7M	CO5	L2
(b)	Explain about Lesk algorithm for Word Sense Disambiguation. How does it utilize dictionary definitions to resolve ambiguities?	7M	CO5	L2
(OR)				
10(a)	Explain about WordNet Structure with example.	7M	CO5	L2
(b)	Discuss about relations between senses with examples.	7M	CO5	L2

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

L.B.Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.: A.P.
B.Tech. (VII Semester) Regular/Supplementary Examinations
20EC26-WIRELESS SENSOR NETWORKS

(ECE)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Explain the challenges in designing a wireless Sensor network.	7M	CO1	L2
(b)	Discuss about the enabling technologies for wireless sensor networks.	7M	CO1	L2
(OR)				
2(a)	Discuss the advantages and applications of sensor networks.	7M	CO1	L2
(b)	Explain how the sensor networks are deployed for various applications.	7M	CO1	L2
3(a)	Explain in detail about main sensor node hardware components with neat diagram.	7M	CO1	L2
(b)	Discuss in detail about the energy consumption of Sensor Nodes.	7M	CO3	L2
(OR)				
4(a)	Discuss optimization goal and Figure of Merit.	7M	CO1	L2
(b)	Explain the need for Gateways and write about Wireless Sensor Network tunneling.	7M	CO1	L2
5(a)	Explain in detail about trans-receiver design considerations of WSNs.	7M	CO3	L2
(b)	Discuss the Contention Based MAC Protocols with Scheduling Mechanisms.	7M	CO2	L2
(OR)				
6(a)	Explain about energy efficient routing with an example.	7M	CO2	L2
(b)	Discuss various challenges in routing.	7M	CO2	L2
7(a)	Explain various topology control techniques.	7M	CO3	L2
(b)	Explain the concept of clustering in wireless sensor networks.	7M	CO3	L2
(OR)				
8(a)	Explain different localization techniques.	7M	CO3	L2
(b)	Describe the concept of task-driven sensing in wireless sensor networks.	7M	CO3	L2
9(a)	Discuss the unique requirements of operating systems for wireless sensor networks.	7M	CO4	L2
(b)	Explain the role of Berkeley Motes in the development of wireless sensor networks.	7M	CO4	L2
(OR)				
10(a)	Explain the trade-offs between high-level programming abstractions and low-level programming control in WSNs.	7M	CO4	L2
(b)	Explain in detail the node level software platform.	7M	CO4	L2

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L.B.Reddy Nagar:: Mylavaram – 521 230 :: NTR Dist.: A.P.

B.Tech. (VII Semester) Regular/Supplementary Examinations

*20000
15/12/25*

**20EE27-HYBRID ELECTRIC VEHICLES
(EEE)**

Time : 3 hours

Max. Marks : 70

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Mention the history of hybrid electric vehicles.	7M	CO1	L2
(b)	Conceptually differentiate electric vehicle and hybrid electric vehicle in detail.	7M	CO1	L2
(OR)				
2(a)	Explain in detail fundamentals of electric vehicle.	4M	CO1	L2
(b)	Mention advantages, disadvantages and applications of electric and hybrid electric vehicles.	10M	CO1	L2
(OR)				
3.	Sketch architecture of hybrid electric vehicles. Explain series and parallel hybrid electric vehicles.	14M	CO2	L2
(OR)				
4(a)	Explain in detail fuel cell vehicles.	7M	CO2	L2
(b)	What are the constituents of fuel cell vehicles?	7M	CO2	L2
(OR)				
5(a)	Discuss fuel economy of Plug-in hybrid electric vehicles.	7M	CO3	L2
(b)	Explain about vehicle to grid technology in detail.	7M	CO3	L2
(OR)				
6(a)	Explain in detail Plug-in hybrid electric vehicle battery charging.	7M	CO3	L2
(b)	Sketch the architecture of Plug-in hybrid electric vehicle.	7M	CO3	L2
(OR)				
7(a)	Mention the standards of charging.	7M	CO4	L2
(b)	Explain the concept of non-isolated bidirectional DC-DC converter with related mathematical expressions.	7M	CO4	L2
(OR)				
8(a)	Compare non-isolated and isolated bidirectional DC-DC converter used in hybrid electric vehicles.	7M	CO4	L2
(b)	Explain the concept of voltages ripples in power electronics converters.	7M	CO4	L2
(OR)				
9(a)	Discuss in detail various energy storage parameters.	7M	CO5	L2
(b)	Explain about pumped hydroelectric energy storage.	7M	CO5	L2
(OR)				
10.	With neat diagram, explain how flywheel as energy storage element in hybrid electric vehicle.	14M	CO5	L2

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.:: A.P.

B.Tech (VII Semester) Regular/Supplementary Examinations

20ME29-AUTOMOBILE ENGINEERING

(ME)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Draw the chassis layout of an automobile vehicle and label all its major components.	7M	CO1	L2
(b)	Mention the functions of the following components. (i) Camshaft (ii) Fly wheel (iii) Valves	7M	CO1	L1
(OR)				
2(a)	Elucidate the construction details of piston rings with neat sketch.	7M	CO1	L2
(b)	Describe the front and rear wheel drive systems with neat sketches.	7M	CO1	L2
3.	Elaborate the working of SU carburetor with a neat sketch.	14M	CO2	L2
(OR)				
4(a)	Illustrate the working principle of simple carburetor.	7M	CO2	L2
(b)	With neat diagram, describe the working of A.C electrical fuel Pump.	7M	CO2	L2
5.	Comprehend the working of battery ignition system and its relative advantages with a neat sketch.	14M	CO3	L2
(OR)				
6(a)	What are the requirements and functions of charging system in automobiles?	7M	CO3	L1
(b)	Discuss the working of Bendix drive mechanism.	7M	CO3	L2
7(a)	With a neat sketch, demonstrate the working of Sliding mesh gear box.	7M	CO4	L2
(b)	Distinguish fluid coupling and torque convertor.	7M	CO4	L2
(OR)				
8(a)	Discuss the universal joints used in transmission system of automobiles.	7M	CO4	L1
(b)	List different types of tyres used in an automobile and explain anyone in detail with neat diagram.	7M	CO4	L2
9(a)	Distinguish leaf and coil springs.	7M	CO5	L2
(b)	Illustrate the steering geometry parameters.	7M	CO5	L2
(OR)				
10(a)	Discuss the merits of hydraulic brakes over mechanical brakes.	7M	CO5	L1
(b)	Explicate the operational details of air braking system.	7M	CO5	L2

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.:: A.P.

B.Tech. (VII Semester) Regular/Supplementary Examinations

Answer
15/12/24

20CS17-INFORMATION SECURITY

(AI&DS and CSE(AI&ML))

