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**R18**

Course Code: A30514



**CMR COLLEGE OF ENGINEERING & TECHNOLOGY**

(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations May-2023

Course Name: **COMPUTER NETWORKS**

(Common for CSE, IT & CSM)

Date: 09.05.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

**PART-A**

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

1. State network hardware. 2 M
2. What is Internet? 2 M
3. Explain simplex data link protocol. 2 M
4. Define sliding window protocol. 2 M
5. Compare virtual circuit and datagram networks. 2 M
6. Give the advantages of routing algorithms. 2 M
7. List the importance of port address in transport layer. 2 M
8. Draw the header format of UDP. 2 M
9. Mention the advantages of User Agent in E-mail. 2 M
10. What is JPEG standard? 2 M

**PART-B**

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Explain OSI reference model. 10M
- OR**
11. B). Discuss wireless transmission medium. 10M
12. A). Explain error detection and correction of data link layer. 10M
- OR**
12. B). Explain ALOHA and Carriers Sense Multiple Access (CSMA) protocols. 10M
13. A). Explain shortest path algorithm with suitable sketches. 10M
- OR**
13. B). Describe congestion control algorithms. 10M
14. A). Discuss the services of transport layer and sketch the TCP header format. 10M
- OR**
14. B). Explain TCP connection management in transport layer. 10M
15. A). Explain the concept of Domain Name System (DNS) in application layer. 10M
- OR**
15. B). Describe the concept of streaming audio and video. 10M

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R18

Course Code: A30518



**CMR COLLEGE OF ENGINEERING & TECHNOLOGY**  
(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations May-2023

**Course Name: FORMAL LANGUAGES & AUTOMATA THEORY**  
(Computer Science & Engineering)

Date: 11.05.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

**PART-A**

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

- |   |     |
|---|-----|
| 1. Define Non-deterministic Finite Automata.  | 2 M |
| 2. Define Moore Machine.  | 2 M |
| 3. Construct a regular grammar for $L = \{0^n 11/n \geq 1\}$  | 2 M |
| 4. Build the simplified regular expression for the following regular expression $r(r^*r + r^*) + r^*$ ? | 2 M |
| 5. Define Context Free Grammar.   | 2 M |
| 6. Define Push Down Automata.   | 2 M |
| 7. Describe the applications of the pumping lemma.  | 2 M |
| 8. Discuss about the various representations of Turing Machines.  | 2 M |
| 9. Justify with an example of undecidable problem.  | 2 M |
| 10. Compare recursive and recursive enumerable languages.   | 2 M |

**PART-B**

Answer the following. Each question carries TEN Marks.

5x10=50M

- |  |     |
|--|-----|
| 11.A). Construct NFA with $\epsilon$ which accepts for $0^* 1^* 2^*$ . And convert into NFA without $\epsilon$ transitions.  | 10M |
| <b>OR</b>  |     |
| 11. B). i) Explain the procedure for converting DFA to NFA.  | 5M  |
| ii) Briefly discuss about Finite Automata with Epsilon- Transitions.   | 5M  |
| 12. A). i) Define Regular Expression? Explain about the Properties of Regular Expressions.   | 5M  |
| ii) Construct a DFA for the Regular Language consisting of even number of a's and b's.   | 5M  |
| <b>OR</b>  |     |
| 12. B). i) Prove that regular set $L = \{1^p / p \text{ is a prime}\}$ is not regular.   | 5M  |
| ii) Explain about Pumping Lemma.   | 5M  |
| 13. A). i) Define Ambiguous Grammar. Demonstrate whether the grammar. $S \rightarrow aAB, A \rightarrow bC/cd, C \rightarrow cd, B \rightarrow c/d$ Is Ambiguous or not? | 5M  |
| ii) Construct a PDA for the following grammar $S \rightarrow AA/a, A \rightarrow SA/b$ .   | 5M  |
| <b>OR</b>  |     |
| 13. B). Construct a PDA that accepts the language $L = \{ WCW^R \mid W \in (a+b)^* \}$   | 10M |

(P.T.O..)

