Code No: R18A0509 **R18**

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

II B.Tech II Semester Supplementary Examinations, June 2024

Java Programming

(CSE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

***

			BCLL	CO(s)	Marks
		SECTION-I			
1	A	Describe the access control mechanism in java with an example program.	L2	CO-I	**[7M]**
	B	Write a java program to implement Constructor overloading.	L3	CO-I	**[7M]**
		OR			
2	A	Describe the type conversion and type casting with respect to primitive data types.	L2	CO-I	**[7M]**
	B	Write a java program to print n^{th} Fibonacci number using recursion?	L4	CO-I	**[7M]**
		SECTION-II			
3	A	How can you prevent one class inherited into another class explain with an example program.	L4	CO-II	**[7M]**
	B	Explain the need of super keyword in java with an example programs.	L2	CO-II	**[7M]**
		OR			
4	A	Compare and Contrast interfaces and abstract classes.	L4	CO-II	**[7M]**
	B	What is user defined package? Explain the creations and usage of user defined package with an example.	L2	CO-II	**[7M]**
		SECTION-III			
5	A	Explain the procedure how to handle exceptions using try, catch and finally blocks with an example program.	L2	CO-III	**[7M]**
	B	Write the steps and explain creating a user defined threads and run it with an example.	L2	CO-III	**[7M]**
		OR			
6	A	Write a java program to implement inter-thread communication correctly.	L3	CO-III	**[7M]**
	B	Write a java program to create a user defined exceptions.	L3	CO-III	**[7M]**
		SECTION-IV			
7	A	Write a java program to demonstrate the lambda expressions.	L2	CO-IV	**[7M]**
	B	Draw the architecture of JDBC Type-4 Driver and write the advantages and disadvantages of type-4 driver.	L2	CO-IV	**[7M]**
		OR			
8	A	Describe Collection Framework? Draw its hierarchy. List out its interfaces and Classes.	L2	CO-IV	**[7M]**

	B	Write a java program to read the file content and display it on the console using byte oriented stream class.	L4	CO-IV	**[7M]**

SECTION-V

9	A	Differentiate between AWT and Swings Components.	L3	CO-V	**[7M]**
	B	Explain in details about AdjustmentListener and ActionListerner.	L2	CO-V	**[7M]**
		OR			
10	A	Explain the procedure how to create border layout and how to arrange the components in a border layout with example.	L2	CO-V	**[7M]**
	B	Explain in details about JTextArea with an example.	L2	CO-V	**[7M]**

***

R18

Code No: R18A0508

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

II B.Tech II Semester Supplementary Examinations, June 2024

Formal Language and Automata Theory

(CSE)

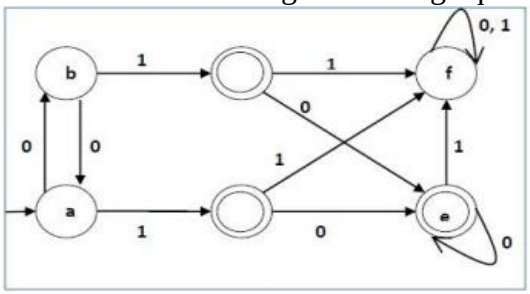
Roll No										

Time: 3 hours **Max. Marks: 70**

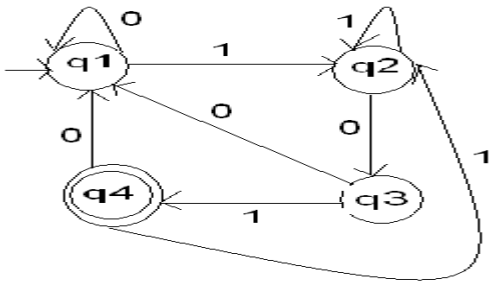
Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

***

			BCLL	CO(s)	Marks
		SECTION-I			
1	A	Define DFA. Construct DFA for the language L having strings x such that, x%5=4 over ∑={0,1}	**L1**	**CO-I**	**[7M]**
	B	Define NFA with ∈ moves. Construct NFA with ∈ moves for the language L having strings with any no. of 0's followed by any no. of 1's over ∑={0,1}.Convert it into NFA and also convert it to DFA	**L1**	**CO-I**	**[7M]**
		OR			
2	A	Construct DFA for the following: L={w | w has both an even number of 0's and even number of 1's }	**L2**	**CO-I**	**[7M]**
	B	Minimize the following DFA using equivalence theorem	**L2**	**CO-I**	**[7M]**