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	State the conventional encryption principles. Explain the two essential requirements for secure use of conventional encryption.	7M	CO1	L2
(b)	Describe the core structure and key setup process in the Advanced Encryption Standard (AES) algorithm. Mention the key differences in the number of rounds for 128-bit, 192-bit, and 256-bit keys.	7M	CO1	L2
(OR)				
2(a)	Evaluate the security and performance trade-offs between DES, Triple DES, and AES. Justify why AES is the current industry standard for symmetric encryption.	7M	CO1	L3
(b)	Differentiate between the four categories of security attacks, providing a concrete example for each.	7M	CO1	L2
3.	Describe the principles of public-key cryptography and explain how public-key algorithms are used to achieve confidentiality, authentication, and key exchange.	14M	CO2	L3
(OR)				
4(a)	Explain the structure and working of the SHA-512 secure hash function.	7M	CO2	L2
(b)	Describe any two public-key cryptography algorithms and explain their key features and applications.	7M	CO2	L2
5(a)	Discuss the working of IKEv2 and explain how it improves authentication and key exchange compared to IKEv1.	7M	CO3	L3
(b)	Explain how PGP handles key management and describe the trust model used in PGP.	7M	CO3	L3
(OR)				
6(a)	Describe the Encapsulating Security Payload (ESP) and explain how encryption and authentication are provided in ESP.	7M	CO3	L2
(b)	Discuss how cryptographic suites combine encryption, authentication, and key exchange algorithms to form a secure IPsec configuration.	7M	CO3	L3
7(a)	Describe the structure of a TLS session and explain the roles of session keys, cipher suites, and alert messages.	7M	CO4	L2
(b)	Discuss the goals and architecture of Secure Electronic Transaction (SET).	7M	CO4	L2
(OR)				
8(a)	Describe the SSL Record Protocol and explain how it provides confidentiality and integrity.	7M	CO4	L2
(b)	Describe the threats and vulnerabilities commonly found in web-based systems and explain their impact on security requirements.	7M	CO4	L2
9(a)	Explain the importance of digital evidence and describe the requirements for proper collection, preservation, and analysis of forensic data.	7M	CO5	L2
(b)	Describe the concept of a trust management system and explain its role in access control and security policies.	7M	CO5	L2
(OR)				
10(a)	Discuss virus classification based on infection mechanism, trigger, and payload.	7M	CO5	L2
(b)	Explain firewall design principles and describe the characteristics of an effective firewall.	7M	CO5	L2

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B. Reddy Nagar: Mylavaram – 521230: NTR Dist.: A.P.

B.Tech. (VII Semester) Regular/Supplementary Examinations

20AE28-SPACE MECHANICS

(ASE)

Time : 3 hours

Max. Marks: 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Explain the ecliptic plane in detail. Discuss its role in the apparent motion of the Sun and the formation of seasons?	7M	CO1	L2
(b)	Explain the inclination between the celestial equator and the ecliptic. How does this inclination produce equinoxes and solstices?	7M	CO1	L2
(OR)				
2.	(i) Explain the different types of astronomical years (sidereal year, tropical year). Discuss how these influence the construction of calendars. (ii) Explain sidereal time in detail. Why is a sidereal day shorter than a solar day? Illustrate with a neat diagram.	14M	CO1	L2
3.	Analyze their impact on long-range missile predictions, including range errors, flight time, gravitational variations, and flight geometry.	14M	CO2	L4
(OR)				
4(a)	Explain the concept of optimal flights.	7M	CO2	L4
(b)	Assess the relationship between burnout angle and re-entry angle using geometric trajectory principles.	7M	CO2	L4
5(a)	Mass ratio $\mu = \frac{m_2}{m_1+m_2} = 0.01215$ (Earth-Moon system) Position of spacecraft in rotating frame: $x = 0.8, y = 0.6$ Velocities in rotating frame: $\dot{x} = 0.05, \dot{y} = -0.02$ Find: The Jacobi Constant C and determine if the spacecraft can pass between the primaries (check zero-velocity condition).	7M	CO3	L3
(b)	Explain in detail about the circular restricted three-body problem with neat diagram.	7M	CO3	L3
(OR)				
6(a)	Satellite in circular Earth orbit: $a = 42164 \text{ km}$ (geostationary) Perturbing body: Sun at $r_s = 1.496 \times 10^8 \text{ km}$ Mass of Sun $m_s = 1.989 \times 10^{30} \text{ kg}$ Mass of Earth $m_E = 5.972 \times 10^{24} \text{ kg}$ Find the ratio of Sun's gravitational perturbation to Earth's gravity at the satellite ($\frac{a_{Sun}}{a_{Earth}}$).	7M	CO3	L3
(b)	Earth-Moon system $\mu = 0.01215$ For L_1 , the approximate x-coordinate is: $x_{L1} = 0.8369, y_{L1} = 0$. Compute C_{L1} , the Jacobi constant at $L_1 = C_{L1} = 2\Omega$ and $\Omega = \frac{1}{2}x^2 + \frac{1-\mu}{r_1} + \frac{\mu}{r_2}$.	7M	CO3	L3
7(a)	Discuss the Method of Variation of Orbital Elements and how perturbing accelerations modify six orbital elements.	7M	CO4	L2
(b)	Explain the General Perturbations Approach and how averaging techniques are used for long-term element evolution.	7M	CO4	L2
(OR)				

20AE28-SPACE MECHANICS

8(a)	Compute velocity $v = \sqrt{\frac{\mu}{r}}$ required for circular orbit at 850km altitude. Given: Earth radius = 6378 km, $\mu = 398600 \text{ km}^3/\text{s}^2$.	7M	CO4	L2
(b)	A satellite injected into a circular orbit has a tangential velocity error of +15 m/s. Find resulting eccentricity $e \approx \frac{\Delta v}{v_c}$ and $v_c = \text{at LEO} = 6.9 \text{ km/s}$	7M	CO4	L2
(OR)				
9(a)	If Mars $\mu = 42828 \text{ km}^3/\text{s}^2$, arrival $v_\infty = 2.7 \text{ km/s}$, desired periapsis $r_p = 4000 \text{ km}$. find (i) Hyperbolic periapsis speed $v_p = \sqrt{v_\infty^2 + 2\mu/r_p}$ (ii) Circular speed at r_p $v_{circ} = \sqrt{\mu/r_p}$ (iii) ΔV to insert to circular orbit $\approx v_p - v_{circ}$	7M	CO5	L4
(b)	Analyse the steps and ΔV budgeting for launching an interplanetary spacecraft: parking orbit, escape, v_∞ requirements, and injection.	7M	CO5	L4
(OR)				
10(a)	Explain three-dimensional interplanetary trajectories and the effect of inclination mismatches. Analyse strategies to minimize plane-change cost.	7M	CO5	L4
(b)	Define launch opportunities and launch windows. Analyse the role of synodic period, phase angle, and relative motion in scheduling interplanetary launches.	7M	CO5	L4

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.:: A.P.

B.Tech. (VII Semester) Regular/Supplementary Examinations

20CE30-REPAIR AND REHABILITATION OF STRUCTURES

(CE)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Illustrate the various factors indicating the distress in concrete structures.	7M	CO1	L2
(b)	Explain the process of alkali-aggregate reaction (AAR) and its consequences.	7M	CO1	L2
(OR)				
2(a)	Describe the different stages of condition assessment, with examples.	7M	CO1	L2
(b)	Discuss the need for rehabilitation of structures in present scenario.	7M	CO1	L2
3(a)	Suggest measures to improve durability under wet-dry exposure conditions.	7M	CO1	L1
(b)	Enumerate causes of cracks in concrete. What are dormant and active cracks?	7M	CO1	L2
(OR)				
4.	With respect to corrosion of steel in concrete. Explain the significance of the following: (i) Carbonation and (ii) Chloride ingress.	14M	CO1	L2
5(a)	Discuss the need and advantages of Non-destructive testing.	4M	CO2	L2
(b)	Define carbonation of concrete. How it is determined in concrete? Mention the limitations associated with it?	10M	CO2	L1
(OR)				
6(a)	Write the limitations of Rebound hammer test.	4M	CO2	L1
(b)	Explain about Ultrasonic pulse velocity method with neat sketch.	10M	CO2	L2
7(a)	Describe polymer modified concrete including its general requirement, field application.	7M	CO3	L2
(b)	List out the factors affecting the selection of repair materials.	7M	CO3	L1
(OR)				
8(a)	Discuss the safety precautions for health and handling repair materials.	7M	CO3	L2
(b)	Outline the methodology for the selection of repair materials.	7M	CO3	L1
9(a)	Summarize the concrete repair by fiber wrap technique.	7M	CO4	L1
(b)	Demonstrate crack repair by routing and sealing with the help of neat sketch.	7M	CO4	L2
(OR)				
10.	Illustrate with neat sketch the procedure of strengthening a beam by jacketing with reinforced concrete.	14M	CO4	L2

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B.Tech. (VII Semester) Regular/Supplementary Examinations

