H.T No: | | | | | | | | | | | **R18** **Course Code: A31201**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations December-2024

Course Name: Automata & Compiler Design

(Common for IT & CSC)

Date: 18.12.2024 AN **Time: 3 hours** **Max.Marks: 70**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries TWO marks. **10x2=20M**

1.	What is a regular expression?	2 M
2.	Derive Right most derivation for thefollowing grammar E→E+T|T, T→T*F|F, F→ (E)|id for W= id+id*id .	2 M
3.	Define ambiguous grammar with a suitable example.	2 M
4.	List out intermediate code forms.	2 M
5.	Compare S-attribute grammars and L-attributed grammars.	2 M
6.	Classify the Chomsky hierarchy of languages.	2 M
7.	What is type expression?	2 M
8.	What is constant folding?	2 M
9.	Define register allocation.	2 M
10.	List out object code forms.	2 M

PART-B

Answer the following. Each question carries TEN Marks. **5x10=50M**

11.A). With an example explain the conversion of NFA to DFA and verify for string. 10M

OR

11. B). Construct the predictive parser for the following grammar: 10M
S → (L) | a
L →L,S | S

12. A). Construct LALR parsing for the grammar S→CC, C→cC, C→d. 10M

OR

12. B). Develop Syntax Directed Definitions for Constructing syntax tree and dependency graph of an expression a+4-c derived from the grammar 10M
E→E+T
E→E-T
E→T
T→(E)
T→id
T→num

13. A). Discuss in detail about equivalence of type expressions. 10M

OR

13. B). Describe about overloading of functions and operations. 10M

(P.T.O.)

14. A). Summarize the language facilities for storage allocation strategies. 10M

OR

14. B). Apply the function preserving transformation techniques on flow graph using the pseudo code for quick sort. 10M

15. A). Demonstrate the generic code generation algorithm. 10M

OR

15. B). Draw the Directed Acyclic Graphs for the following expression and explain the procedure ((p + q) - ((p + q) / (p - q))) + ((p + q) / (p - q)). 10M

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H.T No: | | | | | | | | | | | **R18** | **Course Code: A30523**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations December-2024

Course Name: Web Technologies

(CSC)

Date: 26.12.2024 AN | **Time: 3 hours** | **Max.Marks: 70**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries TWO marks. **10x2=20M**

1.	List various String Functions in PHP.	2 M
2.	Design a PHP code to swap any two numbers	2 M
3.	Define image tag with an example.	2 M
4.	Define naming rules in XML	2 M
5.	What are the Difference between Generic Servlet and HTTPServlet?	2 M
6.	What is Session?	2 M
7.	What are the Beans in jsp page	2 M
8.	Explain about Scriptlet Tag.	2 M
9.	What is DATE object in JavaScript	2 M
10.	Define Event. How are events handled in JavaScript?	2 M

PART-B

Answer the following. Each question carries TEN Marks. **5x10=50M**

11.A).	Explain database connectivity in PHP with reference to MYSQL.	10M
	OR	
11. B).	How to read data from web form control like Check boxes explain with an example?	10M
12. A).	How can both Internal and External DTDs be used in an XML File? Show with an Example.	10M
	OR	
12. B).	Define Table tag and their attributes with an example.	10M
13. A).	i) What are the advantages of Servlets over CGI. ii) Explain Life Cycle of a Servlet.	5M 5M
	OR	
13. B).	What is JDBC? How to connecting to a database using JDBC?	10M
14. A).	Explain the components of jsp.	10M
	OR	
14. B).	Explain about the getProperty() and setProperty() of beans in jsp.	10M
15. A).	i) What is JavaScript? What are the features of JavaScript? ii) Design A JavaScript to display whether given number is prime or not.	5M 5M
	OR	
15. B).	i) What is the need of scripting languages in web Technologies? ii) Build a JavaScript program to convert temperature from Celsius to Fahrenheit and vice versa.	5M 5M

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H.T No: | | | | | | | | | | | R18 | Course Code: A36209

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations December-2024

Course Name: Intrusion Detection & Prevention Systems

(CSC)

Date: 23.12.2024 AN | **Time: 3 hours** | **Max.Marks:70**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries TWO marks. 10x2=20M

1.	Define Intrusion detection system.	2 M
2.	Recall Bayes theory.	2 M
3.	Compare Centralized and Distributed intrusion detection.	2 M
4.	Define Cooperative intrusion detection.	2 M
5.	What is the role of Intrusion detection in security?	2 M
6.	What is ROI?	2 M
7.	List out some of tools used for Acquisition process.	2 M
8.	Define NFR security.	2 M
9.	List out common legal concerns and myths in IDS.	2 M
10.	Define standard of due care.	2 M

