

Hall Ticket Number :									
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<b>R-20</b>
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**Code: 20A552T**

III B.Tech. I Semester Supplementary Examinations June 2024

**Computer Networks**

(Common to CSE, AI&DS and AI&ML)

Max. Marks: 70

Time: 3 Hours

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- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
2. In Part-A, each question carries **Two marks**.  
3. Answer **ALL** the questions in **Part-A** and **Part-B**

**PART-A**

(Compulsory question)

1. Answer **all** the following short answer questions ( 5 X 2 = 10M )
- |  |     |    |
|--|-----|----|
|  | CO  | BL |
| a) Identify the layers which these protocols belong to: TCP, IEEE 802.3, SMTP and OSPF.  | CO1 | L1 |
| b) What are the two sublayers of the data link layer? What do they perform?  | CO2 | L2 |
| c) State the differences between IPv4 and IPv6 addressing schemes with a mention of the number of hosts forming the network.   | CO3 | L3 |
| d) How many bits are required to specify a TCP/UDP port number? Specify the port numbers on which the HTTP and FTP are served. | CO4 | L4 |
| e) Define the terms URN, URI and URL and also state the relationships among them.  | CO5 | L1 |

**PART-B**

Answer **five** questions by choosing one question from each unit ( 5 x 12 = 60 Marks )

Marks CO BL

**UNIT-I**

2. a) List the layers of TCP/IP reference model with description on the functionalities of each layer. 8M CO1 L1
- b) Compare and contrast among the physical media: coaxial cable, twisted pair wires and optical fiber cable. 4M CO1 L2

**OR**

3. a) State the purpose of following network devices with a mention on the layers at which they perform: hubs, switches, routers, firewalls and gateways. 6M CO1 L1
- b) What is meant by network topology? State and compare the types of such topologies. 6M CO1 L2

**UNIT-II**

4. a) Are parity check mechanisms capable of detecting multiple bit errors? If the received byte is 10001010 and even-parity mechanism is adopted, determine whether the received bit stream is having bit-error or not. 6M CO2 L4
- b) Explain how the CSMA technique is better than ALOHA in efficiently sharing the channel. 6M CO2 L2

**OR**

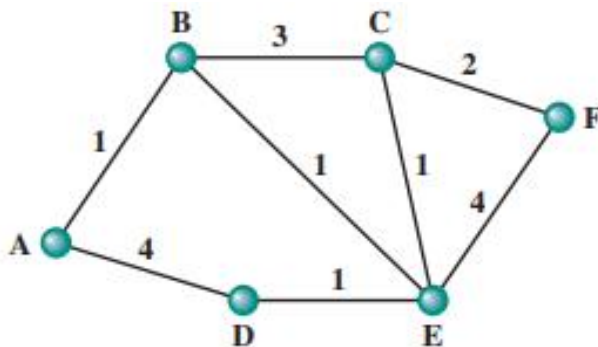
5. a) Describe the structure of MAC frame format of IEEE 802.3 6M CO2 L1  
 b) Explain binary exponential back off mechanism. 6M CO2 L2

**UNIT-III**

6. a) Write brief notes on adaptive routing. 5M CO3 L2  
 b) Write down the steps involved in Dijkstra's algorithm 7M CO3 L5

**OR**

7. a) State the differences between Dijkstra's and Bellman-Ford algorithms 4M CO3 L2  
 b) Apply Bellman-Ford algorithm for the following network.



8M CO3 L4

**UNIT-IV**

8. a) Distinguish between TCP and UDP with respect to their header structures. 6M CO4 L2  
 b) List and explain any four socket functions. 6M CO4 L3

**OR**

9. a) Differentiate between the terms 'collision' and 'congestion'. Which of the layers give importance to these phenomena? 6M CO4 L2  
 b) What are QoS parameters? Write brief notes on traffic shaping. 6M CO4 L2

**UNIT-V**

10. a) Describe the functional modules and protocols used in Internet Mail Architecture. 8M CO5 L2  
 b) What are the elements of Domain Name Systems? 4M CO5 L3

**OR**

11. a) Illustrate the message formats of HTTP requests and responses. 6M CO5 L2  
 b) Write brief notes on HTML and WWW. 6M CO5 L2

\*\*\* End \*\*\*

Hall Ticket Number :

**R-20**

**Code: 20A55DT**

III B.Tech. I Semester Supplementary Examinations June 2024

**Principles of Programming Languages**

(Computer Science and Engineering)

Max. Marks: 70

Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)