20EC27-LOW POWER VLSI DESIGN

(ECE)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Describe short-circuit power dissipation in CMOS logic. Explain its dependence on rise/fall times and supply voltage.	7M	CO1	L2
(b)	What is glitch power dissipation? Explain its origin, effects, and techniques to reduce glitching activity.	7M	CO1	L2
(OR)				
2(a)	Describe active power dissipation in CMOS circuits and discuss various dynamic power reduction strategies.	7M	CO1	L2
(b)	Explain leakage power dissipation in deep-submicron technologies and discuss different leakage current components.	7M	CO1	L2
(OR)				
3(a)	Explain the architecture, operation, and benefits of VT MOS circuits in low-power VLSI.	7M	CO2	L2
(b)	Discuss about MTMOS technique with suitable diagram in detail.	7M	CO2	L2
(OR)				
4(a)	Explain the Dynamic- V_{th} technique and its impact on leakage and performance.	7M	CO2	L2
(b)	Explain the role of body biasing in leakage reduction, and discuss reverse and forward body bias techniques.	7M	CO2	L2
(OR)				
5(a)	What are the design challenges in low-voltage, low-power adder circuits?	7M	CO4	L2
(b)	Design a full adder using transmission gate and pass transistor logics.	7M	CO4	L3
(OR)				
6(a)	Explain Carry Select Adder (CSLA) architecture and how it reduces power consumption.	7M	CO4	L3
(b)	Describe the architecture of a Ripple Carry Adder (RCA) and analyze its power and delay characteristics.	7M	CO4	L3
(OR)				
7(a)	Describe the need for low-power multipliers in VLSI circuits.	7M	CO4	L2
(b)	Explain Baugh-Wooley multiplier design with neat diagrams and discuss its suitability for signed multiplication.	7M	CO4	L3
(OR)				
8(a)	Illustrate the architecture of a Braun multiplier for low power applications.	7M	CO4	L3
(b)	Write about Wallace Tree Multiplier with example.	7M	CO4	L2
(OR)				
9(a)	Describe different types of ROMs and explain future trends and developments in ROM technology.	7M	CO3	L2
(b)	Discuss precharge and equalization circuits used in SRAM and their importance in low-power operation.	7M	CO3	L2
(OR)				
10(a)	Explain about various low-power SRAM techniques used in low power applications.	7M	CO3	L2
(b)	Describe self-refresh mechanisms in DRAM and explain how they contribute to low-power memory operation.	7M	CO3	L2

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

L.B.Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.:: A.P.
B.Tech. (VII Semester) Regular/Supplementary Examinations

18/12/2025

**20CS26-SOFT COMPUTING
(IT)**

Time : 3 hours

Max. Marks : 70

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Explain the structure of a biological neuron and describe how it is functionally different from an artificial neuron.	7M	CO1	L2
(b)	Explain the concept of multi-layer feed-forward networks. How do they address the limitations of single-layer networks?	7M	CO1	L2
(OR)				
2(a)	Illustrate the working of auto-associative memory in neural networks. How does it differ from hetero-associative memory?	7M	CO1	L3
(b)	Define perception and convergence rules in neural networks. Provide an example where these rules are applied in a neural network model.	7M	CO1	L1
3.	Explain the backpropagation algorithm in detail. Apply its steps to demonstrate how the weights in the neural network are adjusted and how the error is calculated during the training process.	14M	CO2	L2
(OR)				
4(a)	Explain the perceptron model. Discuss its working and limitations.	7M	CO2	L2
(b)	Discuss the architecture and working principles of both single-layer and multi-layer perceptron models.	7M	CO2	L2
5(a)	Discuss the properties of fuzzy sets. How do these properties affect the application of fuzzy logic in real-world problems?	7M	CO3	L2
(b)	Define fuzzy sets and explain how they differ from crisp sets. Illustrate with an example.	7M	CO3	L2
(OR)				
6(a)	Describe the concept of fuzzy relations, rules, and propositions in fuzzy logic. How do they contribute to making inferences?	7M	CO3	L2
(b)	Explain the process of fuzzy-to-crisp conversion. Discuss the different methods used for this conversion.	7M	CO3	L2
7(a)	Explain the significance of fuzzification and defuzzification in the context of fuzzy logic systems. How do they ensure accurate decision-making?	7M	CO4	L2
(b)	Explain fuzzy implications and their importance in fuzzy logic systems. How do they contribute to making decisions based on fuzzy conditions?	7M	CO4	L2
(OR)				
8(a)	Describe fuzzy algorithms and their applications in real-world systems. Discuss the steps involved in applying fuzzy algorithms for problem-solving.	7M	CO4	L2
(b)	Discuss the Fuzzywuzzy Python library and its capabilities for fuzzy logic.	7M	CO4	L2
9(a)	Explain the crossover operator in genetic algorithms. Discuss its role in combining solutions and how it helps in exploring the solution space.	7M	CO5	L3
(b)	Explain the mutation operator in genetic algorithms? How mutation helps maintain diversity in the population.	7M	CO5	L2
(OR)				
10(a)	Describe the fundamental structure of a genetic algorithm (GA). What are the key components that make up the GA, and how do they interact to find optimal solutions.	7M	CO5	L2
(b)	Discuss the selection process in genetic algorithms. How does it influence the convergence and effectiveness of the GA?	7M	CO5	L2

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B.Tech. (VII Semester) Regular/Supplementary Examinations

20ME32-POWER PLANT ENGINEERING

(ME)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

15/12/25

Q.No	Questions	Marks	CO	BL												
1(a)	Explain the different types of power plants.	7M	CO1	L2												
(b)	With a neat diagram, illustrate pulverized fuel burning system.	7M	CO1	L2												
(OR)																
2(a)	Elucidate the overfeed and underfeed stoker.	7M	CO1	L2												
(b)	Discuss the mechanical coal handling system.	7M	CO1	L2												
(OR)																
3(a)	Illustrate the layout configuration of diesel electric power plant and its components.	7M	CO2	L2												
(b)	Explain the process of wet sump lubrication system with a neat diagram.	7M	CO2	L2												
(OR)																
4(a)	With the help of a diagram, explain the working of an open cycle gas turbine power plant.	7M	CO2	L2												
(b)	Mention the advantages and disadvantages of diesel power plant over gas turbine power plant.	7M	CO2	L1												
(OR)																
5(a)	Describe the essential components of hydroelectric power plant with layout.	7M	CO3	L2												
(b)	Mention the various parts of nuclear reactors in detail.	7M	CO3	L1												
(OR)																
6(a)	Describe in detail the construction and working of a CANDU reactor with a neat labelled diagram.	7M	CO3	L2												
(b)	Define hydrograph and explain its importance in the design of hydroelectric power plant.	7M	CO3	L2												
(OR)																
7(a)	Discuss the advantages and disadvantages of combined cycle power plant.	7M	CO4	L2												
(b)	Describe the construction and working of open cycle MHD system with a neat sketch.	7M	CO4	L2												
(OR)																
8(a)	Illustrate the working of gas turbine-based cogeneration.	7M	CO4	L2												
(b)	Outline the design, working, and applications of a Proton Exchange Membrane Fuel Cell (PEMFC).	7M	CO4	L2												
(OR)																
9(a)	Discuss air pollution caused by thermal power plants.	7M	CO5	L2												
(b)	Explain the significance of Load factor, utilization factor and plant capacity factor.	7M	CO5	L2												
(OR)																
10(a)	A power station has to supply load as follows: <table border="1" style="margin-left: 20px;"> <tr> <td>Time(Hrs)</td> <td>0-6</td> <td>06-12</td> <td>12-14</td> <td>14-18</td> <td>18-24</td> </tr> <tr> <td>Load(MW)</td> <td>45</td> <td>135</td> <td>90</td> <td>150</td> <td>75</td> </tr> </table> (i) Draw the load curve (ii) Draw the load duration curve (iii) Calculate the load factor.	Time(Hrs)	0-6	06-12	12-14	14-18	18-24	Load(MW)	45	135	90	150	75	7M	CO5	L3
Time(Hrs)	0-6	06-12	12-14	14-18	18-24											
Load(MW)	45	135	90	150	75											
(b)	What are different pollutants evolved from the thermal power plants? Explain the methods to control them.	7M	CO5	L2												