		SECTION-II			
3	A	Define Regular expression. Find out Regular expression for the following automata	**L1**	**CO-II**	**[7M]**



	B	Construct FA for the following regular expressions	**L3**	**CO-II**	**[7M]**

		(0+1)*(1+00)(0+1)*.			
		OR			
4	A	Construct an NFA for the following Regular expression: a) 01[((10)*+111)*+0]*1 b) ((01+10)*00)*	**L3**	**CO-II**	**[7M]**
	B	Write a detail note on the closure properties of regular sets.	**L1**	**CO-II**	**[7M]**
		SECTION-III			
5	A	Illustrate the differences between right linear and left linear grammars with examples	**L2**	**CO-III**	**[7M]**
	B	Write the steps to construct regular expression from given DFA.	**L2**	**CO-III**	**[7M]**
		OR			
6	A	Illustrate the differences between Right most and leftmost derivation of strings with an example	**L1**	**CO-III**	**[7M]**
	B	Construct Regular grammar for the given Finite Automata.(a+b)*ab*.	**L3**	**CO-III**	**[7M]**
		SECTION-IV			
7	A	a) Construct a grammar in CNF of the language L={ $a^n b^m a^n$ | n≥0, m≥ 1} b) Prove the following grammar is ambiguous: S → aS | aSbS | ε.	**L3**	**CO-IV**	**[7M]**
	B	State and prove pumping lemma theorem for regular languages. Also check the language $L=0^n, n>=1$ is regular or not	**L3**	**CO-IV**	**[7M]**
		OR			
8	A	Convert the following grammar to Chomsky Normal Form S→ ABA A→ aA | Є B→ bB | Є and simplify the grammar	**L3**	**CO-IV**	**[7M]**
	B	Design Push down Automata for the language L = $\{a^n b^{2n}$ |n≥1}.	**L3**	**CO-IV**	**[7M]**
		SECTION-V			
9	A	Construct TM for the language $L=1^n 2^n$, where m,n≥1	**L2**	**CO-V**	**[7M]**
	B	Give LR(0) grammar for the following grammar E→E+T / T T→T*F / F F→(E) / a	**L2**	**CO-V**	**[7M]**
		OR			
10	A	Design a T.M for copying of information from one place to the other place. Make all the necessary assumptions and discuss its functioning.	**L1**	**CO-V**	**[7M]**
	B	Discuss briefly about decidability and undecidability problems.	**L1**	**CO-V**	**[7M]**

***

R18

Code No: R18A0507

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

II B.Tech II Semester Supplementary Examinations, June 2024

Design and Analysis of Algorithms

(CSE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

***

			BCLL	CO(s)	Marks
		SECTION-I			
1	***A***	Give the algorithm for matrix multiplication and find the time complexity of the algorithm using step – count method.	**L3**	**CO-I**	**[7M]**
	B	Differentiate between Big-Oh and Omega notation with example.	**L2**	**CO-I**	**[7M]**
		OR			
2	***A***	Write Divide – And – Conquer recursive Merge sort algorithm and derive the time complexity of this algorithm.	**L2**	**CO-I**	**[7M]**
	B	Write the General method of Divide – And – Conquer approach.	**L2**	**CO-I**	**[7M]**
		SECTION-II			
3	***A***	Describe an algorithm to identify bi-connected components in a graph.	**L2**	**CO-II**	**[7M]**
	B	Write an algorithm for AND/OR Graphs.	**L2**	**CO-II**	**[7M]**
		OR			
4	***A***	Describe the 8-queen problem and how it can be solved using backtracking.	**L3**	**CO-II**	**[7M]**
	B	What is a Hamiltonian Cycle? Explain how to find Hamiltonian path and cycle using backtracking algorithm.	**L3**	**CO-II**	**[7M]**
		SECTION-III			
5	***A***	Define Greedy algorithm and find an optimal solution to the knapsack instance n=7.(p1,p2,p3,…p7)=(10,5,15,7,6,18,3) and (w1,w2,w3,…w7)=(2,3,5,7,1,4,1)	**L3**	**CO-III**	**[7M]**
	B	Write the prim's minimum cost spanning tree algorithm and show that the run time is O((n+|E|) log n).	**L4**	**CO-III**	**[7M]**
		OR			
6	***A***	Write a greedy algorithm to the job sequencing with deadlines.	**L3**	**CO-III**	**[7M]**
	B	Define merging and purging rules in 0/1 knapsack problem.	**L2**	**CO-III**	**[7M]**
		SECTION-IV			
7		Explain matrix chain multiplication with an example	**L3**	**CO-IV**	**[14M]**
		OR			
8		Draw an Optimal Binary Search Tree for n=4 identifiers (a1, a2, a3, a4) = (do, if, read, while) P(1:4)=(3,3,1,1) and Q(0:4)=(2,3,1,1,1).	**L3**	**CO-IV**	**[14M]**

