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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
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Examination : **B.Tech V Semester Regular Examinations December-2024**
Course Name : **Computer Networks**
Course Code : **CSE-A405310/ CSD-A467305/ CSM-A466304/ AIM-A473303**
Branch : **CSE/ CSD/ CSM/ AIM**
Date & Session : **18-12-2024 AN** **Duration: 3 hours** **Max. Marks: 60**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries ONE mark. **10x1=10M**

1.	What is ARPANET?	1 M
2.	List the various framing methods.	1 M
3.	Illustrate the services provided by the data link layer.	1 M
4.	Compare the functions of MAC and LLC.	1 M
5.	Summarize the desire properties for routing algorithm.	1 M
6.	Interpret the class and default subnet mask of the IP address 217.65.10.7.16.	1 M
7.	Outline the transport layer services.	1 M
8.	State the 3 way handshake protocol.	1 M
9.	What are the differences between POP3 and IMAP?	1 M
10.	Illustrate the importance of HTTP for the World Wide Web.	1 M

PART-B

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

11.A).	Distinguish between TCP/IP network model and OSI reference model.	10M
	OR	
11. B).	Analyze the significance of error detection and error correction mechanisms in data link layer.	10M
12. A).	Compare and Contrast Go-back-N and selective repeat sliding window protocols.	10M
	OR	
12. B).	Explain about various Carrier Sense Multiple Access Protocols.	10M
13. A).	Define Routing. Explain shortest path routing algorithm with an example.	10M
	OR	
13. B).	Compare and Contrast sub netting and super netting mechanisms.	10M
14. A).	Explain about various elements of Transport Protocols.	10M
	OR	
14. B).	Distinguish between TCP and UDP protocols.	10M
15. A).	What is DNS? What are the services provided by DNS and Explain how it works?	10M
	OR	
15. B).	Summarize the concepts of E-mail, its architecture and services.	10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
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Examination : **B.Tech V Sem Regular Examinations December-2024**
Course Name : **DevOPS**
Course Code : **A405311**
Branch : **Computer Science & Engineering**
Date & Session : **20-12-2024 AN** **Duration: 3 hours** **Max. Marks: 60**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries ONE mark. **10x1=10M**

1. State the role of DevOps in software development. 1 M
2. List any 2 DevOps principles. 1 M
3. Write in short about Microservices. 1 M
4. State the key difference between microservices architecture and monolithic architecture. 1 M
5. What is the function of Git in source code management? 1 M
6. What is the role of source code control management in DevOps environment? 1 M
7. What is the purpose of build trigger in Jenkins, and why it is important? 1 M
8. What is the purpose of Release phase in DevOps lifecycle? 1 M
9. List the key components of Selenium. 1 M
10. Why do you think Docker might be good in continuous deployment for DevOps? 1 M

PART-B

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

11.A). Describe the main differences between Agile and DevOps. How do these approaches complement each other in a development process? 10M

OR

11. B). List and explain the key stages in a DevOps delivery pipeline. Why are these stages important for continuous delivery? 10M

12. A). Describe the DevOps lifecycle and its role in improving business agility. 10M

OR

12. B). Explain how microservices and database migration impact DevOps architecture. Explain with a suitable example for each. 10M

13. A). What is source code management, and why it is essential in DevOps? Describe GitLab's role in managing code versions. 10M

OR

13. B). Describe Docker and its use in DevOps projects for system migration and isolation. 10M

14. A). Explain how Jenkins automates build processes in DevOps. List and explain the advantages of using Jenkins? 10M

OR

14. B). What is Infrastructure as Code (IaC) and why it is important in DevOps? State a real-world scenario where IaC would be beneficial. 10M

(P.T.O..)

15. A). What is the role of Selenium in DevOps testing? List features of Selenium that make it useful for test automation. 10M

OR

15. B). Describe the importance of virtualization in DevOps deployment and how Docker and Chef support deployment processes? 10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
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Examination : **B.Tech V Sem Regular Examinations December-2024**
Course Name : **Design and Analysis of Algorithms**
Course Code : **A405302**
Branch : **Computer Science & Engineering**
Date & Session : **23-12-2024 AN** **Duration: 3 hours** **Max. Marks: 60**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries ONE mark. **10x1=10M**