2. In Part-A, each question carries **Two marks**.

3. Answer **ALL** the questions in **Part-A** and **Part-B**

**PART-A**

**(Compulsory question)**

- |   |    |    |
|---|----|----|
| 1. Answer <b>all</b> the following short answer questions ( 5 X 2 = 10M ) | CO | BL |
| a) List two aspects language description.                                 | 1  | L1 |
| b) Recall an example of mixed mode expression                             | 2  | L1 |
| c) Explain parameter passing methods                                      | 3  | L2 |
| d) Derive data encapsulation with an example                              | 4  | L6 |
| e) Illustrate basic elements prolog                                       | 5  | L4 |

**PART-B**

Answer **five** questions by choosing one question from each unit (5 x 12 = 60 Marks)

Marks CO BL

**UNIT-I**

- |  |    |   |   |
|--|----|---|---|
| 2. a) Describe distinguishing characteristics of declarative and imperative programming language paradigms | 6M | 1 | 1 |
| b) Describe the importance of syntactic ambiguity. Explain the role of compiler in a program               | 6M | 1 | 3 |

**OR**

- |  |    |   |   |
|--|----|---|---|
| 3. a) Illustrate different data types used in procedural oriented language         | 6M | 1 | 1 |
| b) Determine the role of pointer in a programming language explain with an example | 6M | 1 | 3 |

**UNIT-II**

- |   |    |   |   |
|---|----|---|---|
| 4. a) Apply various data type to give details about a student | 6M | 2 | 3 |
| b) Illustrate the constant and variable importance            | 6M | 2 | 1 |

**OR**

- |  |    |   |   |
|--|----|---|---|
| 5. a) Describe data binding and type checking                  | 6M | 2 | 2 |
| b) Describe the type of operators used in programming language | 6M | 2 | 2 |

**UNIT-III**

- |  |    |   |   |
|--|----|---|---|
| 6. a) Apply the conditional statement to find greatest number among 3. | 6M | 3 | 3 |
| b) Summarize the static and dynamic variables with an example          | 6M | 3 | 3 |

**OR**

- |  |    |   |   |
|--|----|---|---|
| 7. a) Use a static variable in a program to calculate the area of a circle | 6M | 3 | 3 |
| b) Demonstrate the importance of scope of a variable                       | 6M | 3 | 3 |

**UNIT-IV**

- |  |    |   |   |
|--|----|---|---|
| 8. a) Create a program for exception handling to find the number divided by zero | 6M | 4 | 6 |
| b) Formulate try and catch block in exception handling with example              | 6M | 4 | 6 |

**OR**

- |  |    |   |   |
|--|----|---|---|
| 9. a) Formulate an example to show the importance of abstract data type. | 6M | 4 | 6 |
| b) Differentiate between Java and C++                                    | 6M | 4 | 6 |

**UNIT-V**

- |  |    |   |   |
|--|----|---|---|
| 10. a) Classify functional and imperative language | 6M | 5 | 4 |
| b) Outline the application of logic programming    | 6M | 5 | 4 |

**OR**

- |  |    |   |   |
|--|----|---|---|
| 11. a) Illustrate fundamentals of FPL and LISP | 6M | 5 | 4 |
| b) Classify the types of element in prolog     | 6M | 5 | 4 |

\*\*\* End \*\*\*

Hall Ticket Number :

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**R-20**

**Code: 20A553T**

III B.Tech. I Semester Supplementary Examinations June 2024

**Software Engineering**

(Common to CSE, AI&DS and AI&ML)

Max. Marks: 70

Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)

2. In Part-A, each question carries **Two marks**.

3. Answer **ALL** the questions in **Part-A** and **Part-B**

**PART-A**

**(Compulsory question)**

- |  |    |    |
|--|----|----|
| 1. Answer <b>all</b> the following short answer questions ( 5 X 2 = 10M )    | CO | BL |
| a) List the types of software process models.                                | 1  | 2  |
| b) Explain the difference between functional and non-functional requirements | 2  | 2  |
| c) What is coupling in component level design                                | 2  | 2  |
| d) What is integration testing?  | 3  | 2  |
| e) What is software reverse engineering?                                     | 4  | 2  |

**PART-B**

Answer *five* questions by choosing one question from each unit ( 5 x 12 = 60 Marks )

Marks CO BL

**UNIT-I**

- |  |    |   |   |
|--|----|---|---|
| 2. a) Discuss some common software myths and misconceptions.           | 6M | 1 | 2 |
| b) Provide an overview of the Unified Process in software development. | 6M | 1 | 1 |

**OR**

- |   |     |   |   |
|---|-----|---|---|
| 3. Summarize all phases of the Software Development Life Cycle. | 12M | 1 | 1 |
|---|-----|---|---|

**UNIT-II**

- |  |    |   |   |
|--|----|---|---|
| 4. a) Explain the requirement elicitation and requirement elaboration tasks in brief | 6M | 2 | 2 |
| b) Demonstrate Scenario-Based Modeling   | 6M | 2 | 2 |