SECTION-V

9	***A***	Write an algorithm schema LC Branch and bound which searches for a least-cost answer node and explain.	**L2**	**CO-V**	**[7M]**
	B	Draw the portion of the state space tree generated by FIFO-Branch and Bound for the given knapsack problem m=5 (p1…. p5)=(w1..w5)=(3,6,5,7,9) and m=15.	**L3**	**CO-V**	**[7M]**
		OR			
10	***A***	Write the non-deterministic sorting algorithm and also analyze its complexity?	**L2**	**CO-V**	**[7M]**
	B	Explain the class of P and NP with example?	**L2**	**CO-V**	**[7M]**

***

R18

Code No: R18A0510

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

II B.Tech II Semester Supplementary Examinations, June 2024

Database Management Systems

(CSE & IT)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

***

			BCLL	CO(s)	Marks
		SECTION-I			
1	***A***	a) Discuss about purpose of Database languages. b) List and explain different data models.	**L1**	**CO-I**	**[7M]**
	B	What is DBMS? List the advantages and applications of DBMS?	**L1**	**CO-I**	**[7M]**
		OR			
2	***A***	Define ER Diagram and explain the following kinds of constraints that can be specified in the ER Diagram and write the example for i) key constraint ii) participation constraint	**L1**	**CO-I**	**[7M]**
	B	Explain about Conceptual Design with relevant examples.	**L4**	**CO-I**	**[7M]**
		SECTION-II			
3	***A***	State and explain the operations of relational algebra.	**L4**	**CO-II**	**[7M]**
	B	Explain different types of SQL query languages.	**L2**	**CO-II**	**[7M]**
		OR			
4	***A***	Differentiate between Tuple Relational Calculus (TRC) – Domain relational calculus (DRC).	**L3**	**CO-II**	**[7M]**
	B	Explain about nested query. Write the examples of nested query for the following: a) Find the names of sailors who have reserved both red and green boats b) Find the names of sailors who have reserved all boats	**L4**	**CO-II**	**[7M]**
		SECTION-III			
5	***A***	Differentiate between BCNF with 3NF with examples.	**L3**	**CO-III**	**[7M]**
	B	Illustrate about transitive dependency with example.	**L2**	**CO-III**	**[7M]**
		OR			
6	***A***	Describe about Dependency Preserving decomposition.	**L2**	**CO-III**	**[7M]**
	B	Explain about redundancy and write the problems that can cause.	**L4**	**CO-III**	**[7M]**
		SECTION-IV			
7	***A***	Explain ACID Properties and illustrate them through examples.	**L4**	**CO-IV**	**[7M]**
	B	Brief the procedure to test for serializability.	**L3**	**CO-IV**	**[7M]**
		OR			
8	***A***	Describe about i) locking protocol ii) strict two phase locking	**L4**	**CO-IV**	**[7M]**

		protocol with examples.			
	B	State and explain about Timestamp based Protocols.	**L4**	**CO-IV**	**[7M]**
		SECTION-V			
9	***A***	Discuss about purpose and uses of Buffer Management.	**L2**	**CO-V**	**[7M]**
	B	Explain the purpose of Failure with loss of nonvolatile storage.	**L2**	**CO-V**	**[7M]**
		OR			
10		Describe about Recovery with Concurrent Transactions.	**L2**	**CO-V**	**[14M]**

