Code: 19A544T

II B.Tech. II Semester Supplementary Examinations December 2022
Object Oriented Programming using JAVA
(Computer Science and Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)
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			Marks	CO	BL
		UNIT–I			
1.		Explain different types of control statements available in Java with examples.	14M	1	2
		OR			
2.	a)	List and explain the java buzz words.	8M	1	1,2
	b)	Explain the importance of byte code in java programming	6M	1	2
		UNIT–II			
3.	a)	Explain abstract classes with an example. Compare final and abstract modifiers	7M	2	3
	b)	Illustrate the use of "this" keyword with an example.	7M	2	3
		OR			
4.		Explain the process of creating and accessing packages with suitable example programs.	14M	2	3
		UNIT–III			
5.	a)	What is the difference between checked and unchecked exception? Write the code segments for each type.	7M	3	3
	b)	Explain "throw" and "throws" keywords in Java	7M	3	2
		OR			
6.	a)	Explain Thread life cycle.	7M	3	2
	b)	Illustrate user defined exceptions with an example.	7M	3	3
		UNIT–IV			
7.	a)	Write a generic method to exchange of two different elements in an array	7M	4	3
	b)	Explain overriding methods in a Generic class	7M	4	2
		OR			
8.	a)	How to add a bridge method in Generic class? Explain with an example.	7M	4	3
	b)	With the help of an example program explain how we can return the values from a lambda expression.	7M	4	2
		UNIT–V			
9.	a)	Differentiate ArrayList and LinkedList? Demonstrate LinkedList with a java program	7M	5	2
	b)	Explain Enumeration interface with a java program	7M	5	3
		OR			
10.	a)	Explain Queue interface.	6M	5	2
	b)	What is the difference between Iterator and ListIterator? Demonstrate ListIterator with example program	8M	5	3

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R-19

Code: 19A545T

II B.Tech. II Semester Supplementary Examinations December 2022

Operating Systems

(Computer Science and Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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		Marks	CO	BL

UNIT–I

1. a)	Define a Process? How many states a process has? Explain when a process changes the state with a state diagram.	7M	CO1	L2
b)	Explain the significance of each field in the Process Control Block.	7M	CO1	L2

OR

2.	Explain different process scheduling algorithms with a suitable example? Draw the Gantt chart for each scheduling and also calculate the average waiting time for each of the Scheduling algorithms?	14M	CO1	L2

UNIT–II

3. a)	What resources are used when a thread is created? How do they differ from those used when a process is created?	7M	CO2	
b)	What are the differences between user-level threads and kernel-level threads? Under what circumstances is one type better than the other?	7M	CO2	L2

OR

4. a)	Define a Monitor? Explain Schematic View of a Monitor?	7M	CO2	L2
b)	Show that, if the wait () and signal () semaphore operations are not executed atomically, then mutual exclusion may be violated?	7M	CO2	L5

UNIT–III

5. a)	What are the necessary conditions for a Deadlock? Discuss?	7M	CO3	L2
b)	List and explain the methods for handling Deadlocks?	7M	CO3	L2

OR

6. a)	Why are segmentation and paging sometimes combined into one scheme?	7M	CO3	L4
b)	What is the purpose of paging the page tables?	7M	CO3	L2

UNIT–IV

7. a)	Explain the following concepts concerning files: i) File Attributes ii) File operations iii) File Structures iv) File Types.	8M	CO4	L1
b)	Explain the concept of file sharing?	6M	CO4	L2

OR

8.	What is RAID? Explain different RAID levels with a neat diagram?	14M	CO4	L2

UNIT–V

9. a)	What is an Interrupt? Discuss in detail the interrupt-driven I/O cycle.	7M	CO5	L2
b)	How can you transfer I/O requests to hardware operations?	7M	CO5	L4

OR

10. a)	Give a detailed note on Denial of Service?	7M	CO5	L2
b)	Explain the difference between protection and security? Describe the scheme of capability list to implement protection?	7M	CO5	L5

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Code: 19AC43T

II B.Tech. II Semester Supplementary Examinations December 2022

Probability & Statistics

(Computer Science and Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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		Marks	CO	BL

UNIT–I

1. Calculate the mean, median and mode of the following data relating to weight of 120 articles:

Weight (in gm):	0-10	10-20	20-30	30-40	40-50	50-60
No. of articles :	14	17	22	26	23	18

14M   1   L2

OR

2. Find the coefficient of correlation between x and y from the given data

x	78	89	97	69	59	79	68	57
y	125	137	156	112	107	138	123	108

14M   1   L2

UNIT–II

3. If $P(A) = 1/4$, $P(B) = 1/3$ and $P(A \cup B) = 1/2$ then find $P(A/B)$, $P(B/A)$, $P(A \cap B')$ and $P(A/B')$.

14M   2   L1

OR

4. State and prove Baye's theorem

14M   2   L4

UNIT–III

5. Ten coins are throw simultaneously. Find the probability of getting at least (i) seven heads (ii) six heads

14M   3   L2

OR

6. If the probability of a bad reaction from a certain injection is 0.001, determine the chance that out of 2000 individuals more than two individuals will get a bad reaction.