**OR**

- |  |    |   |   |
|--|----|---|---|
| 5. a) How can use cases help in identifying system boundaries and user interactions? | 6M | 2 | 3 |
| b) Discuss Class-Based Modeling and Data Modeling in brief                           | 6M | 2 | 2 |

**UNIT-III**

6. Explain the design process in software engineering.  
What are the key steps involved? 12M 3 2

**OR**

7. Describe the process of conducting component-level design in software engineering. 12M 3 3

**UNIT-IV**

8. What are the "Golden Rules" of user interface design, and why are they important? 12M 4 4

**OR**

9. a) What is software testing, and why is it crucial in software development? 6M 4 4  
b) What is unit testing, and how is it performed in software development? 6M 4 2

**UNIT-V**

10. What are the key steps involved in project planning in software project management? 12M 5 2

**OR**

11. Describe the key characteristics of software maintenance and its role in the software development life cycle. 12M 5 2

\*\*\* End \*\*\*

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<b>R-20</b>
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**Code: 20A551T**

III B.Tech. I Semester Supplementary Examinations June 2024

**Artificial Intelligence**

(Computer Science and Engineering)

Max. Marks: 70

Time: 3 Hours

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- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
2. In Part-A, each question carries **Two marks**.  
3. Answer **ALL** the questions in **Part-A** and **Part-B**

**PART-A**

(Compulsory question)

1. Answer **all** the following short answer questions ( 5 X 2 = 10M )
- |  |     |    |
|--|-----|----|
|  | CO  | BL |
| a) What is the significance of having a rational agent in AI systems?            | CO1 | L2 |
| b) How the A* search algorithm utilizes heuristic functions for problem-solving? | CO2 | L1 |
| c) What is Propositional Logic?  | CO3 | L1 |
| d) Define "Ontology" in the context of Knowledge Engineering                     | CO4 | L2 |
| e) What are the basic components of "Bayes' Rule"?                               | CO5 | L1 |

**PART-B**

Answer **five** questions by choosing one question from each unit ( 5 x 12 = 60 Marks )

Marks CO BL

<b>UNIT-I</b>
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2. a) Explain the key characteristics of intelligent agents. Provide examples of different types of intelligent agents and describe the types of environments in which they operate. 8M CO1 L2
- b) Discuss the role of problem representation in state space search and how it is essential for the efficient functioning of intelligent agents. 4M CO1 L5

**OR**

3. Discuss the historical development of Artificial Intelligence (AI) and the emergence of intelligent agents. Then, explain the concept of a "Rational Agent" in AI systems. 12M CO1 L5

<b>UNIT-II</b>
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4. a) Evaluate the performance of different search algorithms, both uninformed and informed, for solving problems. 6M CO2 L2
- b) Provide a real-world scenario and apply various search techniques to solve the problem, comparing their efficiency and effectiveness. 6M CO2 L6

**OR**

5. a) Explain the concept of Constrained Satisfaction Problems (CSPs) in AI. 4M CO2 L2
- b) Provide examples of CSPs such as map coloring and walk through how backtracking can be applied to solve them. 8M CO2 L6

<b>UNIT-III</b>
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6. a) Compare and contrast two important inference techniques used in logic-based AI: Forward Chaining and Backward Chaining 6M CO3 L5
- b) Explain the concept of extensions and notational variations in First Order Logic and their implications. 6M CO3 L2

**OR**

7. a) Describe the fundamentals of Propositional Logic, including its syntax and semantics. 4M CO3 L1
- b) Explain how reasoning in Propositional Logic works, and provide a step-by-step example of solving a logical problem using this logic. 8M CO3 L2

<b>UNIT-IV</b>
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8. a) Describe how partial order planning differs from other planning techniques and its application in solving complex planning problems. 8M CO4 L2
- b) Describe the components of a "Planning Problem" and the role of state space search in solving planning problems. 4M CO4 L2

**OR**

9. a) Provide a step-by-step explanation of how hierarchical planning can be applied to solve a complex planning problem, such as task scheduling in a manufacturing environment. 8M CO4 L6
- b) Explain the concept of "Mental Events and Objects" in knowledge representation. 4M CO4 L2

<b>UNIT-V</b>
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10. a) Discuss the types of uncertainty and their implications in decision-making. 6M CO5 L2
- b) Discuss how the concept of independence is used to simplify the representation of uncertain knowledge. 6M CO5 L2

**OR**

11. a) Define the basic principles of probability, including the axioms of probability and the notation used in probability theory. 6M CO5 L1
- b) Provide practical examples to demonstrate how probability theory can be applied to model and solve uncertain problems. 6M CO5 L6

\*\*\* End \*\*\*