14. A). i) Find GNF for  $S \rightarrow AB, A \rightarrow BS/b, B \rightarrow SA/a$ . 5M  
ii) Design a Turing Machine for  $L = \{0^n 1^n \mid n \geq 1\}$  5M

**OR**

14. B). Design a Turing Machine to accept  $L = \{WCW^R \mid W \text{ is in } (a+b)^*\}$ . 10M

15. A). i) Explain Decision Properties of Context-Free Languages. 5M  
ii) Explain the concepts of Undecidable Problems about Turing Machines. 5M

**OR**

15. B). i) Outline an overview of recursively enumerable language. 5M  
ii) Outline the correspondence between P, NP and NP-complete problems. 5M

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**R18**

Course Code: A30527



**CMR COLLEGE OF ENGINEERING & TECHNOLOGY**

(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations May-2023

Course Name: **INFORMATION SECURITY**

(Common for CSE & IT)

Date: 13.05.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

**PART-A**

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

1. Write about strength of DES algorithm. 2 M
2. What are the advantages of Key Distribution? 2 M
3. What is Key Management? 2 M
4. Write the need of Hash Function. 2 M
5. What are the various PGP services? 2 M
6. Describe about Digital signature. 2 M
7. Explain IP Security. 2 M
8. What is SSL handshake protocol? 2 M
9. What is Intrusion detection? 2 M
10. Write the Difference between virus and worm. 2 M

**PART-B**

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Illustrate in detail about various types of Security attacks with neat diagrams. 10M
- OR**
11. B). Explain about Traffic Confidentiality. 10M
12. A). Briefly explain in detail about public key cryptography principles. 10M
- OR**
12. B). Write in detail about Message Authentication and Hash function. 10M
13. A). Discuss the various Digital signatures in security? Explain in detail about each. 10M
- OR**
13. B). What is Email Security? Write in detail about S/MIME. 10M
14. A). Describe in detail about Authentication Header. 10M
- OR**
14. B). What are the web security requirements and write in detail about Transport Layer Security (TLS). 10M
15. A). What is a Firewall? Explain its design principles and types with example. 10M
- OR**
15. B). What is Intruder? Discuss Intrusion detection system with neat diagram. 10M

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**R18**

Course Code: A30528

**CMR COLLEGE OF ENGINEERING & TECHNOLOGY**

(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations May-2023

Course Name: **DATA WAREHOUSING & DATA MINING**

(Common for CSE &amp; CSC)

Date: 13.05.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

**PART-A**

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

1. Define Data Warehousing. 2 M
2. List the different types of fact tables. 2 M
3. Why is data preprocessing needed? 2 M
4. List four issues in data mining. 2 M
5. Explain Support and Confidence in Association. 2 M
6. Define Apriori property. 2 M
7. Explain the accuracy and error rates of a classifier. 2 M
8. Differentiate the supervisor learning and un-supervisor learning. 2 M
9. Define the Outliers. 2 M
10. Show the time complexities of the K-means clustering algorithm. 2 M

**PART-B**

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Apply star schema to draw a diagram for the data warehouse. Suppose that a data warehouse consists of three dimensions time, doctor, and patient, and the two measures are count and charge, where the charge is the fee that a doctor charges a patient for a visit. 10M

**OR**

11. B). Compare the Characteristics of Online Transactional Processing (OLTP) and Online Analytical Processing (OLAP). 10M

12. A). Outline the Knowledge Discovery from Data (KDD) process with a neat diagram. 10M

**OR**

12. B). In real-world data, tuples with missing values for some attributes are a common occurrence. Describe various methods for handling this problem. 10M

13. A). A database has five transactions. Let  $\text{min\_sup} = 60\%$  and  $\text{min\_conf} = 80\%$ . Apply the Apriori algorithm to find all frequent itemsets. 10M

TID	items_bought
T100	{M, O, N, K, E, Y}
T200	{D, O, N, K, E, Y}
T300	{M, A, K, E}
T400	{M, U, C, K, Y}
T500	{C, O, O, K, I, E}

(P.T.O..)