1. Give the two major phases of performance evaluation. 1 M
2. List the applications of divide and conquer. 1 M
3. Define priority queue. 1 M
4. Write simple union algorithm. 1 M
5. What is meant by bottom-up dynamic programming? 1 M
6. Define feasible and optimal solution. 1 M
7. Write any two characteristics of Greedy Algorithm? 1 M
8. List the different representations of graph. 1 M
9. Define FIFO branch and bound. 1 M
10. What is LCBB? 1 M

PART-B

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

11.A). What is performance analysis. Explain about time and space complexity with an example. 10M

OR

11. B). Define divide and conquer. Explain and tracing quick sort algorithm for the following set of numbers: 25, 10, 72, 18, 40, 11, 64, 58, 32, 9. 10M

12. A). What is heap? Explain heap sort algorithm with an example. 10M

OR

12. B). Explain the Graph–Coloring problem and draw the state space tree for m= 3 colors and n=4 vertices graph. Discuss the time and space complexity. 10M

13. A). Construct an optimal binary search tree for the given example. Let n = 4 and (a1,a2,a3,a4) = (do, if, int, while). Let p(1:4) = (3,3,1,1) and q (0 :4) = (2,3,1,1,1). 10M

OR

13. B). Solve all pairs shortest path problem with suitable example. 10M

14. A). Solve fractional knapsack problem using greedy method for the given example: n=3, M=20, (P1, P2, P3) = (25,24,15) and (w1, w2, w3) = (18,15,10). 10M

OR

14. B). i) What are different binary tree traversal techniques? Demonstrate with an example. 7M
ii) Discuss Connected and Biconnected Components. 3M

(P.T.O..)

15. A). Solve travelling sales person problem LCBB procedure with the following instance and draw the portion of the state space tree and find an optimal tour. 10M

$$\begin{pmatrix} \infty & 20 & 30 & 10 & 11 \\ 15 & \infty & 16 & 4 & 2 \\ 3 & 5 & \infty & 2 & 4 \\ 19 & 6 & 18 & \infty & 3 \\ 16 & 4 & 7 & 16 & \infty \end{pmatrix}$$

a cost matrix

OR

15. B). Briefly explain about:
i) Classes of NP-hard 10M
ii) Classes of NP-complete with neat diagrams.

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
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Examination : **B.Tech V Sem Regular Examinations December-2024**
Course Name : **Data Analytics**
Course Code : **A405420**
Branch : **Computer Science & Engineering**
Date & Session : **26-12-2024 AN** **Duration: 3 hours** **Max. Marks: 60**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries ONE mark. **10x1=10M**

1. What is data architecture? 1 M
2. What is noise in data? 1 M
3. Recall the reasons for implementing of business modeling. 1 M
4. Define data cleaning. 1 M
5. What is least squares estimation? 1 M
6. Define logistic regression. 1 M
7. Define unsupervised learning. 1 M
8. What is meant by average energy in model features? 1 M
9. Define pixel oriented visualization. 1 M
10. List examples of icon-based visualization technique. 1 M

PART-B

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

11.A). Illustrate the challenges and solutions for managing data quality. 10M

OR

11. B). Explain the role and techniques of data processing in analytics. 10M

12. A). Explain the role of data analytics in business decision – making. 10M

OR

12. B). Explain different types of databases used in data analytics. 10M

13. A). Demonstrate how variable rationalization is beneficial in regression model building. 10M

OR

13. B). Illustrate the applications of logistic regression in business analytics. 10M

14. A). Compare between regression and segmentation. 10M

OR

14. B). Explain the STL approach in time series analysis, how does it work? 10M

15. A). Explain the benefits and use cases of geometric projection techniques in data visualization. 10M

OR

15. B). Explain hierarchical visualization techniques and their importance in data analysis. 10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
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Examination	:	**B.Tech V Sem Regular Examinations December-2024**
Course Name	:	**Principles of Programming Languages**
Course Code	:	**A405403**
Branch	:	**Computer Science & Engineering**
Date & Session	:	**26-12-2024 AN** **Duration: 3 hours** **Max. Marks: 60**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries ONE mark. **10x1=10M**

1.	Differentiate between static and dynamic semantic.	1 M
2.	Give the relative advantages of object oriented programming paradigm.	1 M
3.	Define guarded commands.	1 M
4.	List the problems in unconditional branching.	1 M
5.	Differentiate between function and procedure.	1 M
6.	What is a Co-routine? Explain.	1 M
7.	What is message passing? Explain.	1 M
8.	Compare semaphores with monitors.	1 M
9.	What are the features of Haskell?	1 M
10.	List the features of functional programming languages.	1 M