PART-B

Answer the following.Each question carries TEN Marks. 5x10=50M

11.A).	Explain in detail about analysis schemes, attacks and detection approaches in Intrusion detection and prevention systems.	10M
	OR	
11. B).	Explain in detail about the Taxonomy of Anomaly detection system.	10M
12. A).	Compare and contrast Centralized and Distributed intrusion detection systems.	10M
	OR	
12. B).	Analyze the need for Cooperative intrusion detection and explain about it.	10M
13. A).	Discuss in detail about Intrusion detection in security.	10M
	OR	
13. B).	Describe the concept of Quantifying risk and Return on Investment.	10M
14. A).	Analyze the usage of different tools used for acquisition process in IDS.	10M
	OR	
14. B).	Analyze the need and working of open source IDS: Prelude and Snort.	10M
15. A).	Illustrate in detail about the Law enforcement and Criminal prosecutions related to Intrusion detection and prevention systems.	10M
	OR	
15. B).	Discuss in detail about Evidentiary Issues, Organizations and Standardizations.	10M

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H.T No: | | | | | | | | | | | R18 | Course Code: A36217

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech V Semester Supplementary Examinations December-2024
Course Name: Cyber laws & Ethics
(CSC)

Date: 20.12.2024 AN **Time: 3 hours** **Max.Marks: 70**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries TWO marks. **10x2=20M**

1. Write about major amendments made to the IT Act, 2000. 2 M
2. Discuss about authorities under the IT Act 2000 and elucidate their powers. 2 M
3. Write about amendments to the Indian Penal Code. 2 M
4. Examine the amendments made to the Indian Evidence Act and the Bankers Book Evidence Act due to the IT Act. 2 M
5. Discuss the concept of e-commerce in India, emphasizing issues and provisions related to e-contracts. 2 M
6. Discuss issues related to e-taxation in cyberspace. 2 M
7. Define reverse hijacking. 2 M
8. Discuss the WIPO treaties related to copyrights. 2 M
9. Discuss the international perspective on cloud computing and its legal implications. 2 M
10. Write about the UNCITRAL Model Law and its significance. 2 M

PART-B

Answer the following. Each question carries TEN Marks. **5x10=50M**

11.A). Examine the amendments made to the Indian Penal Code due to the IT Act. Discuss specific provisions and their implications on cyber-related offenses. 10M

OR

11. B). Investigate the penalties and offenses outlined in the IT Act, 2000. Evaluate their effectiveness in deterring cybercrimes and protecting digital assets. 10M

12. A). Analyze the jurisdiction issues under the IT Act, 2000. Explore recent case laws that highlight challenges and advancements in cyber space jurisdiction. 10M

OR

12. B). Explore the impact of amendments to the Bankers Book Evidence Act in the context of the IT Act. Discuss the implications on handling electronic evidence in financial transactions. 10M

13. A). Evaluate the role and practicality of Cyber Tribunal & Appellate Tribunal in resolving disputes related to e-contracts and e-governance. 10M

OR

13. B). Discuss the challenges and legal considerations associated with e-taxation in cyberspace. Evaluate the effectiveness of existing legal provisions in addressing these challenges. 10M

(P.T.O..)

14. A). Analyze the concept of cyber squatting and reverse hijacking in the internet era. Discuss recent case studies illustrating legal outcomes in such disputes. 10M

OR

14. B). Discuss the relevance of WIPO treaties in shaping copyright laws in the digital medium. Evaluate the effectiveness of copyright protection for computer programs. 10M

15. A). Explore the legal issues and challenges related to cryptography laws. Discuss how these laws impact data security and privacy in the digital age. 10M

OR

15. B). Examine the cyber laws of major countries, highlighting any recent developments. Discuss the role of international cooperation in addressing global cyber threats. 10M

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H.T No: | | | | | | | | | | | **R18** | **Course Code: A36205**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations December-2024

Course Name: Cryptography & Network Security

(CSC)

Date: 16.12.2024 AN | **Time: 3 hours** | **Max.Marks: 70**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries TWO marks. **10x2=20M**

