Hall Ticket Number :										

R-20

Code: 20A305CT

III B.Tech. I Semester Regular Examinations Dec 2022/Jan 2023

Optimization Techniques

(Artificial Intelligence & Data Science)

Max. Marks: 70 Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. In Part-A, each question carries **Two mark.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A

(Compulsory question)

1. Answer ***all*** the following short answer questions (5 X 2 = 10M)		CO	BL
a)	Discuss about objective function.	CO1	BL1
b)	What is meant by infeasible solution?	CO2	BL1
c)	What is the difference between elimination and interpolation method?	CO3	BL1
d)	Write about Powell's method	CO4	BL1
e)	What is a multi stage decision problem?	CO5	BL1

PART-B

Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

			Marks	CO	BL
		UNIT–I			
2.	a)	Explain a single variable optimization technique.	4M	CO1	BL1
	b)	Calculate the maxima and minima of f(x) = $\frac{x^4}{(x-1)(x-3)^3}$	8M	CO1	BL4
		OR			
3.		Use Kuhn-Tucker conditions to solve Maximize $Z= 2x_1^2 +12x_1x_2-7x_2^2$ subject to $2x_1+5x_2 \leq 98$ and $x_1, x_2 \geq 0$	12M	CO1	BL6
		UNIT–II			
4.		Consider the following L.P model and solve it by using **graphical** method. Maximize $Z = 6x_1+8x_2$ Subject to $5x_1+10x_2 \leq 60$; $4x_1+4x_2 \leq 40$; and $x_1, x_2 \geq 0$	12M	CO2	BL6
		OR			
5.		Consider the following L.P model and find the multiple optimal solution by using the **simplex** method. Maximize $Z = 3x_1+6x_2$ Subject to $x_1+x_2 \leq 5$; $x_1+2x_2 \leq 6$; and $x_1, x_2 \geq 0$	12M	CO2	BL6

UNIT–III

6. Using Exhaustive Search method, find the minimum of f = x (x-1.5) in the interval (0.0, 1.00) to within 10% of the exact value. 12M CO3 BL1

OR

7. Minimize f(x) = x^2 over (-5, 15) using Fibonacci Search method. Take n=7. 12M CO3 BL6

UNIT–IV

8. Write the general iterative procedure of optimization in unconstrained minimization method. 12M CO4 BL1

OR

9. Use reduced gradient algorithm to solve the following optimization problem.
Minimize $2x_1^2+2x_2^2-2x_1x_2-4x_1-6x_2$ subject to
$x_1+x_2+x_3 = 2$; $x_1+5x_2+x_4 =5$; $x_1, x_2, x_3, x_4 \geq 0$. 12M CO4 BL6

UNIT–V

10. a) Explain the computational procedure used in dynamic programming. 6M CO5 BL1

    b) State Bellman's principle of optimality and explain by an illustrative example how it can be used to solve multistage decision problem. 6M CO5 BL1

OR

11. A drug manufacturing concern has ten medical representatives working in three sales areas. The profitability for each representative in three sales areas is as follows. Determine the optimum allocation of medical representatives in order to maximize the profits.

No. of representative		0	1	2	3	4	5	6	7	8	9	10
Profit (thous-ands of Rs.)	Area 1	15	22	30	38	45	48	54	60	65	70	70
	Area 2	26	35	40	46	55	62	70	76	83	90	95
	Area 3	30	38	44	50	60	65	72	80	85	90	85

12M CO5 BL5

*** End ***

Hall Ticket Number :										

R-20

Code: 20A553T

III B.Tech. I Semester Regular Examinations Dec 2022/Jan 2023

Software Engineering

(Common to CSE and AI&DS)

Max. Marks: 70 Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. In Part-A, each question carries **Two mark.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A

(Compulsory question)

1. Answer all the following short answer questions (5 X 2 = 10M)		CO	BL
a)	Illustrate the steps in SDLC model.	CO1	L2
b)	What are the characteristics of good SRS document?	CO2	L1
c)	List the principles of a software design.	CO3	L1
d)	Will exhaustive testing guarantee that the program is 100% correct? Explain.	CO4	L3
e)	Specify the purpose of Software Configuration Management.	CO5	L2