****

R18

Code No: R18A0061

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

II B.Tech II Semester Supplementary Examinations, June 2024

Managerial Economics and Financial Analysis

(ECE & CSE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

***

			BCLL	CO(s)	Marks
		SECTION-I			
1	***A***	Define managerial economics and explain the features of managerial economics.	**L2**	**CO-I**	**[7M]**
	B	How do you explain the relation of managerial economics with other subjects? Elaborate.	**L2**	**CO-I**	**[7M]**
		OR			
2	***A***	What is managerial economics? Explain its nature and significance.	**L2**	**CO-I**	**[7M]**
	B	What the techniques employed to forecast demand for new products?	**L3**	**CO-I**	**[7M]**
		SECTION-II			
3	***A***	Discuss about Cobb Douglas Production function.	**L3**	**CO-II**	**[7M]**
	B	A Company reported the following results for two period Period Sales Profit I Rs. 20,00,000 Rs. 2,00,000 II Rs. 25,00,000 Rs. 3,00,000 Ascertain the BEP, PV ratio, fixes cost and Margin of Safety.	**L4**	**CO-II**	**[7M]**
		OR			
4	***A***	Explain the production function with reference to Law of variable proportions and substitutability of factors.	**L3**	**CO-II**	**[7M]**
	B	What is break even analysis? How do you determine breakeven point? Illustrate.	**L3**	**CO-II**	**[7M]**
		SECTION-III			
5	***A***	Define monopoly. How is price under monopoly determined?	**L3**	**CO-III**	**[7M]**
	B	Explain the features of partnership.	**L2**	**CO-III**	**[7M]**
		OR			
6	***A***	Define a joint stock company & explain its basic features.	**L2**	**CO-III**	**[7M]**
	B	What is pricing? Explain different methods of pricing.	**L3**	**CO-III**	**[7M]**
		SECTION-IV			
7	***A***	Discuss the factors determine the requirement of working capital.	**L3**	**CO-**	**[7M]**

	B	List out the objectives of accounting and what is accounting cycle.	**L2**	**IV CO-IV**	**[7M]**

OR

8	***A***	Journalise the following transactions in the books of Khanu and Co.	**L3**	**CO-IV**	**[7M]**

2021	**(Rs)**
Jan 2 Started the business with	8,00,000
Jan 4 Bought stationery for	5,000
Jan 4 Purchased goods for cash at	2,00,000
Jan 6 Sold to R.Desai goods worth	1,00,000
Jan 7 Bought goods from Mundra Bros at	80,000
Jan 8 Paid office cleaning charges	1,500
Jan 9 Bought goods from Hari worth	1,00,000
Jan 10 Sold to Sharma and Co; good worth	60,000
Jan 11 Received from R.Desai	50,000
Jan 11 Paid to Hari	90,000
Jan 12 Bought typewriter for	80,000
Jan 13 Paid house rent of	7,500
Jan 14 Paid light charges of	5,000
Jan 15 Paid salary accounting to	50,000

	B	What is the need of capital? Explain types of ca[ital.	**L2**	**CO-IV**	**[7M]**

SECTION-V

9					**L4**	**CO-V**	**[14M]**

Liabilities	**Rs.**	**Assets**	**Rs.**
Equity Share Capital	5,00,000	Land & Building	1,00,000
Preference share capital	2,00,000	Machinery	4,00,000
General Reserve	1,00,000	Furniture	50,000
Secured Loan	3,00,000	Inventory	3,00,000
Sundry Creditors	1,00,000	Sundry Debtors	3,00,000
		Cash/Bank Balance	50,000
	12,00,000		**12,00,000**

Calculate Following Ratios from the above balance sheet:
1. Current Ratio 2. Liquid Ratio 3. Proprietary Ratio 4. Stock Working capital Ratio 5. Capital Gearing Ratio 6. Debt Equity Ratio