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B.Tech. (VII Semester) Regular/Supplementary Examinations

20ME35-TOTAL QUALITY MANAGEMENT

(ME)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Elucidate the major stages in the evolution of Total Quality Management and how they contributed to the current TQM philosophy.	7M	CO1	L2
(b)	Define the concept of quality and describe its importance from both the producer's and customer's viewpoints.	7M	CO1	L2
(OR)				
2(a)	Describe the role of strategic planning in Total Quality Management.	7M	CO1	L2
(b)	Explicate Deming's philosophy of quality management and describe its key principles.	7M	CO1	L2
3(a)	Illustrate customer satisfaction organizational diagram.	7M	CO2	L2
(b)	List the five levels in Maslow's hierarchy of needs and describe each level.	7M	CO2	L2
(OR)				
4(a)	Describe the various elements in Juran Trilogy with a neat diagram.	7M	CO2	L2
(b)	Describe the 5S methodology and its key components.	7M	CO2	L2
5(a)	List out the seven tools of Total Quality management. Explain any two.	7M	CO3	L2
(b)	Describe the steps to construct and interpret an X-bar and R-bar control chart.	7M	CO3	L2
(OR)				
6(a)	Describe the advantages and limitations of Six Sigma.	7M	CO3	L2
(b)	List out and illustrate the two methodologies followed by six sigma.	7M	CO3	L2
7(a)	Describe the important steps involved in benchmarking.	7M	CO4	L2
(b)	How the total productive maintenance can be implemented?	7M	CO4	L2
(OR)				
8(a)	Explicate each section of the basic structures of house of quality.	7M	CO4	L2
(b)	Elucidate about stages of FEMA.	7M	CO4	L2
9(a)	Explain why organizations need formal quality systems like ISO 9000.	7M	CO5	L2
(b)	Discuss the role and importance of documentation in maintaining a quality system.	7M	CO5	L2
(OR)				
10(a)	Explain how ISO 14000 complements ISO 9000 in an integrated management approach	7M	CO5	L2
(b)	Describe the key concepts and scope of TS 16949 standard in the automotive industry.	7M	CO5	L2

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B.Tech. (VII Semester) Regular/Supplementary Examinations

25/09/25
17/12/25

20EE83-UTILIZATION OF ELECTRICAL ENERGY

(AI&DS,CE,CSE,CSE(AI&ML),IT and ME)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Explain the advantages of electric heating over conventional heating methods. Describe resistance heating and its applications.	7M	CO1	L1
(b)	Differentiate between direct arc furnace and indirect arc furnace. Explain their construction, working and industrial applications.	7M	CO1	L2
(OR)				
2 (a)	Illustrate the Direct Resistance and Indirect Resistance heating.	7M	CO1	L2
(b)	Classify the different methods of Electric Resistance Welding and List their Applications.	7M	CO1	L2
3(a)	Explain the laws of illumination with neat diagrams and state their applications in lighting design.	7M	CO2	L3
(b)	A room with an area of 6 × 9 m is illustrated by ten 80-W lamps. The luminous efficiency of the lamp is 80 lumens/W and the Coefficient of Utilization is 0.65. Find the average Illumination.	7M	CO2	L3
(OR)				
4(a)	Describe various lighting schemes and compare direct, semi-direct, and indirect lighting systems.	7M	CO2	L2
(b)	Discuss the significance of laws of illumination in modern lighting schemes.	7M	CO2	L2
5(a)	Compare AC Drives over DC Drives.	7M	CO3	L2
(b)	Explain torque-speed characteristics of DC shunt, series, induction, and synchronous motors.	7M	CO3	L2
(OR)				
6(a)	Define electric drive and list components with diagrams.	7M	CO3	L1
(b)	Discuss the load equalization in an electric drive with a neat sketch.	7M	CO3	L2
7(a)	Describe components and operation of an electric traction system.	7M	CO4	L2
(b)	A train has a schedule speed of 50 kmph between stops which are 1.5km apart. It is running at a maximum speed of 60kmph with (i) Duration of stops as 30 sec (ii) Acceleration as 1.7kmphps (iii) Retardation as 3.3 kmphps. Draw the speed time curve for the run and represent the time durations of acceleration, free running and retardation.	7M	CO4	L3
(OR)				
8(a)	Draw and compare speed-time curves for suburban, main-line, and urban trains.	7M	CO4	L2
(b)	Compare AC and DC traction systems.	7M	CO4	L2
9(a)	Explain various types of tariffs in distribution systems.	7M	CO5	L2
(b)	Illustrate the power factor improvement by static capacitor method.	7M	CO5	L2
(OR)				
10(a)	Discuss disadvantages of low power factor with examples.	7M	CO5	L2
(b)	The following two tariffs are offered: (i) Rs 100 plus 15 paise per unit; (ii) A flat rate of 30 paise per unit; At what consumption is first Tariff Economical?	7M	CO5	L3

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L.B.Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.: A.P.

B.Tech. (VII semester) Regular / Supplementary Examinations

**20EC85-SYSTEMS AND SIGNAL PROCESSING
(ASE)**

Time : 3 hours

Max. Marks : 70

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Explain the following standard signals with neat sketches (i) Unit ramp (ii) Unit step (iii) Exponential.	7M	CO1	L1
(b)	Sketch the given signal $x(t)$ and also find (i) $x(t+2)$ (ii) $x(-t+2)$ $x(t) = u(t) - 2u(t-1) + u(t+2)$	7M	CO1	L3
(OR)				
2(a)	(i) Find and sketch the even and odd parts of the signal $x(t)=u(t)-u(t-4)$ (ii) Check the given signal is periodic or not $x(t) = \cos(0.2\pi t) + \cos(0.5\pi t)$.	7M	CO1	L2
(b)	Explain about the following operations on continuous time signals with examples (i) Amplitude scaling (ii) Time scaling (iii) Time shifting.	7M	CO1	L2
(OR)				
3(a)	State the following properties of Fourier Transform. (i) Linearity (ii) Time convolution (iii) Frequency Convolution.	7M	CO2	L2
(b)	Find the Fourier transform of the following signals (i) $e^{-t}u(t)$ (ii) $\text{sgnm}(t)$	7M	CO2	L3
(OR)				
4(a)	Using the properties of Fourier Transform find the Fourier transform of the following signal $g(t) = \frac{1}{1+t^2}$ (i) $g(t) = \frac{1}{1+t^2}$ (ii) $g(t) = 1/(\pi t)$.	7M	CO2	L3
(b)	Explain sampling theorem for band limited signals.	7M	CO1	L2
(OR)				
5(a)	Identify whether the following system is Linear or Non-Linear. (i) $y_1(t) = x^2(t)$ (ii) $y_2(t) = x(t)+x(t-1)$.	7M	CO3	L2
(b)	Obtain the convolution of given two signals $x_1(t)=u(t-1)-u(t-4)$ and $x_2(t)=u(t-2)-u(t-3)$	7M	CO3	L3
(OR)				
6(a)	Explain the following about system. (i) Linearity (ii) Causality (iii) Stability.	7M	CO3	L2
(b)	Explain the properties of Region of convergence of Z-Transform.	7M	CO2	L2
(OR)				
7(a)	Compute the DFT of a sequence $x(n) = \{1, 2, 3, 4\}$.	7M	CO2	L3
(b)	Examine the properties of Discrete Fourier Transform.	7M	CO2	L2