1.	Distinguish between Attack Surfaces and Attack trees.	2 M
2.	What are the different types of Security Attack?	2 M
3.	Interpret about Avalanche effect.	2 M
4.	Discuss about Monoalphabetic Cipher.	2 M
5.	Differentiate between Conventional and Public Key Encryption.	2 M
6.	Identify the Attacks on RSA algorithm.	2 M
7.	What is Digital Signature?	2 M
8.	Classify the Hierarchical Key Control in KDC.	2 M
9.	List the different MIME content types.	2 M
10.	What are the benefits of IPSec?	2 M

PART-B

Answer the following. Each question carries TEN Marks. **5x10=50M**

11.A).	i) Explain the Model for Network Security.	5M
	ii) Explain the Euclidian Algorithm.	5M
	OR	
11. B).	i) Discuss about the fundamental security design principles.	5M
	ii) Determine the working of The Chinese Remainder Theorem.	5M
12. A).	Explain the Block Cipher Mode of Operations.	10M
	OR	
12. B).	i) Discuss about Transposition Cipher.	5M
	ii) Determine the AES Transformation Functions.	5M
13. A).	i) Elaborate the Elgamal Cryptographic Systems.	5M
	ii) Draw and analyze the HMAC structure.	5M
	OR	
13. B).	i) Elaborate the use of Diffie-Hellman algorithm for Secure Exchange of Keys.	5M
	ii) Users A and B use the Diffie-Hellman key exchange technique with a common prime $q = 71$ and a primitive root $a = 7$. a. If user A has private key $XA = 5$, what is A's public key YA? b. If user B has private key $XB = 12$, what is B's public key YB? c. What is the shared secret key?	5M

(P.T.O..)

14. A). i) Build the model of X.509 Certificate generation. 5M

ii) Can you design the Kerberos Realm? 5M

OR

14. B). Explain the Symmetric Key Distribution using Asymmetric Encryption. 10M

15. A). Determine the operational services in PGP and Message generation with a neat diagrams. 10M

OR

15. B). Explain about IP Security in detail. 10M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A30525**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations December-2024

Course Name: Software Engineering

(Common for CSM & AIM)

Date: 18.12.2024 AN **Time: 3 hours** **Max.Marks: 70**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries TWO marks. **10x2=20M**

1.	Define software engineering.	2 M
2.	Mention the merits of incremental model.	2 M
3.	List out various functional requirements.	2 M
4.	What is the importance of modeling?	2 M
5.	What are the objectives of Requirement analysis?	2 M
6.	What are the Difficulties in Elicitation?	2 M
7.	Distinguish between Black Box Testing vs White box testing.	2 M
8.	What are the steps followed in testing?	2 M
9.	What is the difference between the "Known Risks" and "Predictable Risks"?	2 M
10.	List out the Elements of SCM.	2 M

PART-B

Answer the following. Each question carries TEN Marks. **5x10=50M**

11.A).	Elaborate on the changing nature of software in detail.	10M
	OR	
11. B).	Explain in detail about the software process.	10M
12. A).	Explain the software requirement analysis and specification. Discuss various methods for requirement gathering.	10M
	OR	
12. B).	Explain in detail about data Models with example.	10M
13. A).	i) Define Use case? Draw the use case diagram for Railway reservation system. ii) Summarize activity diagrams with suitable example.	5M 5M
	OR	
13. B).	Explain about architectural design styles and pattern.	10M
14. A).	i) Explain system testing in detail. ii) Define Testing and explain validation testing.	5M 5M
	OR	
14. B).	Discuss in detail about product metrics for analysis, design, coding and testing with suitable example.	10M
15. A).	Explain the role of software engineering methods in achieving software quality.	10M
	OR	
15. B).	i) Compare reactive and proactive risk strategies. ii) What is Software review and explain the different types of reviews.	5M 5M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A36603**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations December-2024

Course Name: Artificial Intelligence and Applications

(CSM)

Date: 20.12.2024 AN **Time: 3 hours** **Max.Marks: 70**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries TWO marks. **10x2=20M**

1.	What are the functionalities of an agent function?	2 M
2.	Differentiate weak and strong AI.	2 M
3.	What are frames to represent knowledge?	2 M
4.	Why is semantic network important in AI?	2 M
5.	State Baye's rule.	2 M
6.	What is the use of Dempster-Shafer theory?	2 M
7.	What is the identification tree in AI?	2 M
8.	List the types of learning.	2 M
9.	Differentiate AI and expert system.	2 M
10.	Name the components of typical expert system.	2 M

