SKI MANAKULA VINAYAGAR
ENGINEERING COLLEGE
(Approved by AICTE, New Delhi and Affiliated to Pondicherry University)
(Accredited by NBA AICTE, New Delhi, Accredited by NAAC with 'A' Grade)
MADAGADIPET, PUDUCHERRY - 605 107

M.Tech (Computer science and engineering)

Model Examination, January-2025

Mathematical Foundation of Computer Applications (U23MAT103)

Class I A Section — **Date: 06.01.2025**

Time: 3 Hours — **Max. Marks- 60**

Instructions:

IMP: Verify that you have received question paper with correct course, code, branch etc.

i) All questions are compulsory.

ii) Figure to the right indicate full marks.

iii) Assume suitable data wherever necessary.

Course Outcomes:

CO2 – Basic knowledge of matrix, set theory, Functions and Relationsconcepts needed for designing and solving problems. (K2)

CO3 - Logical operations and predicate calculus needed for computing skill..(K3)

Knowledge Level: K1–Remember, K2–Understand, K3–Apply, K4–Analyze & K5–Evaluate

		Marks	B.L	CO's
	PART A (6 x 2 =12 Marks)			
	Answer all the Questions			
Q.1	**Find the sum and product of the Eigen values of the matrix** $\begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & 2 \\ 1 & 2 & 3 \end{bmatrix}$.	**2**	**2**	**CO1**
Q.2	**Find the rank of the matrix** $A = \begin{bmatrix} 1 & 2 & 3 & -1 \\ 3 & 6 & 9 & -3 \\ 2 & 4 & 6 & -2 \end{bmatrix}$	**2**	**2**	**CO1**
Q.3	**In how many ways a committee consisting of 5 men and 3 women, can be chosen from 9 men and 12 women?**	**2**	**1**	**CO2**
Q.4	**Explain Bi-conditional Statement and give an example.**	**2**	**2**	**CO3**
Q.5	**Construct the truth table for** $P \wedge \neg Q$	**2**	**1**	**CO3**
Q.6	**Write the Chomsky classification of grammar in formal languages.**	**2**	**1**	**CO4**
	PART B (4 x 12 = 48 Marks)			
	Answer any four Questions			
Q.7	**Find the Eigen values and Eigen vector of** $\begin{bmatrix} 2 & 2 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{bmatrix}$	**12**	**3**	**CO1**
Q.8	**Verify Cayley–Hamilton theorem for the given matrix** $A = \begin{bmatrix} 1 & 3 & 7 \\ 4 & 2 & 3 \\ 0 & 2 & 1 \end{bmatrix}$ **and find** A^{-1} **and** A^4.	**12**	**3**	**CO1**
Q.9	**Explain about types of relation and Give an example of an Equivalence relation.**	**12**	**3**	**CO2**
Q.10	**Show that the following implication is a tautology.** $(P \rightarrow (Q \rightarrow R)) \Rightarrow ((P \rightarrow Q) \rightarrow (P \rightarrow R))$	**12**	**2**	**CO3**
Q.11	**(i) Prove that** $\{\downarrow\}$ **is a functionally complete set of connectives.** **(ii) Obtain the PDNF & PCNF for** $(Q \rightarrow P) \wedge (\neg P \wedge Q)$	**12**	**2**	**CO3**
Q.12	**Derive the pumping lemma for Regular Languages.**	**12**	**3**	**CO4**

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MADAGADIPET, PUDUCHERRY - 605 107

M.Tech. (Department of Computer Science and Engineering) (I Year/ II Semester)
CAT 3 Examination, January 2025
Advanced Data Structures and Algorithms (P23CSTD01)

Date: 07.01.2025
Time: 1:30pm – 4: 30 pm **Max. Marks- 60**

Instructions:

IMP: Verify that you have received question paper with correct course, code, branch etc.

i) All questions are compulsory.
ii) Figure to the right indicates full marks.
iii) Assume suitable data wherever necessary.