14M   3   L2

UNIT–IV

7. If we can assert with 95% that the maximum error is 0.05 and P is 0.2. Find the size of the sample.

14M   4   L4

OR

8. A random sample of 100 recorded deaths in a country showed an average life span of 71.8 years. Assuming a population standard deviation of 8.9 years, does this seem to indicate that the mean life span today is greater than 70 years? Use a 0.05 level of significance.

14M   4   L4

UNIT–V

9. A random sample of 10 boys had the following I.Qs: 70, 120, 110, 101, 88, 83, 95, 98, 107, and 100. Do these data support the assumption of population mean I.Q of 100?

14M   4   L4

OR

10. 4 coins were tossed 160 times and the following results were obtained,

No, of Heads	0	1	2	3	4
Frequency	17	52	54	31	6

Under the assumption that coins are unbiased, find the expected frequencies of 0,1,2,3,4 heads and test the goodness of fit for =0.05

14M   4   L4

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II B.Tech. II Semester Supplementary Examinations December 2022
Software Engineering
(Computer Science and Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	BL

UNIT–I

1.	Discus about software process frame work activities with a neat diagram.	14M	CO1	L2

OR

2.	a)	Identify the specialized process models.	9M	CO1	L2
	b)	discus about TSP.	5M	CO1	L2

UNIT–II

3.	Demonstrate the importance of SRS template in Software Engineering	14M	CO2	L3

OR

4.	a)	Discuss in detail about Data Modeling Concepts	9M	CO2	L2
	b)	Describe elements of Analysis model.	5M	CO2	L2

UNIT–III

5.	a)	Implement a Design class for Floor plan	10M	CO3	L3
	b)	Recognize the importance of component level design elements	4M	CO3	L2

OR

6.	a)	Differentiate between a design and an architecture with an example. Explain their importance	7M	CO3	L4
	b)	Examine the translation of requirements model into the design model	7M	CO3	L4

UNIT–IV

7.	a)	List the Theo Mandel Golden Rules.	10M	CO4	L1
	b)	Explain the user interface process.	4M	CO4	L2

OR

8.	a)	Examine the McCabe's Cyclomatic Complexity Metric in Testing	7M	CO4	L4
	b)	Recognize the importance of Debugging in testing.	7M	CO4	L2

UNIT–V

9.	a)	Discuss about Function Point Metric with an example	10M	CO5	L2
	b)	Explain the Heuristic Technique in project estimation	4M	CO5	L2

OR

10.	a)	Recognize the importance of ISO 9000 certification in software industry.	7M	CO5	L2
	b)	List the characteristics of software evolution	7M	CO5	L2

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R-19

Code: 19A541T

II B.Tech. II Semester Supplementary Examinations December 2022

Artificial Intelligence

(Computer Science and Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	BL

UNIT–I

| 1. | | List and explain the applications of AI and Mention some related fields of Artificial Intelligence. | 14M | CO1 | L1 |

OR

| 2. | a) | Explain the state space representation of Water –Jug problem. | 7M | CO1 | L2 |
| | b) | Discuss the problem characteristics. | 7M | CO1 | L2 |

UNIT–II

| 3. | a) | Define Heuristic search and heuristic function | 7M | CO2 | L1 |
| | b) | Differentiate between Uninformed and Informed Search technique | 7M | CO2 | L2 |

OR

| 4. | a) | Discuss Simulated Annealing in detail. | 7M | CO2 | L2 |
| | b) | Illustrate crypt arithmetic problem with an example to relate it to CSP. | 7M | CO2 | L3 |

UNIT–III

| 5. | a) | Differentiate between data, belief, hypothesis, and knowledge. What is tautology? Illustrate with an example. | 7M | CO3 | L2 |
| | b) | Demonstrate with an example how unification algorithm works. | 7M | CO3 | L3 |

OR

| 6. | | Define the term logic. What is the role of logic in Artificial Intelligence? Compare Propositional Logic with First order Logic. | 14M | CO3 | L1 |

UNIT–IV

| 7. | a) | Explain the concept of planning with state space search with an example | 7M | CO4 | L2 |
| | b) | Discuss the significance of ontology | 7M | CO4 | L2 |

OR

| 8. | a) | Discuss mental Events and Objects | 7M | CO4 | L2 |
| | b) | Discuss partial order planning. | 7M | CO4 | L2 |

UNIT–V

| 9. | a) | Illustrate with an example a method for constructing Bayesian networks | 7M | CO5 | L3 |
| | b) | Discuss supervised learning and fuzzy logic in detail. | 7M | CO5 | L2 |