PART-B

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

11.A).	i) Explain the attribute grammar and write the attribute grammar for simple assignment statements.	3M
	ii) Write reasons for studying concepts of programming languages.	7M
	OR	
11. B).	In what fundamental way semantics and syntax differ.	10M
12. A).	i) Explain data types in detail.	5M
	ii) Explain about Overloading Operators.	5M
	OR	
12. B).	i) Explain the unconditional statements with an example.	5M
	ii) Explain about the type of compatibility with an example.	5M
13. A).	i) What is the need for an activation record in implementing a subprogram?	3M
	ii) Explain parameter passing methods with an example.	7M
	OR	
13. B).	What are the characteristics of co-routine features? List the languages which allow co-routines.	10M

(P.T.O..)

14. A). Explain java threads with example. 10M

OR

14. B). Explain the exception handling mechanism in C++ with illustrative example. 10M

15. A). i) Explain the differences between Imperative and functional languages. 5M
ii) Explain the applications of functional programming languages. 5M

OR

15. B). Explain various storage and control statements available in Python. 10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
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Examination : **B.Tech V Sem Regular Examinations December-2024**
Course Name : **Full Stack Development**
Course Code : **CSE-A405312/ CSD-A467403**
Branch : **CSE/ CSD**
Date & Session : **28-12-2024 AN** **Duration: 3 hours** **Max. Marks: 60**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries ONE mark. **10x1=10M**

1. What are the advantages of being a full stack developer? 1 M
2. List the few of the companies using the Node.js technology. 1 M
3. Write the purpose of file modes rs+, ws+. 1 M
4. What is buffer? 1 M
5. What are the primary differences between SQL and NoSQL databases? 1 M
6. What is the driver for MongoDB? 1 M
7. What is a directive in Angular, and why is it used? 1 M
8. What is a component in Angular, and why is it fundamental? 1 M
9. How do you create a new component in React? 1 M
10. What is third party library in react? Is react router third party? 1 M

PART-B

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

11.A). Define Web Framework? Explain with example of design of a Web application written using the Common Gateway Interface (CGI) standard with its disadvantage. 10M

OR

11. B). Describe the key advantages of using the MERN (MongoDB, Express, React, Node.js) stack. 10M

12. A). What are the Basic components that can be included in a URL? Describe the properties of URL object 10M

OR

12. B). Illustrates implementing HTTP clients and servers in Node.js with request and response. 10M

13. A). Describe Understanding Collections and Understanding Document. 10M

OR

13. B). List and describe the various data types supported by MongoDB with examples. 10M

14. A). Explain Creation of a Custom Directive with a Component. 10M

OR

14. B). What are expressions in Angular, and how are they used? How do Angular expressions differ from JavaScript expressions? 10M

15. A). What are React Components? Demonstrate the different types of components in React. 10M

OR

15. B). What are some challenges in traditional web development that React aims to solve? How does React improve the performance of web applications? 10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
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Examination : **B.Tech V Sem Regular Examinations December-2024**
Course Name : **Software Testing Methodologies**
Course Code : **A405406**
Branch : **Computer Science & Engineering**
Date & Session : **30-12-2024 FN** **Duration: 3 hours** **Max. Marks: 60**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries ONE mark. **10x1=10M**

1. What is meant by testing? 1 M
2. What is the intent of path-based testing? 1 M
3. Differentiate Transaction Flow and Data Flow. 1 M
4. List the applications of domain testing. 1 M
5. State Regular Expressions. 1 M
6. Distinguish the sum of product form and product of sum form. 1 M
7. Differentiate between good state graphs and bad state graphs. 1 M
8. What is logic-based testing? 1 M
9. What are the applications of the node reduction algorithm? 1 M
10. List the different types of tools required for test planning. 1 M

PART-B

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

11.A). What are the consequences of bugs? To what extent can testing be used to validate that the program is fit for its purpose? Explain. 10M

OR

11. B). i) Discuss the implementation and application of path testing. 5M
ii) Describe instrumentation and sensitization in path testing. 5M

12. A). Explain the Transaction Flow testing with an example. 10M

OR

12. B). i) What are ugly domains? How testers and programmers treat them. 5M
ii) Discuss domains and testability. 5M

13. A). i) Explain the loop term step in a reduction procedure with an example. 5M
ii) Elaborate the decision tables and structure with examples. 5M

OR

13. B). Describe the procedure for specification validation using KV charts. 10M

14. A). i) Explain about good state and bad state graphs. How to handle bad state graphs. 5M
ii) Elaborate on Transition Bugs and Dead States. 5M

(P.T.O..)