PART-B

Answer the following. Each question carries TEN Marks. **5x10=50M**

11.A).	i) Explain why Artificial Intelligence is beneficial even though computers cannot really think. How is it different from the conventional computer systems?	5M
	ii) Discuss iterative-deepening A* with an example.	5M
	OR	
11. B).	Demonstrate Min Max procedure for game playing with any example.	10M
12. A).	i) Discuss the limitations of propositional logic and explain how first order logic overcomes these with its features.	5M
	ii) "Some medicines are dangerous if taken in excessive amount". Translate the sentence into predicate logic and then to clause form.	5M
	OR	
12. B).	What are the characteristics of good knowledge representation technique? Explain each of them in brief.	10M
13. A).	Explain the concept of Bayesian network in representing knowledge in an uncertain domain.	10M
	OR	
13. B).	i) Why is probabilistic reasoning necessary in AI?	5M
	ii) Discuss partial order planning with suitable example.	5M
14. A).	Explain the process of explanation based learning with example.	10M
	OR	
14. B).	What is Rote Learning? Explain with example.	10M

(P.T.O..)

15. A). Explain the basic architecture of an expert system. Also give its applicability in different areas. 10M

OR

15. B). How does expert system differ from conventional programs? Discuss the various stages of knowledge acquisition in expert systems. 10M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A36613**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations December-2024

Course Name: Advanced Python Programming

(Common for CSM & AIM)

Date: 26.12.2024 AN **Time: 3 hours** **Max.Marks: 70**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries TWO marks. **10x2=20M**

1.	What are the rules for writing an identifier in Python?	2 M
2.	Define Module and Package.	2 M
3.	Differentiate Numpy and Pandas.	2 M
4.	Write about Data Wrangling.	2 M
5.	What can you do with SciPy?	2 M
6.	Explain about the purpose of MatPlotLib.	2 M
7.	What is a Cursor in the context of Database Programming?	2 M
8.	Identify the Web Forms in Flask.	2 M
9.	List out the advantages of Qt Designing.	2 M
10.	Explain about Item based Graphing.	2 M

PART-B

Answer the following. Each question carries TEN Marks. **5x10=50M**

11.A).	List different Control Statements in Python with appropriate examples.	10M
	OR	
11. B).	Explain in detail about Python Files, its types, Functions and Operations that can be performed on files with examples.	10M
12. A).	Explain about Matrix Manipulation Indexing and Slicing.	10M
	OR	
12. B).	How do you load, add, select and update data of a data set in a Data Frame?	10M
13. A).	Write any 6 SciPy Modules or Sub Packages with examples.	10M
	OR	
13. B).	Design Scatter Plot, Bar Chart and Stack Chart with sample data.	10M
14. A).	Explain the procedure for connecting to a MySQL data base using Python.	10M
	OR	
14. B).	Elaborate Flask basic application structure.	10M
15. A).	Classify Dumb dialogues and Smart dialogues in PyQt GUI Programming.	10M
	OR	
15. B).	Analyze the process of creating Custom GUI Widget for Python Apps.	10M

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H.T No: | | | | | | | | | | | **R18** | **Course Code: A36605**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations Dec-2024/Jan-2025

Course Name: Theory of Computation

(CSM)

Date: 08.01.2025 FN | **Time: 3 hours** | **Max.Marks: 70**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries TWO marks. **10x2=20M**

1. What are the fundamental concepts of strings and alphabet? 2 M
2. Define NFA with ε moves. Give example. 2 M
3. Discuss the key components and operations involved in regular expressions. 2 M
4. Explain the concept of the pumping lemma for context-free grammars (CFG) in formal language theory. 2 M
5. Define and differentiate between rightmost derivation and leftmost derivation in the context of context-free grammars. 2 M
6. Explain the definition of context –free grammars. 2 M
7. Explain the concept of the pumping lemma for context-free grammars (CFG) in formal language theory. 2 M
8. What is a CNF? 2 M
9. What is a Turing machine? 2 M
10. Define a Linear Bounded Automaton (LBA). 2 M

PART-B

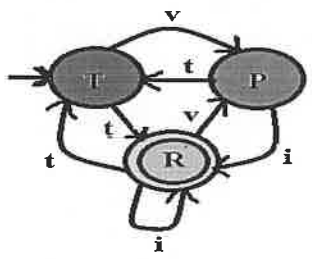
Answer the following. Each question carries TEN Marks. **5x10=50M**

11.A). i) Describe below DFA and check the Strings valid or not with Transition Table of DFA. 5M

a) iiti

b) tiitt

c) vitti



ii) Explain the concept of acceptance of strings and languages in the context of formal language theory. Define what it means for a string to be accepted by a language and describe the various methods and devices used for acceptance. 5M

OR

11. B). i) Construct deterministic finite automata to recognize odd number of 1's and even number of 0's. 5M

ii) Explain the concept of equivalence between Nondeterministic Finite Automata (NFA) with and without epsilon moves. Describe the characteristics and functionalities of both types of NFAs. 5M

(P.T.O..)