20EC85-SYSTEMS AND SIGNAL PROCESSING

(OR)				
8(a)	Find the 8-Point DFT of the sequence $x(n)=\{1,1,2,2,1,1,2,2\}$ using decimation in time radix-2 FFT.	7M	CO2	L3
(b)	Perform circular convolution of the two sequences $x_1(n)=\{2,1,2,-1\}$ and $x_2(n)=\{1,2,3,4\}$.	7M	CO2	L3
9(a)	Design a Digital IIR filter by using Impulse Invariant Method for the following Specification's Pass band gain=3.01dB or 0.707 Stop band gain=13.97dB or 0.20 Pass band edge Frequency = 0.3π radian/Sample Stop band edge Frequency= 0.75π radian/Sample and Sampling Time T=1sec	7M	CO4	L3
(b)	Design FIR low pass filter with frequency response $H_d(e^{j\omega}) = \begin{cases} 1; & \text{for } -\frac{\pi}{2} \leq \omega \leq \frac{\pi}{2} \\ 0; & \text{for } \frac{\pi}{2} \leq \omega \leq \pi \end{cases}$ <p>Find the values of $h(n)$ for value $N=11$ using rectangular window. And plot the magnitude response.</p>	7M	CO4	L3
(OR)				
10(a)	Using Bi-linear transform technique design a high-pass filter using Butterworth filter approximation with cut-off frequency 1000 Hz and down 10dB at 350 Hz, sampling frequency is 5KHz.	7M	CO4	L3
(b)	Compare FIR and IIR filters.	7M	CO4	L2

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B.Tech. (VII Semester) Regular / Supplementary Examinations

**20IT84-CYBER SECURITY AND DIGITAL FORENSICS
(ECE & EEE)**

Time : 3 hours

Max. Marks : 70

Answer one question from each unit
All questions carry equal marks

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17/12/25*

Q.No	Questions	Marks	CO	BL
1.	Summarize different types of classification of cybercrimes.	14M	CO1	L2
(OR)				
2(a)	Explain the types of stalkers, the workings of stalking, and cases reported on cyberstalking.	7M	CO1	L2
(b)	Discuss the following network and cyber-attacks a cybercafe and cybercrimes.	7M	CO1	L2
3(a)	Discuss the steps for SQL injection attacks and how to prevent SQL injection attacks.	7M	CO2	L3
(b)	Describe DoS and DDoS attacks covering their classification, levels, tools used to launch, attacks, and protection.	7M	CO2	L3
(OR)				
4(a)	Explain online, and offline attacks on password cracking along with strong, weak, and random passwords.	7M	CO2	L2
(b)	Outline the use of software, hardware, anti-key loggers of spyware.	7M	CO2	L2
5.	Analyze the importance of disk forensics and network forensics.	14M	CO3	L4
(OR)				
6(a)	Infer the use of wireless forensics and database forensics.	7M	CO3	L4
(b)	Explain about mobile forensics and email forensics.	7M	CO3	L2
7(a)	Classify the sources of digital evidence.	7M	CO4	L2
(b)	Discuss the challenges raised for the collection of digital evidence on the Internet.	7M	CO4	L2
(OR)				
8(a)	Distinguish between Windows artifact and Linux artifact for digital evidence.	7M	CO4	L2
(b)	Explain the significance of Windows registry and browser artifact.	7M	CO4	L2
9(a)	Determine how forensic tools are used for integrity verification hashing, and email analysis.	7M	CO5	L3
(b)	Explain the importance of drive imaging and validation tools.	7M	CO5	L2
(OR)				
10(a)	Outline what are the roles of forensic tools in data recovery, and how do they facilitate encryption and decryption processes?	7M	CO5	L2
(b)	Infer the tools used for analyzing network and password recovery.	7M	CO5	L2

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B.Tech. (VII Semester) Regular/Supplementary Examinations

17/12/25

20ME81-RENEWABLE ENERGY SOURCES

(IT)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Question	Marks	CO	BL
1(a)	Enlighten on the various energy resources that are available in the world.	7M	CO1	L2
(b)	List out the merits, demerits and applications of non-conventional sources of energy.	7M	CO1	L2
(OR)				
2(a)	Describe the working of a solar water heating system with a neat sketch.	7M	CO1	L2
(b)	Explain the working of a Pyranometer with a neat diagram.	7M	CO1	L2
(OR)				
3(a)	Derive an expression for the Betz limit and prove that $P_T = 0.59$ of power available in wind (P_w).	7M	CO2	L3
(b)	Differentiate the horizontal axis and vertical axis wind turbine.	7M	CO2	L2
(OR)				
4(a)	Illustrate the functioning of a liquid dominated system.	7M	CO2	L2
(b)	Describe the working of a single flash system with a neat diagram.	7M	CO2	L2
(OR)				
5(a)	Explain the working of a overtopping wave energy conversion device with a neat sketch.	7M	CO3	L2
(b)	Illustrate the construction and working of a single basin tidal energy conversion system.	7M	CO3	L2
(OR)				
6(a)	With a neat sketch explain the functioning of an open cycle OTEC system.	7M	CO3	L2
(b)	List out the merits, demerits and applications of OTEC.	7M	CO3	L2
(OR)				
7(a)	What are the different biomass resources available for the production of biomass energy? Mention some applications.	7M	CO4	L2
(b)	Describe aerobic and anaerobic digestion process with examples.	7M	CO4	L2
(OR)				
8(a)	Explain the process of production of biogas from fixed dome type biogas plant.	7M	CO4	L2
(b)	Illustrate the construction and working of circulating fluidized bed gasifier.	7M	CO4	L2
(OR)				
9(a)	Describe the working and construction details of a thermionic generator plant.	7M	CO5	L2
(b)	What are the merits and demerits and applications of the solar PV system?	7M	CO5	L2
(OR)				
10(a)	Illustrate the working of MHD closed cycle system.	7M	CO5	L2
(b)	List out the merits, demerits and applications of direct energy conversion systems.	7M	CO5	L2

H.T.No

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B. Reddy Nagar: Mylavaram – 521 230: N.T.R. Dist.: A.P.

B.Tech. (VII Semester) Regular/Supplementary Examinations

BOS 990
19/12/25**20CE82-DISASTER MANAGEMENT**

(AI&DS and ECE)

Time : 3 hours

Max. Marks: 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Distinguish between hazard and a disaster.	7M	CO1	L2
(b)	Summarize the role and responsibilities of disaster manager.	7M	CO1	L2
(OR)				
2(a)	Mention the different types of disasters and explain each briefly.	10M	CO1	L2
(b)	Explain the term 'vulnerability' in disaster management.	4M	CO1	L2
(OR)				
3(a)	Explain the impacts of disaster on human health.	7M	CO1	L2
(b)	Discuss the disastrous impact of cyclone and landslides on human life.	7M	CO1	L2
(OR)				
4.	Write a case study related to Earth quake which includes loss of life, habitation, agriculture, and environmental losses. Also suggest measures for their control.	14M	CO1	L2
(OR)				
5(a)	Relate the relevance of Indigenous knowledge in disaster risk reduction technological and economical aspect.	7M	CO2	L2
(b)	Explain the functions of multimedia technology in disaster management.	7M	CO2	L2
(OR)				
6(a)	Describe the importance of disaster management strategies for critical infrastructures like electrical substations during earthquake.	7M	CO2	L2
(b)	Explain the term risk assessment. Summarize the steps followed in risk assessment.	7M	CO2	L2
(OR)				
7(a)	Describe about response and rehabilitation plans after cyclone.	7M	CO3	L2
(b)	Discuss the effect of various human activities causing soil erosion process.	7M	CO3	L2
(OR)				
8(a)	Explain about response and rehabilitation plans after flood.	7M	CO3	L2
(b)	Discuss the risk reduction measures that can be taken up to prevent severe damage.	7M	CO3	L2
(OR)				
9(a)	Discuss the need for disaster risk reduction in schools.	7M	CO4	L2
(b)	Explain the necessity of community participation in disaster.	7M	CO4	L2
(OR)				
10.	In May 22, 1960, an earthquake named as "The great Chilean Earthquake", discuss the impacts, mitigation measures and response to the disaster.	14M	CO4	L2

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

L.B.Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.:: A.P.