OR

| 10. | | Explain The Axioms of Probability in detail | 14M | CO5 | L2 |

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Code: 19A542T

II B.Tech. II Semester Supplementary Examinations December 2022

Design and Analysis of Algorithms

(Computer Science and Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	Blooms Level
		UNIT–I			
1.	a)	Write performance analysis of an algorithm	7M	CO1	L2
	b)	Explain the differences between an algorithm and pseudocode	7M	CO1	L2
		OR			
2.	a)	How to validate an algorithm. Explain	7M	CO1	L5
	b)	How to design an algorithm. Explain	7M	CO1	L5
		UNIT–II			
3.	a)	Explain the average case analysis of Quick sort in detail	10M	CO2	L2
	b)	Write the best case analysis of quick sort	4M	CO2	L2
		OR			
4.	a)	Explain the differences between divide and conquer and greedy method	7M	CO2	L2
	b)	What are the applications of divide and conquer	7M	CO2	L4
		UNIT–III			
5.	a)	Explain the features of dynamic programming	7M	CO3	L2
	b)	Show the general procedure of dynamic programming	7M	CO3	L4
		OR			
6.	a)	Write the general method of dynamic programming	7M	CO3	L2
	b)	Explain in detail Matrix chain multiplication	7M	CO3	L2
		UNIT–IV			
7.	a)	List the advantages of backtracking method	7M	CO4	L1
	b)	Write the general method of back tracking	7M	CO4	L4
		OR			
8.		Write in detail Travelling sales person problem and discuss how to solve it by using branch and bound method	14M	CO4	L4
		UNIT–V			
9.	a)	How are P and NP problems related	7M	CO5	L4
	b)	Compare NP hard and NP Completeness	7M	CO5	L4
		OR			
10.	a)	Briefly explain the classes NP hard and NP complete	7M	CO5	L2
	b)	Explain the satisfiability problem	7M	CO5	L2

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Code: 19A543T

II B.Tech. II Semester Supplementary Examinations December 2022

Formal Languages and Automata Theory

(Computer Science and Engineering)

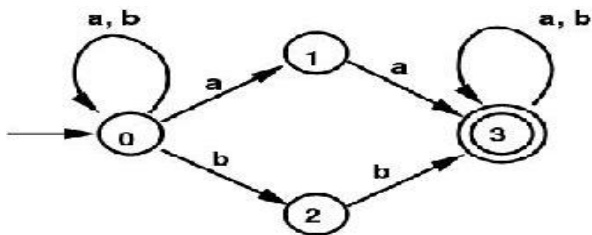Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	Blooms Level

UNIT–I

1. a) Categorize the different types of languages in automata theory? — 4M — 1 — L4

b) Let M be the NFA shown in Figure. Construct Equivalent DFA for the given NFA?


10M — 1 — L5

OR

2. a) Construct a Moore machine to determine the residue mod 3 for each binary string treated as a binary integer. Convert the resultant to Mealy machine? — 10M — 1 — L5

b) What are the difference between NFA and DFA? — 4M — 1 — L5

UNIT–II

3. a) List and explain any six identity rules of the Regular expressions? — 6M — 2 — L1

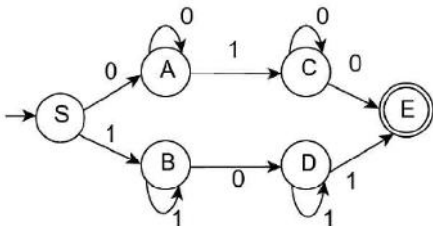b) Convert the following automation to a Regular Expression?

8M — 2 — L4
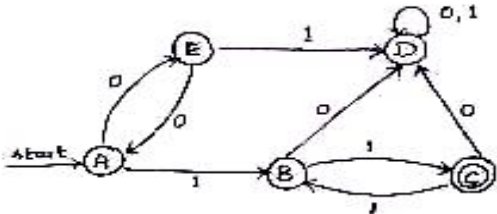
OR

4. a) What is pumping lemma? Write the applications of Pumping Lemma? — 4M — 2 — L1

b) Construct NFA for the regular expression:

    10+(0+11)0*1   10M — 2 — L5

UNIT–III

5. a) Differentiate Leftmost Derivation and Rightmost Derivation with an example? — 4M — 3 — L5

b) Find Right Linear Grammar for the following FA?

10M — 3 — L3

OR

6.	a)	Give the CFG for "The set of all strings of balanced parenthesis"?	6M	3	L3
	b)	Convert the following grammar into CNF?			

        S   aAD

        A   aB/bAB

        B   b

        D   d.   8M   3   L6

UNIT–IV

7.	a)	Write a short note on DPDA and DCFL?	4M	4	L3
	b)	Construct the equivalent PDA for the following CFG?			

        S   0A

        A   0AB/1

        B   1   10M   4   L5

OR

8.	a)	Differentiate PDA by empty stack and final state by giving their definitions?	4M	4	L5
	b)	Construct a PDA that accepts the language $L = \{ww^R / w \in \{a, b\}\}$?	10M	4	L5

UNIT–V

9.	a)	Explain church's hypothesis?	4M	5	L2
	b)	Explain with a neat diagram, the working of a Turing Machine model?	10M	5	L2

OR

10.	a)	What is Undecidability? Explain about PCP and modified PCP?	4M	5	L2
	b)	Design a Turing machine which multiplies two integers?	10M	5	L6

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