12. A). Explain the Chomsky Hierarchy of Languages in the context of formal language theory. Describe each of the language classes within the hierarchy. Explain using Examples. 10M

OR

12. B). Construct Finite Automata to accept the regular expression. **(0+1)*(00+11)) (0+1)*.** 10M

13. A). Construct the PDA M for the language L = $\{WW^R / W \in \{a,b\}^*\}$ such that L = L(M) with transition Diagram. 10M

OR

13. B). Discuss the concept of equivalence between Context-Free Languages (CFLs) and Pushdown Automata (PDAs). Explain with suitable Example. 10M

14. A). Explain the Pumping Lemma for Context-Free Languages and its significance in proving that certain languages are not context-free.
Consider the language L = {a^nb^nc^n | n ≥ 0}, which consists of strings of the form "$a^nb^nc^n$" where the number of 'a's, 'b's, and 'c's are equal and greater than or equal to zero.
Use the Pumping Lemma for Context-Free Languages to prove that L is not a context-free language. Provide a step-by-step explanation. 10M

OR

14. B). Find the Greibach Normal Form of the following grammar: 10M
E→E+T | T
T→T*F|F
F→(E)|A

15. A). Define Turing Machine and its movements (Move {L,R}). Design a Turing machine to recognize the language L = $\{0^n1^n | n \geq 1\}$. 10M

OR

15. B). Explain briefly about the different types of Turing machines with examples. 10M

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H.T No: | | | | | | | | | | | R18 | Course Code: A36606

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations December-2024

Course Name: Computer Vision

(CSM & AIM)

Date: 23.12.2024 AN **Time: 3 hours** **Max.Marks:70**

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions
Each question carries TWO marks. 10x2=20M

1.	List the goals of computer vision.	2 M
2.	What is an image and list the types of images?	2 M
3.	Categorize the color models.	2 M
4.	Define sampling.	2 M
5.	Recall edge detection.	2 M
6.	What is Dilation?	2 M
7.	List the types of edge detection operators.	2 M
8.	Compare local and global features of an image.	2 M
9.	Classify the face detection techniques in image processing.	2 M
10.	Define Dataset and list few examples.	2 M

PART-B
Answer the following.Each question carries TEN Marks. 5x10=50M

11.A).	Explain about Intrinsic parameters and extrinsic parameters.	10M
	OR	
11. B).	i) Categorize image reconstruction methods.	5M
	ii) Explain how Back Projection is used for Image Reconstruction.	5M
12. A).	Illustrate Smoothing linear filters with example.	10M
	OR	
12. B).	Outline the steps to generate RGB image of cross sectional color plane.	10M
13. A).	Elaborate how Hit-or-Miss transformation tool is used for shape detection.	10M
	OR	
13. B).	Explain watershed segmentation algorithm.	10M
14. A).	Discuss Gaussian based edge detectors in detail.	10M
	OR	
14. B).	Discuss the steps in SIFT algorithm.	10M
15. A).	Explain briefly about Adaboost approaches.	10M
	OR	
15. B).	i) What is object detection? What are the applications of object detection?	5M
	ii) Write brief note on fundamental matrix.	5M

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H.T No: | | | | | | | | | | | **R18** | **Course Code: A36704**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations December-2024

Course Name: Data Science With R

(CSD)

Date: 20.12.2024 AN **Time: 3 hours** **Max.Marks: 70**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries TWO marks. **10x2=20M**

1. What is the difference between big data and data science hype? 2 M
2. What are the different types of environments in R? 2 M
3. What is an attribute? 2 M
4. Define Mean, Median and Mode. 2 M
5. Difference between data frame and a matrix in R. 2 M
6. Convert a matrix to a 1-dimensional array using R. 2 M
7. What is the use of return () function? 2 M
8. What are the relational operators in R 2 M
9. What Is Data Reduction? 2 M
10. What is pixel-oriented representation? 2 M

PART-B

Answer the following. Each question carries TEN Marks. **5x10=50M**

11.A). How to get system date in R? Generate sequence of previous and coming 10 dates from today in R? 10M