PART-B

Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

			Marks	CO	BL
		UNIT–I			
2.	a)	Specify different software myths and explain.	4M	CO1	L3
	b)	Explain perspective process models.	8M	CO1	L2
		OR			
3.		Define software process. Describe the unified process, personal and Team process models.	12M	CO1	L2
		UNIT–II			
4.		Describe the process of developing SRS (Software Requirement Process) with use cases.	12M	CO2	L3
		OR			
5.		Explain scenario based modeling and UML models for Requirement engineering.	12M	CO2	L3
		UNIT–III			
6.	a)	Explain the concept of Coupling & Cohesion in Component level design.	8M	CO3	L2
	b)	Specify the purpose of class based components.	4M	CO3	L2

OR

7.		Describe different architecture styles and patterns with suitable use cases.	12M	CO3	L2

UNIT–IV

8.	a)	Specify the differences between Black box and white box testing.	4M	CO4	L3
	b)	Explain the process of User interface analysis and design.	8M	CO4	L3

OR

9.	a)	Define unit testing. Explain about unit testing considerations and procedures.	6M	CO4	L3
	b)	Illustrate the steps in Unit testing using suitable examples.	6M	CO4	L3

UNIT–V

10.	a)	Using a suitable example, explain how the following are estimated in the COCOMO estimate technique: Cost, Effort, Duration, and Size of a Project.	6M	CO5	L4
	b)	Categorize various risks in software engineering.	6M	CO5	L3

OR

11.	a)	Illustrate the Characteristics of Software Maintenance.	4M	CO5	L2
	b)	Explain the process of Software Reverse Engineering and specify its purpose.	8M	CO5	L3

*** End ***

Hall Ticket Number :										

R-20

Code: 20A552T

III B.Tech. I Semester Regular Examinations Dec 2022/Jan 2023

Computer Networks

(Common to CSE and AI&DS)

Max. Marks: 70 Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. In Part-A, each question carries **Two mark.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A

(Compulsory question)

		CO	BL
1.	Answer ***all*** the following short answer questions (5 X 2 = 10M)		
	a) List any two advantages and disadvantages of Guided Media.	CO1	L2
	b) What is CRC? What are the rules for selecting the CRC polynomial?	CO2	L1
	c) What is the difference between Adaptive routing and non-adaptive routing?	CO3	L1
	d) List two differences between TCP & UDP.	CO4	L2
	e) What is the structure of DNS address?	CO5	L1

PART-B

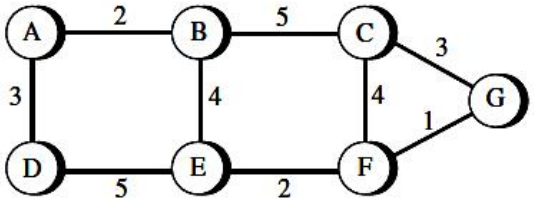
Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

			Marks	CO	BL
		UNIT–I			
2.	a)	How would you compare TCP / IP and OSI Model?	6M	CO1	L2
	b)	What is the principal difference between connectionless communication and connection-oriented communication?	6M	CO1	L3
		OR			
3.	a)	What is the difference between a protocol and a service interface? Explain in terms of ISO reference model?	6M	CO1	L2
	b)	Explain about unguided media with examples.	6M	CO1	L2
		UNIT–II			
4.	a)	State and explain various methods used in controlled access.	6M	CO2	L2
	b)	Write about error detection and correction .The Data word to be sent is 100100, CRC generator polynomial is x^3+x^2+1. What is the bit stream transmitted by the sender and check at receiver whether the received bit stream contains any error or not.	6M	CO2	L3
		OR			
5.	a)	What is called burst error? How can you detect it? Explain.	6M	CO2	L3
	b)	Can you assess the importance of CSMA/CD MAC protocol? Explain the types of Physical address in data link layer	6M	CO2	L2

UNIT–III

6. a) The CIDR notation of a IP address is as follows:
167.199.170.82/27
i) What type of address is the above (Host/network/broadcast)?
ii) What is the network address?
iii) What are the total numbers of hosts that can be connected in that network?
iv) What is the subnet mask?
v) What is the broadcast address of that network? 6M CO3 L3

b) Apply the Distance Vector Routing Algorithm on for the graph below and calculate distance vectors of every node during the iterations