B.Tech. (VII Semester) Regular/Supplementary Examinations

20EE81-LINEAR CONTROL SYSTEMS

(ASE)

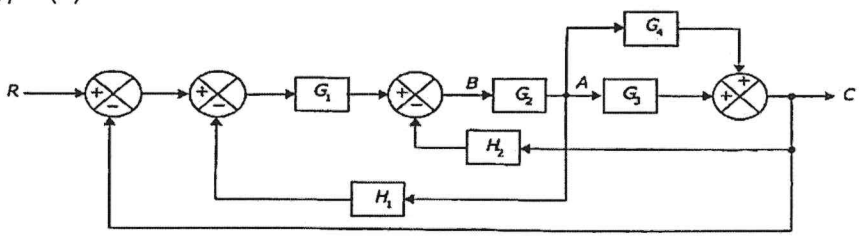
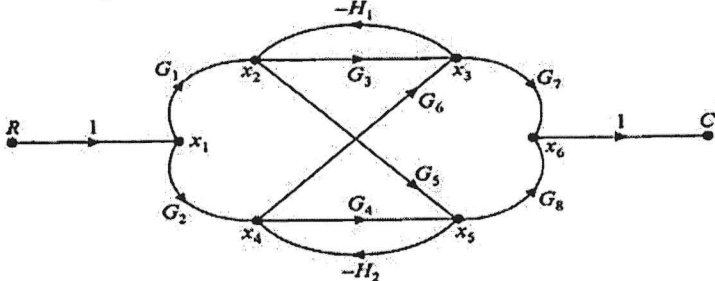
Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

20/12/25
19/12/25

Q.No	Questions	Marks	CO	BL
1(a)	Simplify the Block Diagram and find its Transfer function C(s)/R(s). 	7M	CO2	L3
(b)	Distinguish between the open loop and closed loop system.	7M	CO1	L2
(OR)				
2(a)	Discuss briefly the classification of control systems.	4M	CO1	L2
(b)	Using mason gain formula find the transfer function C/R for the signal flow graph shown in figure. 	10M	CO2	L3
3.	The Open loop transfer function of a servo system with unity feedback is given by $G(s) = \frac{500}{s(1+0.1s)}$. Evaluate the error series for the above system and determine the steady state error when the input is $R(t) = 1 + 2t + t^2$	14M	CO3	L3
(OR)				
4(a)	Discuss briefly the effect of Damping ratio on the transient response of a second order system.	7M	C03	L3
(b)	For a second order system derive the time domain specifications.	7M	C03	L3
5(a)	Apply the Routh criterion to check the stability $s^6 + 9s^5 + 20s^4 + 12s^3 + 8s^2 + 16s + 16 = 0$ of and comment upon the roots for stability.	4M	CO3	L4

20EE81-LINEAR CONTROL SYSTEMS

(b)	Sketch the complete root locus for an open loop transfer function with $G(s) = \frac{K}{s(s+1)(s+3)(s+4)}$ unity feedback system.	10M	CO3	L4
(OR)				
6.	A Unity feedback system has an open loop transfer function $G(s) = \frac{K(s+5)}{s(s+3)}$. Sketch the root locus and Show that the root locus in the complex plane is a circle.	14M	CO3	L4
7(a)	Define the frequency Domain Specification.	4M	CO4	L2
(b)	The forward path transfer function of unity feedback system is $G(s) = \frac{K}{s(s+6)}$. Find the resonant peak M_r , resonant frequency ω_r and bandwidth of the closed loop system for the following values of K (i) K=5 and (ii) K=100.	10M	CO4	L3
(OR)				
8(a)	The open loop T/F of a unity feedback system is $G(s) = \frac{1}{s(1+s)(1+2s)}$. Sketch the polar plot and determine the G.M & P.M.	7M	CO4	L4
(b)	The open loop T/F of a unity feedback system is $G(s)H(s) = \frac{(1+4s)}{s^2(1+s)(1+2s)}$. Comment on Stability using Nyquist plot and find the G.M.	7M	CO4	L4
9(a)	Explain concepts of state, state variables and state model.	7M	CO2	L2
(b)	Determine the state transition matrix for the system $\dot{X} = AX + BU$ with $A = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix}$	7M	CO2	L3
(OR)				
10(a)	Explain the concept of controllability and observability with an example.	7M	CO2	L2
(b)	A linear time invariant system is characterized by the state variable model. $\begin{bmatrix} \dot{X}_1 \\ \dot{X}_2 \end{bmatrix} = \begin{bmatrix} -1 & 0 \\ 0 & -2 \end{bmatrix} \begin{bmatrix} X_1 \\ X_2 \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \end{bmatrix} U; Y(t) = \begin{bmatrix} 1 & 2 \end{bmatrix} \begin{bmatrix} X_1 \\ X_2 \end{bmatrix}$ Find the transfer function of the system.	7M	CO2	L3

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.: A.P.

B.Tech. (VII Semester) Regular/Supplementary Examinations

20ME84-ELEMENTS OF AUTOMOBILE ENGINEERING

(CE)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Describe the working principle of four stroke C. I engine with a neat diagram.	7M	CO1	L2
(b)	Explain the construction and working of turbocharger.	7M	CO1	L2
(OR)				
2(a)	Write the advantages and disadvantages of water cooling system.	4M	CO1	L1
(b)	Draw and explain with a simple sketch, pressurized lubrication system with its relative advantages.	10M	CO1	L2
3.	Briefly explain a battery ignition system with the help of neat sketch. State the advantages and dis-advantages of a battery ignition system.	14M	CO2	L2
(OR)				
4(a)	Illustrate the working of electronic ignition system with the help of suitable diagram.	7M	CO2	L2
(b)	Explain briefly the Bendix drive starting system of an automobile.	7M	CO2	L2
5(a)	What is meant by power steering? Sketch and demonstrate its working.	7M	CO3	L2
(b)	Specify the requirements & functions of steering system.	7M	CO3	L1
(OR)				
6(a)	Illustrate the working of master cylinder used in hydraulic braking system of an automobile.	7M	CO3	L2
(b)	Elucidate with a suitable diagram, working of air braking system of an automobile.	7M	CO3	L2
7(a)	Draw a neat diagram and explain the working principle of sliding mesh gear box.	7M	CO4	L2
(b)	Explain the importance and principle of traction control.	7M	CO4	L2
(OR)				
8(a)	Distinguish fluid coupling and Torque convertor.	7M	CO4	L2
(b)	Illustrate the working principle of multi plate clutch with a neat sketch.	7M	CO4	L2
9(a)	Discuss in detail the function and constructional details, working and types of air bags.	7M	CO5	L2
(b)	Explain about bumper design safety in detail.	7M	CO5	L2
(OR)				
10(a)	Mention the pollutants from the exhaust of gasoline and diesel engines.	7M	CO5	L1
(b)	List factors affecting emissions in CI engines and explain in brief.	7M	CO5	L2

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

L.B.Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.:: A.P.
B.Tech. (VII Semester) Regular/Supplementary Examinations