Q.No	PART A (6 x 2 =12 Marks)	Marks	B.L	CO's
	Answer all the Questions			
Q.1	Define asymptotic notations and give examples.	2	K1	CO1
Q.2	List different types of recurrence relations and their significance in algorithms.	2	K1	CO1
Q.3	Compare AVL Trees and Red-Black Trees in terms of balancing and rotations.	2	K2	CO2
Q.4	Outline the applications of B-Trees in databases.	2	K2	CO2
Q.5	Explain the basic concept of pattern matching in text processing with an example.	2	K2	CO3
Q.6	What is a minimum spanning tree? Provide a real-time application of its usage.	2	K2	CO4
	PART B (4 x 12 =48 Marks)			
	Answer any FOUR Questions			
Q.7	Solve the recurrence relation T(n)=T(n/2)+nT(n) = T(n/2) + nT(n)=T(n/2)+n using the substitution method.	12	K3	CO1
Q.8	Illustrate the working of Quicksort algorithm with an example. Compare its performance in best, average, and worst cases.	12	K4	CO2
Q.9	Analyze the AVL tree insertion process with an example for the sequence of keys: 10, 20, 30, 25, 40, 50, and 35.	12	K4	CO2
Q.10	Explain the Knuth-Morris-Pratt (KMP) pattern matching algorithm and illustrate its working with an example.	12	K3	CO3
Q.11	Apply Dijkstra's algorithm to find the shortest path in the given graph. (Provide a graph with 5–6 nodes).	12	K3	CO4
Q.12	Discuss the concept of multithreaded algorithms. Explain how they can improve the performance of graph processing tasks.	12	K3	CO4

P23CST108

Part - A

1. List the key characteristics of cloud service
   - Administration.
2. Illustrate Virtualisation
3. Summarize hyper threading.
4. Summarize NVP
5. Simplify Geo-distributed cloud data center
6. List the types of digital data.

Part - B

1. Analyse cloud Data management with example
2. Explain in detail about service oriented Architecture
3. Explain briefly about utility computing technologies
4. explain in detail about software defined Networks
5. Discuss in detail about Big data analytics
6. Explain the history of Hadoop and its advantages.

SRI MANAKULA VINAYAGAR
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M.Tech. (Department of Computer Science and Engineering) (I Year/ II Semester)
Model Examination, January-2025
Research Methodology and IPR (P23HSTC01)

Date: 09.01.2025
Time: 3Hrs **Max. Marks- 60**

Instructions:

IMP: Verify that you have received question paper with correct course, code, branch etc.

i) All questions are compulsory.
ii) Figure to the right indicates full marks.
iii) Assume suitable data wherever necessary.

Q.No	PART A (6 x 2 =12 Marks)	Marks	B.L	CO's
	Answer all the Questions			
Q.1	What do you mean by errors in selecting a research problem?	2	K1	CO1
Q.2	Difference between Research Methods and Methodology.	2	K2	CO1
Q.3	What are common forms of plagiarisms in research reports?	2	K2	CO2
Q.4	How can you use effective literature in research?	2	K1	CO2
Q.5	Describe the relationship between Qualitative and Quantitative Research.	2	K1	CO3
Q.6	What is a trademark? How to select a good trademark?	2	K1	CO4
	PART B (4 x 12 =48 Marks)			
	Answer any FOUR Questions			
Q.7	Discuss on the concept of "Research," emphasizing its significance, objectives, and the various sources of research problems.	12	K2	CO1
Q.8	Elucidate the concept of Research Methodology and outline the critical steps involved in the research process	12	K2	CO1
Q.9	Examine the implications of plagiarism within research, highlighting its ethical concerns in the context of literature review.	12	K2	CO2
Q.10	a) Discuss the concept of oral presentations, outlining the key advantages and disadvantages associated with this mode of communication. b) Outline the essential guidelines for effectively delivering an oral presentation of a research report.	12	K2	CO3
Q.11	Outline the structure and components of a research proposal, explaining the purpose of each section within the context of the proposal's objectives.	12	K3	CO3
Q.12	Explain the concept of innovation and explore its different types. Discuss the various forms of innovation and their implications for research and development.	12	K2	CO4