OR

11. B). Explain the types of probability distributions. 10M

12. A). Explain the Qualitative Attributes with Example. 10M

OR

12. B). Explain measuring the description of data with example. 10M

13. A). How to create a factor and how to access components of a factor? How to modify a factor? 10M

OR

13. B). Create a data frame from a matrix of your choice, change the row names so every row says id_i (where i is the row number) and change the column names to variable_i (where i is the column number). I.e., for column 1 it will say variable_1, and for row 2 will say id_2 and so on. 10M

14. A). Explain the Relational Operators with example. 10M

OR

14. B). Define Recursion? Write a R Program to Find the Factorial of a Number Using Recursion. 10M

15. A). Explain the steps of Principal Component Analysis. 10M

OR

15. B). Explain the types of Data Visualization techniques. 10M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A36705**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations December-2024

Course Name: Data Mining

(CSD)

Date: 23.12.2024 AN **Time: 3 hours** **Max.Marks:70**

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions
Each question carries TWO marks. 10x2=20M

1. Compare characterization and discrimination. 2 M
2. Define data integration. 2 M
3. Define frequent pattern. 2 M
4. What is sampling? 2 M
5. State Correlation analysis. 2 M
6. Differentiate mean absolute and mean squared error. 2 M
7. Write about cluster analysis with an example. 2 M
8. What is the significance of grid-based methods? 2 M
9. Compare audio and video data mining. 2 M
10. Write the goals of time-series analysis. 2 M

PART-B
Answer the following.Each question carries TEN Marks. 5x10=50M

11.A). i) Explain with a neat diagram the classification of data mining system. 5M
ii) How to handle missing values in data sets? 5M

OR

11. B). i) Describe how wavelet transform and attribute subset selection are used to perform data reduction. 5M
ii) Explain data mining as a step in the process of knowledge discovery. 5M

12. A). i) Discuss about mining frequent itemsets using candidate generation with the following example. 5M

TID	List of item-IDs
T100	I1,I2,I5
T200	I2,I4
T300	I2,I3
T400	I1,I2,I4
T500	I1,I3
T600	I2,I3
T700	I1,I3
T800	I1,I2,I3,I5
T900	I1,I2,I3

Using the Apriori algorithm, give all candidates and all frequent item sets of lengths 1,2 and 3 with a minimum support of 2 items. 5M
ii) Write Apriori algorithm.

(P.T.O.)

OR

12. B). i) Construct the FP-Tree from the given transactional database. Explain the procedure in detail with minimum support count=3. 5M

TID	List of items
1	F,A,C,D,G,J,M,P
2	A,B,C,F,L,M,O
3	B,F,H,J,O,W
4	B,C,K,S,P
5	A,F,C,E,L,P,M,N

ii) Write about different types of Constraint-Based Association Mining. 5M

13. A). i) Distinguish between classification and prediction methods. 5M

ii) Briefly outline the major steps of decision tree classification. 5M

OR

13. B). Why naive Bayesian classification is called naïve? Briefly outline the major ideas of naive Bayesian classification? 10M

14. A). i) What is partitioning method? Describe partition around medoids clustering algorithm with an example? 5M

ii) Compare agglomerative and divisive hierarchical clustering. 5M

OR

14. B). Why is Outlier mining important? Explain statistical distribution based outlier detection. 10M

15. A). i) Write the various major components for characterizing time-series data. 5M

ii) Explain the sequential pattern mining. 5M

OR

15. B). i) Explain aggregation and approximation in spatial and multimedia data generalization. 5M

ii) Write about Similarity Search in Multimedia Data. 5M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A37201**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations December-2024

Course Name: Finite Automata & Compiler Design

(AID)

Date: 18.12.2024 AN **Time: 3 hours** **Max.Marks: 70**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries TWO marks. **10x2=20M**

1. Differentiate between NFA and DFA. 2 M
2. Check whether the given grammar is ambiguous or not for the string w= abba 2 M

   S → SS

   S → a

   S → b
3. Define the following terms and give suitable example for it. 2 M

   a) Handle b) Handle Pruning
4. Translate the following conditional statement into 3-address code 2 M

   if A < B then 1 else 0
5. List the different types of type checking. 2 M
6. Distinguish between operator overloading and function overloading with suitable examples. 2 M
7. Give the fields in an Activation record. 2 M
8. Construct a DAG for the expression: 2 M

   a = b * -c + b *-c
9. Classify the two types of object codes. 2 M
10. Identify the purpose of address descriptor and register descriptor. 2 M