**OR**

13. B). Explain the FP-growth algorithm for discovering frequent itemsets with a suitable example. 10M

14. A). Briefly outline the major steps of decision tree classification with suitable example. 10M

**OR**

14. B). Briefly outline the major steps of Naive Bayesian Classification with suitable example 10M

15. A). Analyze each of the following clustering algorithms in terms of the following criteria: 10M

(i) Shapes of clusters that can be determined; (2) Input parameters that must be specified;

(ii) Advantages and (4) limitations.

(iii) K-Means

(iv) Partitioning Around Medoids (PAM)

(v) Hierarchical

**OR**

15. B). Suppose that the data mining task is to cluster the following eight points (with (x; y) representing location) into three clusters. 10M

A1(2; 10); A2(2; 5); A3(8; 4); B1(5; 8); B2(7; 5); B3(6; 4); C1(1; 2); C2(4; 9): The distance function is Euclidean distance. Suppose initially we assign A1, B1, and C1 as the center of each cluster, respectively. Apply the k-means algorithm to show only.

i) The three cluster centers after the first round of execution and

ii) The final three clusters.

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**R18**

Course Code: A30529



**CMR COLLEGE OF ENGINEERING & TECHNOLOGY**

(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations May-2023

Course Name: **SOFTWARE TESTING METHODOLOGIES**

(Common for CSE & IT)

Date: 13.05.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

**PART-A**

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

1. Distinguish between Error and Bug. 2 M
2. List the differences between Flow Graph and Flow Chart. 2 M
3. Define Data flow testing. 2 M
4. Define Slicing. 2 M
5. List out the properties of nice domain. 2 M
6. Define Path and Path Product. 2 M
7. Define State table. 2 M
8. Outline the Principles of judging a graph as a good or bad state graph. 2 M
9. Define out-degree and in-degree of a node. 2 M
10. Define the term equivalence relation. 2 M

**PART-B**

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Explain path selection and path testing criteria. Identify how they affect testing. 10M
- OR**
11. B). Illustrate various types of Bugs possible in executing a program and discuss their remedies. 10M
12. A). Identify and discuss the complexity of transaction flow representation. 10M
- OR**
12. B). Compare and contrast static versus dynamic anomaly detection. 10M
13. A). Summarize the importance of regular expression in software testing. 10M
- OR**
13. B). Identify and explain various restrictions at domain testing processes. 10M
14. A). Outline the principles of state testing? Discuss advantages and disadvantages. 10M
- OR**
14. B). Identify how decision tables will be helpful in logic based testing. Illustrate with an example. 10M
15. A). Analyze the features of Jmeter Testing environment. 10M
- OR**
15. B). Demonstrate matrix of graphs representation in details. 10M

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**R18**

Course Code: A30516

**CMR COLLEGE OF ENGINEERING & TECHNOLOGY**

(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations May-2023

Course Name: **OPERATING SYSTEMS**

(Common for CSE &amp; IT)

Date: 16.05.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

**PART-A**

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

1. List the objectives of operating system. 2 M
2. What is real time operating system? 2 M
3. Draw the process state transition diagram and define the states. 2 M
4. Identify the benefits of multithreaded programming. 2 M
5. Define Semaphore. Give its primitive operations 2 M
6. How does deadlock differ from starvation? 2 M
7. What is a file directory? 2 M
8. How thrashing is detected by operating system? Give any two ways to resolve it. 2 M
9. List any four system calls used for file manipulation with its functions. 2 M
10. Identify the purpose of access control list regarding file protection in operating system. 2 M

**PART-B**

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Discuss about operating system structures. 10M

**OR**

- 11.B). Classify the types of system calls and explain any three types of it with its functions. 10M

- 12.A). Show how cooperating processes can communicate with each other via a message passing facility with an example. 10M

**OR**

- 12.B). Consider the following set of processes, with the length of the CPU-burst time given in milli seconds: 10M

Process	Burst Time	Arrival Time
P1	8	0.0
P2	4	0.4
P3	1	1.0

i) Draw the Gantt's chart illustrating the execution of these processes using FCFS, preemptive SJF and non-preemptive SJF scheduling techniques.

ii) Find the turnaround time and waiting time of each process using the above techniques.

(P.T.O..)