*Passes
19/11/20*

20CE81-BASICS OF CIVIL ENGINEERING
(AI&DS,CSE,CSE(AI&ML) and IT)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Explain the interconnection among specializations in civil engineering.	7M	CO1	L2
(b)	Describe the role of sanitation and ventilation in building planning.	7M	CO1	L2
(OR)				
2(a)	Define the elements of a building and explain their functions.	4M	CO1	L2
(b)	Discuss the planning requirements for hot and dry climates.	10M	CO1	L2
3.	Explain the classification, properties, and applications of bricks and cement in construction.	14M	CO2	L2
(OR)				
4(a)	Describe the composition and commercial forms of glass and plywood.	7M	CO2	L2
(b)	Discuss the advantages of using eco-friendly materials in modern construction.	7M	CO2	L2
5(a)	Explain soil classification systems and their applications in foundation design.	7M	CO3	L2
(b)	Describe the types of foundations used for telecommunication towers and cooling towers.	7M	CO3	L2
(OR)				
6.	Discuss the purpose and methods of improving the bearing capacity of soils.	14M	CO3	L2
7(a)	Explain the principles and applications of levelling in civil engineering projects.	7M	CO4	L2
(b)	Describe the PLEV theory and its role in road design.	7M	CO4	L2
(OR)				
8(a)	Define contour maps and discuss their uses.	4M	CO4	L2
(b)	Explain the types of railway gauges and their significance in railway engineering.	10M	CO4	L2
9.	Discuss the objectives and methods of sewage disposal systems.	14M	CO5	L2
(OR)				
10(a)	Define water quality standards for drinking water. Explain their impacts.	4M	CO5	L2
(b)	Discuss the principles and objectives of water distribution systems.	10M	CO5	L2

H.T.No

19 DEC 2025

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

L.B. Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.:: A.P.
B.Tech. (VII Semester) Regular/Supplementary Examinations

20CE84-ENVIRONMENTAL SANITATION

(CSE(AI&ML) and IT)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1.	Explain the Role of Sanitary Engineer in detail.	14M	CO1	L2
(OR)				
2.	Explain the Sanitation management aspects for solid wastes.	14M	CO1	L2
3(a)	Enlist the modes of communicable diseases.	4M	CO2	L1
(b)	Explain the Impacts, Characteristics and Control of Food borne Diseases.	10M	CO2	L2
(OR)				
4(a)	Enlist the different sources of pathogen entering in to the food.	4M	CO2	L1
(b)	Explain the different Host Factors that affect the modes of transmissions.	10M	CO2	L2
5(a)	How mosquitoes are spreading pathogens?	7M	CO3	L2
(b)	How mosquito breeding centers is created because of human negligence? How to prevent it?	7M	CO3	L2
(OR)				
6(a)	Describe how animals are responsible for Disease spreading.	7M	CO3	L2
(b)	Explain the different measure to prevent Disease spreading by animals.	7M	CO3	L2
7(a)	Discuss the sanitation measures that lead to Disease spreading in Hostels.	7M	CO4	L2
(b)	Enlist the sanitation measures that lead to Disease spreading in hospitals.	7M	CO4	L2
(OR)				
8(a)	Describe the insanitation aspects that lead to Disease spreading in schools.	7M	CO4	L2
(b)	Enlist the insanitation aspects that lead to Disease spreading in hostels.	7M	CO4	L2
9(a)	Explain the advantages and disadvantages of soak pits.	7M	CO5	L2
(b)	Explain the management of landfills to prevent Disease spreading.	7M	CO5	L2
(OR)				
10(a)	Define Ecological sustainable Sanitation, how can we apply sustainable measures in sanitation of smart towns.	7M	CO5	L2
(b)	Describe the different occupational hazards that lead to ill health of sanitation workers.	7M	CO5	L2

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19 DEC 2025

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.:: A.P.

B.Tech. (VII Semester) Regular/Supplementary Examinations

20AD81-INTRODUCTION TO ARTIFICIAL INTELLIGENCE

(ECE)

Time : 3 hours

Max. Marks: 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Recall the structure of Agents in AI.	7M	CO1	L2
(b)	Describe the Applications of AI.	7M	CO1	L2
(OR)				
2(a)	Demonstrate PEAS with an example.	7M	CO1	L2
(b)	Identify the nature of Environments in AI.	7M	CO1	L2
(OR)				
3.	Describe the Informed and Uninformed search strategies.	14M	CO2	L2
(OR)				
4(a)	Write A* algorithm. Use a suitable example to show how the A* algorithm is used for problem reduction.	7M	CO2	L3
(b)	Demonstrate the Best first searching technique with an example.	7M	CO2	L3
(OR)				
5(a)	Differentiate between Breadth-first and Depth-first search techniques.	7M	CO3	L2
(b)	Explain the Iterative deepening DFS search technique.	7M	CO3	L2
(OR)				
6(a)	Illustrate the bi-directional search algorithm with a proper example.	7M	CO3	L3
(b)	Recall any two blind search strategies in AI.	7M	CO3	L2
(OR)				
7(a)	Explain the Minmax algorithm by taking a suitable example.	7M	CO4	L2
(b)	Differentiate between backward and forward chaining.	7M	CO4	L2
(OR)				
8(a)	Exemplify the working of Alpha-Beta Pruning.	7M	CO4	L3
(b)	Summarize the approaches of knowledge representation.	7M	CO4	L2
(OR)				
9(a)	Describe the concept of Internet Shopping World.	7M	CO5	L2
(b)	What are the different types of reasoning systems for categories?	7M	CO5	L2
(OR)				
10(a)	Outline the different techniques of knowledge representation in AI.	7M	CO5	L2
(b)	What do you mean by Ontological engineering? Explain with an example.	7M	CO5	L2

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19/12/20

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.:: A.P.

B.Tech. (VII Semester) Regular/Supplementary Examinations

20ME82-ROBOTICS IN AUTOMATION

(EEE)

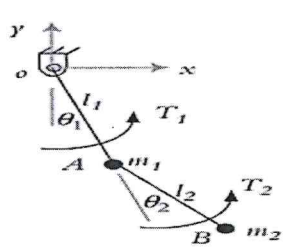
Handwritten signature and date: 19/12/25

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Discuss different joints and joint notation schemes used in robots.	7M	CO1	L2
(b)	Explain the mechanical structure of a robotic arm with a neat diagram.	7M	CO1	L2
(OR)				
2(a)	Describe the Gear-and-rack actuation and Cam actuation mechanisms for opening and closing of the gripper.	7M	CO1	L2
(b)	Specify the applications in which the tools are used as end effectors.	7M	CO1	L2
3(a)	Differentiate different actuators used in robot.	7M	CO2	L2
(b)	With the help of neat sketch, discuss hydraulic drive system. Mention its applications in industrial scenario.	7M	CO2	L2
(OR)				
4(a)	With a neat sketch explain the working of ultrasonic proximity sensor used in robots.	7M	CO2	L2
(b)	Explain the working of tactile sensors used in robots.	7M	CO2	L2
5(a)	A point $P(7,3,1)^T$ is attached to a frame F_{noa} and is subjected to the following transformations. Find the coordinates of the point relative to the reference frame at the conclusion of transformations. (i) Rotation of 90° about the z-axis (ii) Followed by a rotation of 90° about the y-axis (iii) Followed by a translation of $[4,-3,7]$.	7M	CO3	L3
(b)	A frame B was rotated about the x-axis 90° , then, it was translated about the current a-axis 3 units before it was rotated about z-axis 90° . Finally, it was translated about current o-axis 5 units. (i) Write an equation that describes the motion (ii) Find the final location of a point $P(1, 5, 4)^T$ attached to the frame relative to the reference frame.	7M	CO3	L3
(OR)				
6.	Derive the equations of motion for the two-degree-of-freedom system shown in figure. 	14M	CO3	L3
7(a)	It is desired to have the first joint of a 6-axis robot go from an initial angle of 50° to a final angle of 80° in 3 seconds. Calculate the coefficients for a third-order polynomial joint-space trajectory. Determine the joint angles, velocities, and accelerations at 1, 2, and 3 seconds. It is assumed that the robot starts from rest and stops at its destination.	7M	CO4	L3
(b)	Discuss Joint space trajectory planning in detail.	7M	CO4	L2
(OR)				
8(a)	Elucidate the differences between powered lead through and manual lead through.	7M	CO4	L2
(b)	Differentiate online programming and offline programming methods.	7M	CO4	L2
9(a)	What are the capabilities and features of Robots in spot welding? Explain.	7M	CO5	L2
(b)	Illustrate the assembly and Inspection applications of robots.	7M	CO5	L2
(OR)				
10(a)	Explain the pillars of the Industry 4.0 Framework.	7M	CO5	L2
(b)	What is the difference between Automation and Robotization?	7M	CO5	L2