PART-B

Answer the following. Each question carries TEN Marks. **5x10=50M**

11.A). Convert the regular expression (a+b)* into an epsilon NFA and find its equivalent DFA using Thompson's subset construction method. 10M

OR

11. B). Check whether the following grammar is a LL(1)grammar or not by constructing a predictive parsing table. 10M

$S \rightarrow iEtSS' \mid a$

$S' \rightarrow eS \mid \varepsilon$

$E \rightarrow b$

12. A). Construct a LALR parsing table for the following grammar 10M

S → CC

C → cC

C→ d

(P.T.O)

OR

12. B). Translate the expression 'a = b * - c + b * - c' into 10M

i) 3-address code
ii) Quadruples
iii) Triples
iv) Indirect Triples

13. A). Compare the Chomsky hierarchy of languages and recognizers with examples. 10M

OR

13. B). Examine the need for type conversion and equivalence of type expressions with examples. 10M

14. A). Summarize the different types of storage allocation strategies with examples. 10M

OR

14. B). Illustrate the principal sources of optimization with examples. 10M

15. A). Identify and illustrate the various issues in the design of a code generator. 10M

OR

15. B). Consider the expression: (a+b) + (e+(c-d)) 10M

i) Translate the above expression into 3-address code
ii) Construct a DAG for the above 3-address code
iii) Generate the machine code for the above 3 -address code.

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H.T No: | | | | | | | | | | | **R18** **Course Code: A36714**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations December-2024

Course Name: Predictive Analytics

(AID)

Date: 23.12.2024 AN **Time: 3 hours** **Max.Marks:70**

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions
Each question carries TWO marks. 10x2=20M

1.	Write an algorithm for Regression by Successive Orthogonalization.	2 M
2.	Compare Subset Selection, Ridge Regression and the Lasso	2 M
3.	Explain the Wrong and Right Way to Do Cross-validation	2 M
4.	How can we apply the bootstrap to estimate prediction error?	2 M
5.	Write the Backfitting Algorithm for Additive Models.	2 M
6.	Write the measures of Misclassification error, Gini index, Cross-entropy or deviance.	2 M
7.	Define the curse of Dimensionality.	2 M
8.	Write the steps forKmeans algorithm.	2 M
9.	Define Random Forests.	2 M
10.	Define Agglomerative Clustering.	2 M

PART-B
Answer the following.Each question carries TEN Marks. 5x10=50M

11.A).	Explain in detail about different Regression Concepts and Least Square Estimation method.	10M
	OR	
11. B).	Write Least Angle Regression Algorithm and explain Lasso regression.	10M
12. A).	Explain The Bias–Variance Decomposition.	10M
	OR	
12. B).	Write notes on The Bayesian Approach and BIC.	10M
13. A).	Explain example of California Housing using different loss functions.	10M
	OR	
13. B).	Write a program implementing AdaBoost with trees.	10M
14. A).	Derive the forward and backward propagation equations for the cross-entropy loss function.	10M
	OR	
14. B).	Write short notes on: i) SVM for regression ii) K – nearest neighbor.	10M
15. A).	Write notes on Association Rules and explainMarket Basket Analysis with an example.	10M
	OR	
15. B).	i) Write an algorithm for Random Forest for Regression or Classification. ii) Analysis of Random Forests.	5M 5M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A30533**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech V Semester Supplementary Examinations December-2024
Course Name: Mobile Computing
(AID)

Date: 26.12.2024 AN **Time: 3 hours** **Max.Marks: 70**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries TWO marks. **10x2=20M**

1.	Give some limitation of handheld devices.	2 M
2.	What is user mobility and device portability?	2 M
3.	Define multiplexing.	2 M
4.	What is CDMA?	2 M
5.	Differentiate TCP and UDP.	2 M
6.	Write the limitations of conventional TCP	2 M
7.	Describe different types of handoff strategies in Mobile Communication Networks.	2 M
8.	What is triangular routing?	2 M
9.	List the applications of MANETs.	2 M
10.	Distinguish Proactive and Reactive Protocols.	2 M

PART-B

Answer the following. Each question carries TEN Marks. **5x10=50M**

11.A).	Write a short notes on 3-Tier architecture of mobile computing and explain the two GPRS support nodes.	10M
	OR	
11. B).	Draw the system architecture in GSM. Explain in detail.	10M
12. A).	Compare and contrast FDMA, TDMA, CDMA and SDMA.	10M
	OR	
12. B).	Describe the Mobile IP Protocol in network layer and explain how IP packets are transmitted between mobile nodes.	10M
13. A).	Write a short notes on I-TCP and its advantages.	10M
	OR	
13. B).	Explain in detail about the database transaction models.	10M
14. A).	Discuss cyclic repetition and broadcasting disk model.	10M
	OR	
14. B).	Explain different types of Data Delivery Mechanisms with a neat sketch.	10M
15. A).	Describe MANET. How does a MANET differ from a fixed infrastructure network?	10M
	OR	
15. B).	Explain the working procedure of DSDV routing protocol with a suitable example.	10M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A30519**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations December-2024