Faculty In Charge **HOD/CSE**

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M.Tech. Department of Computer Science and Engineering

MODEL EXAMINATION, January-2025

SPEECH LANGUAGE PROCESSING (P23CSTD02)

Day and Date: 08.01.2025 Year/Sem/:I/I

Time: 1:30 pm to 4:30 pm Max. Marks- 60 marks

Instructions:

IMP: Verify that you have received question paper with correct course, code, branch etc.

i) All questions are compulsory.

ii) Figure to the right indicate full marks.

iii) Assume suitable data wherever necessary.

		Marks	B.L	CO's
	PART A (6 X 2 = 12 MARKS)			
	Answer all the Questions			
Q.1	List the different phases of NLP.	2	K2	1
Q.2	What is Lemmatization in NLP?	2	K2	1
Q.3	What is Text Classification and sentiment analysis in NLP	2	K2	2
Q.4	How does a neural network approach benefit NLP tasks?	2	K2	2
Q.5	What is GPT in NLP	2	K2	3
Q.6	Define Cross Lingual Transfer Learning.	2	K2	4
	PART B (4 X 12=48 MARKS)			
	Answer any Four Questions			
Q.7	Explain in Detail about POS Tagging and Named entity recognition in NLP.	12	K3	1
Q.8	Discuss Briefly about the N-Gram Model in NLP	12	K4	2
Q.9	Write short note on LSTMs for NLP.	12	K3	2
Q.10	Explain briefly about the BERT transformer architecture in detail	12	K3	3
Q.11	Discuss about the concept of Text indexing and Text Summarization	12	K4	4
Q.12	Discuss in detail about the NLTK Libraries.	12	K3	4

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M.Tech. (Computer Science and Engineering)

(I Year / I Semester/A Section)

MODEL EXAMINATION, January- 2025

Professional Elective I- Block chain and Crypto Currency (P23CSE104)

Day and Date:, 10.1.2025

Time: 01.40 PM to 4.40PM **Max. Marks-60**

Instructions:

IMP: Verify that you have received question paper with correct course, code, branch etc.

i) All questions are compulsory.
ii) Figure to the right indicate full marks.
iii) Assume suitable data wherever necessary.

Course Outcomes

After completion of the course, the students will be able to

CO1 – Understand the design principles of Bitcoin and Ethereum
CO2 – Make use of the Simplified verification payment protocol
CO3 – Understand about cryptocurrency
CO4 – Illustrate the cryptocurrency regulation
CO5 – Implement Blockchain applications

		Marks	B.L	CO's
	PART A (6 x 2 =12 Marks)			
	Answer all the Questions			
Q.1	Differentiate Distributed database and Hadoop distributed file system	2	2	CO1
Q.2	Differentiate Two general problem and byzantine general problem	2	2	CO1
Q.3	Examine private and public blockchain	2	4	CO2
Q.4	Differentiate between hard and soft fork	2	2	CO2
Q.5	Express the term Distributed ledger	2	2	CO3
Q.6	Recognize anomalies in Blackmarket and global economy	2	2	CO4
	PART B (4 x 12 =48 Marks)			
	Answer any FOUR Questions			
Q.7	Illustrate about Memory hard algorithm	12	3	CO1
Q.8	Articulate about Blockchain networks	12	3	CO2
Q.9	Demonstrate Meride Patricia tree and Gas limit	12	4	CO2
Q.10	Categorize about Mining strategy and rewards	12	2	CO3
Q.11	Describe in detail about applications of IOT	12	3	CO4

12. Discuss in detail about medical record management system.