20HS02-MANAGEMENT SCIENCE FOR ENGINEERS

6(a)	What is Quality? Explain how quality and the tools of quality can lead to overall development.	7M	CO3	L2																																													
(b)	Calculate the number of observation requires for an accuracy of plus minus 5% and confidence level of 95%, if the average percentage of occurrence activity is 0.8.	7M	CO3	L3																																													
(OR)																																																	
7(a)	Discuss in detail different training methods.	7M	CO4	L2																																													
(b)	Write different methods in performance management system.	7M	CO4	L2																																													
(OR)																																																	
8(a)	Write short notes on wage and salary administration.	4M	CO4	L2																																													
(b)	List out the various types in latest recruitment methods adopted by different companies.	10M	CO4	L2																																													
(OR)																																																	
9(a)	Compare and contrast between CPM and PERT, in the context of project management.	4M	CO5	L3																																													
(b)	Draw the suitable network diagram and identify the critical path. What is the duration of the project that will have 50% chance of completion?	10M	CO5	L4																																													
<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Activity</th> <th style="text-align: left;">Immediate Predecessor</th> <th style="text-align: left;">Optimistic (a) time</th> <th style="text-align: left;">Most Likely (m) time</th> <th style="text-align: left;">Pessimistic(b) time</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>—</td> <td>1 week</td> <td>2 weeks</td> <td>3 weeks</td> </tr> <tr> <td>B</td> <td>—</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>C</td> <td>A</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>D</td> <td>B</td> <td>2</td> <td>4</td> <td>6</td> </tr> <tr> <td>E</td> <td>C</td> <td>1</td> <td>4</td> <td>7</td> </tr> <tr> <td>F</td> <td>C</td> <td>1</td> <td>2</td> <td>9</td> </tr> <tr> <td>G</td> <td>D,E</td> <td>3</td> <td>4</td> <td>11</td> </tr> <tr> <td>H</td> <td>E,G</td> <td>1</td> <td>2</td> <td>3</td> </tr> </tbody> </table>					Activity	Immediate Predecessor	Optimistic (a) time	Most Likely (m) time	Pessimistic(b) time	A	—	1 week	2 weeks	3 weeks	B	—	2	3	4	C	A	1	2	3	D	B	2	4	6	E	C	1	4	7	F	C	1	2	9	G	D,E	3	4	11	H	E,G	1	2	3
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G	D,E	3	4	11																																													
H	E,G	1	2	3																																													
(OR)																																																	
10(a)	Briefly explain various steps in Programme Evaluation and Review Technique.	7M	CO5	L2																																													
(b)	What do you mean by crashing a network? State step by step procedure of crashing.	7M	CO5	L2																																													

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H.T.No

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B. Reddy Nagar: Mylavaram – 521 230: N.T.R. Dist.: A.P.

B.Tech. (VII Semester) Regular/Supplementary Examinations

20CE82-DISASTER MANAGEMENT
(ME)

Time : 3 hours

Max. Marks: 70

Answer one question from each unit
All questions carry equal marks

Q. No	Questions	Marks	CO	BL
1(a)	Summarize the functions of disaster management.	7M	CO1	L2
(b)	Explain the significance of prediction and prevention phase in disaster management cycle.	7M	CO1	L2
(OR)				
2(a)	Mention the elements of disaster. Discuss them briefly.	7M	CO1	L2
(b)	Describe the role and responsibilities of National Disaster Management Authority (NDMA).	7M	CO1	L2
(OR)				
3(a)	Discuss the disastrous impact of earthquake on agriculture and loss of human life. Suggest measures for their control.	7M	CO1	L2
(b)	Explain how will you assess the loss and damage to live stock in disasters.	7M	CO1	L2
(OR)				
4.	Write a case study related to natural disaster which includes loss of life, habitation, and environmental losses.	14M	CO1	L2
(OR)				
5(a)	Summarize the importance of indigenous knowledge and explain how it is helpful in disaster management.	7M	CO2	L2
(b)	Discuss about the management information system.	7M	CO2	L2
(OR)				
6(a)	Describe how does drought can be assed using modern technology.	7M	CO2	L2
(b)	Explain the term "GIS". How this application helps in disaster management process?	7M	CO2	L2
(OR)				
7(a)	Discuss the main factors which contribute to the choice of various shelters provide after disaster.	7M	CO3	L2
(b)	Summarize the factors that are responsible for the occurrence of tsunami and its effects on life and economy.	7M	CO3	L2
(OR)				
8(a)	Elaborate effective disaster planning, with its advantages.	7M	CO3	L2
(b)	Explain the role of food and nutrition in disaster response and why it is a priority during relief efforts.	7M	CO3	L2
(OR)				
9(a)	Discuss about the essentials of disaster education.	7M	CO4	L2
(b)	Mention the advantages of community awareness and participation in disaster.	7M	CO4	L2
(OR)				
10.	In case of manmade disaster like "Radiation disaster, Panama 2001", write about preventive actions and mitigation measures could have been taken, and the response to the disaster, steps and shortcomings in disaster management.	14M	CO4	L2

H.T.No

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R20

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B.Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.: A.P.

B.Tech. (VII Semester) Regular/Supplementary Examinations

20HS03-INDUSTRIAL ECONOMICS AND MANAGEMENT

(ME)

Time : 3 hours

Max. Marks : 70

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Explain the principles of management as outlined by Henry Fayal's?	7M	CO1	L2
(b)	Describe Herzberg two factor theory of motivation with a suitable example.	7M	CO1	L2
(OR)				
2(a)	Illustrate in detail the functional organization structure and enumerate its advantages and disadvantages.	7M	CO1	L2
(b)	Discuss the following terms in relation to organization: (i) Authority (ii) Responsibility (iii) Span of control.	7M	CO1	L2
3(a)	Explain Break-Even Analysis and its managerial significance.	7M	CO2	L2
(b)	A company sells a product for ₹100 per unit, with variable cost of ₹60 per unit and total fixed cost of ₹4,00,000 per year. Determine the break-even point and provide its interpretation.	7M	CO2	L2
(OR)				
4(a)	What are the various methods and sources of raising capital? Discuss their suitability for different business contexts.	7M	CO2	L2
(b)	Define Capital Budget and explain its importance.	7M	CO2	L2
5(a)	Differentiate between job, batch and mass production.	7M	CO3	L2
(b)	Define plant layout and explain its significance in a manufacturing industry.	7M	CO3	L2
(OR)				
6(a)	Illustrate various types of process charts.	7M	CO3	L2
(b)	Summarize the objectives of work measurement.	7M	CO3	L2
7(a)	What do you understand by acceptance sampling? Explain the concepts of single and double sampling plans.	7M	CO4	L2
(b)	In a pilot investigation of the length of the nails produced in the shop floor, it is found that the mean length \bar{X} is 4 cm, the standard deviation 3σ , the measure of variability of the nails produced 0.2 cm. From this data, construct the control chart and explain its significance.	7M	CO4	L2
(OR)				
8.	Explain Deming's 14 key principles of management used for bringing out business effectiveness.	14M	CO4	L2
9(a)	Discuss the functions of human resource manager in an industry.	7M	CO5	L2
(b)	Explain performance appraisal and its methods.	7M	CO5	L2
(OR)				
10(a)	Elucidate about salary and wage administration.	7M	CO5	L2
(b)	Explain the job evaluation process.	7M	CO5	L2