OR

14. B). i) What is the purpose of State testing? Write its limitations. 5M
ii) What is the equivalent state? Explain in detail. 5M

15. A). i) Write an algorithm for Node Reduction and illustrate its applications. 5M
ii) Define graph matrices and evaluate graph matrices with pictorial graphs. 5M

OR

15. B). i) Explain the features of the Jmeter Testing environment. 5M
ii) How to record tests and set checkpoints in win runners? Discuss. 5M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
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Examination : **B.Tech V Sem Regular Examinations Dec-2024/Jan-2025**
Course Name : **Scripting Languages**
Course Code : **A405422**
Branch : **Computer Science & Engineering**
Date & Session : **08-01-2025 FN** **Duration: 3 hours** **Max. Marks: 60**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries ONE mark. **10x1=10M**

1. Define the structure of a Ruby program. 1 M
2. Write the purpose of the Canvas widget in RubyTk. 1 M
3. What does embedding a Ruby interpreter involve? 1 M
4. How can Ruby be embedded into other programming languages? 1 M
5. Define an array in PERL. 1 M
6. What is a scalar expression in PERL? 1 M
7. Define eval in the context of PERL. 1 M
8. List one security issue in Internet programming with PERL. 1 M
9. What is event-driven programming in TCL? 1 M
10. Define the exec command in TCL. 1 M

PART-B

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

11.A). Discuss the various web servers that can be used with Ruby for web applications. 10M

OR

11. B). List and describe different widgets available in RubyTk. 10M

12. A). Describe the Ruby Type System and how it differs from other programming languages. 10M

OR

12. B). Create a Ruby extension (or simulate in pure Ruby) to allocate memory for a list of objects and print their memory addresses. 10M

13. A). Describe the origin and evolution of scripting languages also Write the main characteristics of scripting languages? 10M

OR

13. B). How are subroutines defined and called in PERL? Demonstrate with suitable examples. 10M

14. A). What are packages and modules in PERL, and how are they implemented? 10M

OR

14. B). Create a PERL program that reads and writes to a file, appending each line of input from the user. 10M

15. A). Describe the structure of a basic TCL program and explain the syntax of TCL comparing from other scripting languages. 10M

OR

15. B). How is Perl-Tk used in scripting with TCL and Perl? Give an example of a simple GUI application using Tk. 10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
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Examination : **B.Tech V Sem Regular Examinations Dec-2024/Jan-2025**
Course Name : **Natural Language Processing**
Course Code : **A405421**
Branch : **CSE/ Honors Programme in CSE**
Date & Session : **08-01-2025 FN** **Duration: 3 hours** **Max. Marks: 60**

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries ONE mark. **10x1=10M**

1.	Name the components of NLP.	1 M
2.	List the methods in finding the structure of documents.	1 M
3.	What is parsing?	1 M
4.	Define Shallow Parsing.	1 M
5.	Give an example for commonly used types of named entity.	1 M
6.	Define Event Resolution.	1 M
7.	Write the advantages of semantic parsing.	1 M
8.	Explain frame net.	1 M
9.	List applications of N-gram Language Model	1 M
10.	Why is cohesion important?	1 M

PART-B

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

11.A).	Compare Generative Sequence Classification Methods and Discriminative Local Classification Methods with suitable examples.	10M
	OR	
11. B).	Write different issues and challenges in finding the structure of words.	10M
12. A).	Define Syntax Tree and explain Syntax Tree for the sentence given: "I drive a car to my college" in detail.	10M
	OR	
12. B).	Discuss Models for Ambiguity Resolution in Parsing with examples.	10M
13. A).	Write Pseudocode of the simplified Lesk Algorithm for Knowledge based Or Rule based with examples.	10M
	OR	
13. B).	Discuss Deep understanding of Named Entity Recognition with an example.	10M
14. A).	Explain predicate argument structure with example.	10M
	OR	
14. B).	Write Algorithm for disambiguating words in detail with an Example.	10M
15. A).	Explain N-gram Language Model Evaluation and Estimation with an Example.	10M
	OR	
15. B).	How the problem of Discourse interpretation can be solved by decomposing w.r.t. Hobbs with an Example.	10M

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