Course Name: Compiler Design

(AIM)

Date: 16.12.2024 AN **Time: 3 hours** **Max.Marks: 70**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries TWO marks. **10x2=20M**

1. What is the role of LEX tool? 2 M
2. What is structure of compiler? 2 M
3. Remove left recursion from the grammar? A->ABd |Aa|a , B->Be|b. 2 M
4. What is the difference between SLR, CLR parsers? 2 M
5. Explain s-attributed definition. 2 M
6. Explain dependency graph with example. 2 M
7. List out the issues in design of code generator. 2 M
8. Explain about Flow Graph. 2 M
9. Explain code motion. 2 M
10. What is partial redundancy elimination? 2 M

PART-B

Answer the following. Each question carries TEN Marks. **5x10=50M**

11.A). What is the role finite automata and regular expressions in compiler design? Describe. 10M

OR

11. B). Explain the role of lexical analyzer in detail. 10M

12. A). Construct SLR parser for the following grammar? 10M

E -> E+T | T

T-> T*F | F

F-> (E) | id

OR

12. B). Check whether following grammar is LL (1) or not? 10M

S -> AaAb| BbBa

A -> ε

B-> ε

13. A). Explain about L-attributed SDDs with example. 10M

OR

13. B). Construct quadruples, triples and indirect triples for the expression a=b*-c+b*-c. 10M

14. A). Explain about access to non-local data in detail. 10M

OR

14. B). Explain different peephole optimization techniques. 10M

15. A). What are principles sources of optimization? Explain in detail. 10M

OR

15. B). Explain about the following: 10M

i) Copy propagation ii) Dead code elimination

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H.T No: | | | | | | | | | | | **R18** **Course Code: A36601**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations December-2024

Course Name: Machine Learning

(AIM)

Date: 20.12.2024 AN **Time: 3 hours** **Max.Marks: 70**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries TWO marks. **10x2=20M**

1.	What is machine learning? List out the problems that it can be solved	2 M
2.	What is a noise? Give some examples.	2 M
3.	What do you understand by MLE?	2 M
4.	Define Bias and variance.	2 M
5.	Can we make k-means robust to outlier? Write your answer.	2 M
6.	What are mixture densities? Give its representation.	2 M
7.	Decision trees are non parametric model? Why	2 M
8.	What do you understand by pair wise separation?	2 M
9.	What is MLP? List some characteristics of MLP.	2 M
10.	Define the terms bagging and boosting.	2 M

PART-B

Answer the following. Each question carries TEN Marks. **5x10=50M**

11.A).	i) Why VC dimensions are important? Illustrate with an example.	5M
	ii) Compare and contrast unsupervised learning with supervised learning	5M
	OR	
11. B).	Describe in detail applications of machine learning in any three different knowledge domains.	10M
12. A).	i) Assess Bayesian Decision theory for a multi class classification problem.	5M
	ii) "Utility theory is concerned with making rational decisions when we are uncertain about the state"? Justify this statement.	5M
	OR	
12. B).	i) Discuss SVM with suitable example.	5M
	ii) Outline the concept of Baye's Estimator in brief.	5M
13. A).	Discuss about feature extraction approach and how can we maximize variance in PCA.	10M
	OR	
13. B).	i) Inspect the steps involved in EM algorithm along with its goal in brief.	5M
	ii) What are the similarities and differences between average-link clustering and k-means? Illustrate in brief.	5M

(P.T.O..)

14. A). i) Distinguish between classification and regression. 5M

ii) How rules can be extracted from the decision tree? Apply this by considering an example decision tree. 5M

OR

14. B). i) Explain ID3 algorithm for learning decision trees. 5M

ii) Overleaf on logistic discrimination in brief. 5M

15. A). What is a perceptron? Discuss the perception training process, and also the implementation of online gradient descent for the case with K>2 classes. 10M

OR

15. B). i) Model a perceptron that implements Boolean function AND and its geometric interpretation. 5M

ii) Illustrate why MLP as a Universal Approximator 5M

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