OR

10		Explain the ratio analysis in detail	**L4**	**CO-V**	**[14M]**

***

R18

Code No: R18A0555

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

II B.Tech II Semester Supplementary Examinations, June 2024

Data Visualization

(IT)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

			BCLL	CO(s)	Marks
		SECTION-I			
1	***A***	Analyze the difference between inferential statistics and descriptive statistics, providing examples for each.	**L4**	**CO-I**	**[7M]**
	B	Evaluate the role of random variables in inferential statistics, illustrating with a real-world scenario	**L4**	**CO-I**	**[7M]**
		OR			
2	***A***	Interpret the concept of normal probability distribution and discuss its significance in statistical analysis.	**L4**	**CO-I**	**[7M]**
	B	Compare and contrast sampling techniques such as random sampling, stratified sampling, and cluster sampling, elucidating the advantages and disadvantages of each.	**L5**	**CO-I**	**[7M]**
		SECTION-II			
3	***A***	Evaluate the process of adding data to Data Refinery in Watson Studio, outlining the steps involved and discussing the advantages of utilizing Data Refinery for data preparation.	**L5**	**CO-II**	**[7M]**
	B	Compare and contrast different data visualization techniques available in Watson Studio, such as charts, graphs, and dashboards, discussing the suitability of each for different types of data analysis tasks.	**L5**	**CO-II**	**[7M]**
		OR			
4	***A***	Using Watson Studio, create a visualization of a given dataset, employing appropriate visualization techniques to effectively convey key insights and trends present in the data.	**L4**	**CO-II**	**[7M]**
	B	Critically assess the benefits and challenges of using both R and Watson Studio for data manipulation and visualization tasks, considering factors such as ease of use, flexibility, and scalability.	**L5**	**CO-II**	**[7M]**
		SECTION-III			
5	***A***	Analyze the process of working with text data and datetime columns in Pandas, discussing common operations performed on such data types and providing examples of their application.	**L4**	**CO-III**	**[7M]**
	B	Using Pandas, demonstrate the concepts of indexing and selecting data from a DataFrame, explaining the difference between loc and iloc methods and when each should be used.	**L3**	**CO-III**	**[7M]**

OR

6	***A***	Apply the groupby function in Pandas to group data based on specified criteria, perform aggregation operations on the grouped data, and interpret the results obtained.	**L4**	**CO-III**	**[7M]**
	B	Discuss the various methods available for merging/joining datasets in Pandas, such as merge, join, concat, and explain the differences between them with examples, including when to use each method.	**L5**	**CO-III**	**[7M]**

SECTION-IV

7	***A***	Compare and contrast Waffle Charts and Word Clouds in terms of their effectiveness in visualizing different types of data, providing examples of datasets where each visualization technique would be appropriate.	**L5**	**CO-IV**	**[7M]**
	B	Evaluate the process of customizing plots in Matplotlib, including adjusting colors, labels, titles, and axes, to enhance the clarity and visual appeal of the visualizations.	**L5**	**CO-IV**	**[7M]**

OR

8	***A***	Using Matplotlib, create a Waffle Chart to represent the distribution of a categorical variable in a dataset, and interpret the insights derived from the visualization.	**L4**	**CO-IV**	**[7M]**
	B	Critically assess the usability of Matplotlib for data visualization tasks, considering factors such as ease of use, flexibility, and scalability, and discuss potential improvements or alternative tools for specific visualization requirements.	**L5**	**CO-IV**	**[7M]**

SECTION-V

9	***A***	Compare and contrast Seaborn and Folium in terms of their functionalities, ease of use, and suitability for different types of spatial visualization and analysis tasks, providing examples of scenarios where each tool excels.	**L5**	**CO-V**	**[7M]**
	B	Utilizing Folium, create interactive maps with markers, popups, and overlays, demonstrating its capabilities for visualizing and analyzing spatial data, and discuss potential applications in real-world scenarios.	**L4**	**CO-V**	**[7M]**

OR

10	***A***	Evaluate the effectiveness of using Seaborn and Folium for spatial analysis through a case study, discussing how these tools were utilized to solve a specific problem or analyze a particular dataset, and assess the outcomes achieved.	**L5**	**CO-V**	**[7M]**
	B	Critically assess the role of Seaborn and Folium in Python for spatial visualizations and analysis, considering factors such as performance, scalability, and community support, and discuss potential areas for improvement or further development.	**L5**	**CO-V**	**[7M]**

***