13. A). Examine how does Peterson's solution satisfy the three requirements of critical section problem with its pseudo code. 10M

**OR**

13. B). Consider the following snapshot of a system 10M

	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2	1	5	2	0
P1	1	0	0	0	1	7	5	0				
P2	1	3	5	4	2	3	5	6				
P3	0	6	3	2	0	6	5	2				
P4	0	0	1	4	0	6	5	6				

With reference to Banker's algorithm

- i) What is the content of the matrix need?
  - ii) Is the system in a safe state?
- If a request from process P1 arrives for (0,4,2,0), can the request be granted immediately?

14. A). Given five memory partitions of 100 KB, 500 KB, 200 KB, 300 KB, and 600 KB (in order). 10M

- i) How would each of the first-fit, best-fit, and worst-fit algorithms place processes of 212 KB, 417 KB, 112 KB, and 426 KB (in order)?
- ii) Which algorithm makes the most efficient use of memory?

**OR**

14. B). Show the situation under which the most frequently used page replacement algorithm generates fewer page faults than the least frequently used page replacement algorithm with an example. 10M

15. A). Explain about file allocation methods and give some examples. 10M

**OR**

15. B). Explain the different techniques used for free space management regarding effective disk space utilization. 10M

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H.T No:

**R18**

Course Code: A30530



**CMR COLLEGE OF ENGINEERING & TECHNOLOGY**  
(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations May-2023

Course Name: ARTIFICIAL INTELLIGENCE

(CSE & IT)

Date: 18.05.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

**PART-A**

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

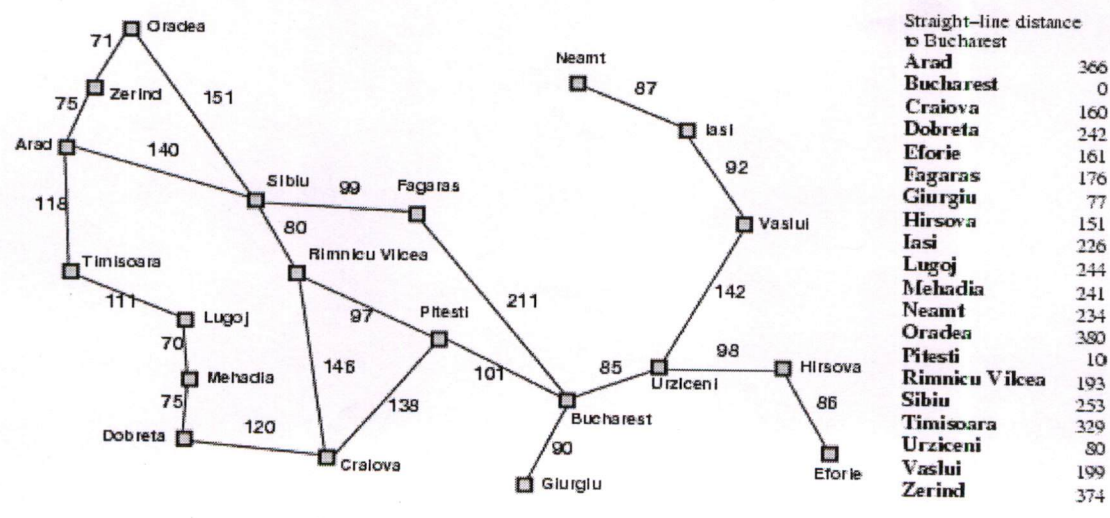
1. Define artificial intelligence system. 2 M
2. Define PEAS in agent system. 2 M
3. Define pruning in a game tree. 2 M
4. What is utility function? 2 M
5. Define propositional logic. 2 M
6. What is first order logic? 2 M
7. Define classical planning problems. 2 M
8. What is a closed world assumptions? 2 M
9. Define a random variables. 2 M
10. What is a decision tree method? 2 M

**PART-B**

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Apply depth first search and Greedy best first search to find the route from Arad to Bucharest in the figure shown below. 10M



OR

- 11.B). Apply Breadth first search and A\* search to find the route from Arad to Bucharest in the above figure. 10M

(P.T.O..)