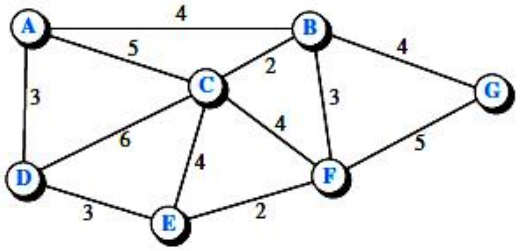


6M CO3 L3

OR

7. a) Illustrate how Packet Switching is used as a connectionless service with an example showing the forwarding/routing tables at each and every router. 6M CO3 L3

b) Apply Dijkstra's algorithm to find the shortest path tree from A to F in the Figure



6M CO3 L3

UNIT–IV

8. a) Demonstrate how connection management is done in TCP 6M CO4 L2

b) The following is the content of UDP Header In Hexadecimal format
CB84000D001C001C
What is the source port no, Destination Port No, Total length of UDP Datagram, length of Data and the Client Process 6M CO4 L3

OR

9. a) What is addressing? Explain addressing concept in transport layer. 6M CO4 L2

b) What is congestion control? How does transport layer support in handling congestion? 6M CO4 L2

UNIT–V

10. a) Explain the concept of MIME in email transfer. 6M CO5 L2

b) What are cookies? Explain the process of Creating and Storing Cookies? 6M CO5 L2

OR

11. a) Explain about DNS in Internet? 8M CO5 L2

b) Write a short note on Audio Compression. 4M CO5 L2

*** End ***

Hall Ticket Number :										

R-20

Code: 20A3051T

III B.Tech. I Semester Regular Examinations Dec 2022 / Jan 2023

Data Warehousing and Data Mining

(Artificial Intelligence & Data Science)

Max. Marks: 70 Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. In Part-A, each question carries **Two marks.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A

(Compulsory question)

		CO	BL
1.	Answer ***all*** the following short answer questions (5 X 2 = 10M)		
	a) List out major issues in data mining.	CO1	L1
	b) When we can say the association rules are interesting?	CO2	L2
	c) What is Decision tree?	CO3	L1
	d) Define Density based method.	CO4	L1
	e) What does web mining mean?	CO5	L2

PART-B

Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

		Marks	CO	BL
	UNIT–I			
2.	a) What is data Mining? Explain the differences between Knowledge discovery and data mining.	6M	1	1,3
	b) Discuss in detail about data reduction in data mining.	6M	1	2
	OR			
3.	a) Explain the steps involved in the Data Mining architecture. Give the sketch of the data mining architecture.	6M	1	2
	b) Discuss about data transformation strategies.	6M	1	3
	UNIT–II			
4.	a) What is measure? Explain types of measures used to compute data warehouse.	6M	2	1,3
	b) Write the algorithm to discover frequent item sets without candidate generation and explain it with an example.	6M	2	3
	OR			
5.	a) Distinguish star schema and snowflake schema.	6M	2	2
	b) What is association analysis? Explain mining various kinds of association rules.	6M	2	1,3

UNIT–III

6.	a)	Why Naïve Bayesian classification is called “naïve”? Explain.	6M	3	3
	b)	Develop the Apriori Algorithm for generating frequent-item set.	6M	3	2

OR

7.	a)	What are the advantages of a decision tree classifier?	6M	3	2
	b)	Explain support vector machines.	6M	3	2

UNIT–IV

8.	a)	What is clustering in data mining? Explain clustering with example.	6M	4	2
	b)	Discuss in detail about various Grid-based methods.	6M	C04	3

OR

9.	a)	Analyze Different Major Clustering Methods.	6M	C04	4
	b)	What is an outlier? Explain the types of outliers.	6M	C04	1,2

UNIT–V

10.	a)	Give a brief discussion about data mining in web search engines.	6M	5	2
	b)	Discuss in detail about Areas of text mining in data mining.	6M	5	2

OR

11.	a)	List out some of the Categories of Multimedia Data Mining.	6M	5	1
	b)	Briefly explain data mining applications.	6M	5	2

*** End ***