12. A). Explain graph coloring problem with example. 10M
- OR**
12. B). Explain Min Max Algorithm with example for 2 player games. 10M
13. A). Explain the models for first order logic and its syntax using Backus naur form. 10M
- OR**
13. B). Explain the unification algorithm with example. 10M
14. A). Explain the language of planning problems. 10M
- OR**
14. B). Explain the job shop scheduling problem for assembling two cars. 10M
15. A). Discuss the semantics of bayesian networks with example. 10M
- OR**
15. B). Explain random variables, prior probability and conditional probability with example. 10M

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**R18**

Course Code: C30166



**CMR COLLEGE OF ENGINEERING & TECHNOLOGY**

(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations May-2023

Course Name: **BUSINESS ETHICS & CORPORATE GOVERNANCE**

(Common for ECE, CSE, CSC & CSM)

Date: 22.05.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

**PART-A**

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

1. Define Business Ethics and Corporate governance. 2 M
2. What is Ethical Dilemma? Discuss. 2 M
3. Explain the Moral Development. 2 M
4. List the five myths about business ethics. 2 M
5. Outline the Ethics of Hospital Services. 2 M
6. Brief about software challenges. 2 M
7. Define the Hacking. Discuss. 2 M
8. Discuss the following: a) Auditors, b) Directors. 2 M
9. What is Internal Control? Illustrate. 2 M
10. Role of Banking in Corporate Governance? Any five. 2 M

**PART-B**

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Discuss various principles of ethics and their implications in the present day business world. 10M

**OR**

11. B). Write in detail about modern ethical models for decision making. 10M

12. A). Explain the ethics to be followed in workplace. 10M

**OR**

12. B). Explain ethical issues in HRM. 10M

13. A). Briefly state and explain the code of ethics adopted by the business firms in combating frauds. 10M

**OR**

13. B). Critically Examine the Mindset of Hackers and cyber Criminals. 10M

14. A). Elucidate the structures and processes of corporate governance. 10M

**OR**

14. B). What is Indian model of corporate governance? Explain it comprehensively. 10M

15. A). What are the recommendations of JJ Irani Committee? Discuss. 10M

**OR**

15. B). Does the political lobbying affect corporate governance? Elaborate with examples. 10M

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**R18**

Course Code: C30162



**CMR COLLEGE OF ENGINEERING & TECHNOLOGY**

(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations May-2023

**Course Name: KNOWLEDGE MANAGEMENT**

**(Common for ECE, CSE, IT & CSC)**

**Date: 22.05.2023 AN**

**Time: 3 hours**

**Max.Marks: 70**

**(Note: Assume suitable data if necessary)**

**PART-A**

**Answer all TEN questions (Compulsory)**

**Each question carries TWO marks.**

**10x2=20M**

1. Define Data Information. 2 M
2. What do you mean by Organizational Knowledge? 2 M
3. What do you mean by Knowledge Management System? 2 M
4. What is BPR? 2 M
5. List out the challenges faced by Manufacturing Sector. 2 M
6. List out the challenges faced by service sector industry. 2 M
7. What do you mean by Relationship Management? 2 M
8. What is CRM? 2 M
9. How Net Banking in India works? Explain. 2 M
10. Define Information Architecture. 2 M

**PART-B**

**Answer the following. Each question carries TEN Marks.**

**5x10=50M**

- 11.A). What are the characteristics, nature and Types of Knowledge Management? Explain. 10M
- OR**
11. B). Explain the key components of Organizational Knowledge. 10M
12. A). Explain the importance of Information Technology in Knowledge Management Systems. 10M
- OR**
12. B). Differentiate between Data Warehousing and Data Mining. 10M
13. A). Explain the role of Knowledge Management in Service industry. 10M
- OR**
13. B). What are the challenges and future of Knowledge Management? Explain. 10M
14. A). Explain how Business Ethics is interrelated with Knowledge Management. 10M
- OR**
14. B). Explain the Imperatives of new age in the Knowledge Process. 10M
15. A). How Business Intelligence is interlinked with Internet Platforms? Explain. 10M
- OR**
15. B). Explain the role of Knowledge Management in Organizational Restructuring. 10M

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