

Roll No.

TMC-401

M. C. A. (FOURTH SEMESTER)
MID SEMESTER EXAMINATION, April/May, 2022
GRAPHICS AND VISUAL COMPUTING

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.
(ii) Each question carries 10 marks.

1. (a) Digitize line from (10, 8) to (18, 16) using DDA line algorithm. Plot points on Cartesian graph. 10 Marks

OR

- (b) Give Mid Point Circle generating algorithm. Why algorithm only compute pixel in one octant / 10 Marks

2. (a) Find the reflection of a triangle A (3, 5), B (5, 8) and C (7, 10) object about the line Y = X. 10 Marks

OR

- (b) Show that equation $ax + by + cz + d = 0$ represents a plane. 10 Marks

3. (a) Give the Boundary Fill algorithm for polygon filling. Explain how it is different from Flood fill algorithm. 10 Marks

OR

- (b) Write a short note on viewing transformation. 10 Marks

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4. (a) For successive rotation establish $R(\theta_1 + \theta_2) = R(\theta_1) \cdot R(\theta_2) = R(\theta_2) \cdot R(\theta_1)$. 10 Marks

OR

- (b) What is clipping ? Discuss the Liang-Barsky line clipping algorithm.

10 Marks

5. (a) Give architecture of the Frame Buffer. Define Aliasing and Anti Aliasing. How long would it take to load a 1024×1024 frame buffer with 12 bit per pixel, if 10^3 bits can transfer per second ? 10 Marks

OR

- (b) Find position of triangle with vertex A (0, 0), B (2, 0) and C (2, 2) after rotation about origin through an angle $+ 60^\circ$. 10 Marks

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TMC-402

M. C. A. (FOURTH SEMESTER)

MID SEMESTER EXAMINATION, April/May, 2022

INTERNET OF THINGS

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.

(ii) Each question carries 10 marks.

1. (a) (i) What is the role of IPv6 in IoT ? Explain the features. (7)

(ii) Explain the role of ICMP Protocols. (3) 10 Marks (CO1)

OR

(b) (i) Explain the basic components of IoT. (6) 10 Marks (CO1)

(ii) Write short notes on real-time applications of IoT. (4)

2. (a) (i) Difference between IoT and M2M applications. (5)

10 Marks (CO2)

(ii) Describe in detail about oT Communication Models. (5)

OR

(b) (i) Write notes on Communication APIs. (5) 10 Marks (CO2)

(ii) Discuss the functional blocks of IoT. (5)

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3. (a) Explain Object Classifications and their characteristics of IoT. (10) 10 Marks (CO1)
OR
(b) Describe in detail about IoT Framework. (10) 10 Marks (CO1)
4. (a) Explain Basic Nodal capabilities of IoT. (10) 10 Marks (CO1)
OR
(b) (i) Write a short note on Application Layers Protocols. (5) 10 Marks (CO1)
(ii) Compare Bluetooth and ZigBee Protocols. (5)
5. (a) Explain IoT Data protocol in detail. (10) 10 Marks (CO2)
OR
(b) (i) Write a short note on Big Data Analytics. (5)
(ii) Discuss Embedded System Hardware and Software. (5) 10 Marks (CO2)

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TMC-403(1)**M. C. A. (FOURTH SEMESTER)****MID SEMESTER EXAMINATION, April/May, 2022****CRYPTOGRAPHY AND NETWORK SECURITY****Time : 1½ Hours****Maximum Marks : 50****Note :** (i) Answer all the questions by choosing any *one* of the sub-questions.

(ii) Each question carries 10 marks.

1. (a) Explain the various security services defined by ITU-T. Which security services(s) are guaranteed when using each of the following methods to send mail at the post office ? 10 Marks (CO1, CO3)

(i) Regular SMS

(ii) Regular SMS with delivery conformation

(iii) Regular mail with delivery and recipient signature

(iv) Certified message

(v) Registered mail

OR

(b) Explain the various types of Cryptanalysis attacks. Some archeologists found a new script written in an unknown language. The archeologists later found a small tablet at the same place that contains a sentence in

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the same language with the translation in English. Using the tablet, they were able to read the original script. What type of attack did the archeologists use ? 10 Marks (CO1, CO3)

2. (a) Encrypt and decrypt the message "THIS IS SECRET MESSAGE" using Affine cipher using key (7, 13). 10 Marks (CO2, CO4)

OR

- (b) Explain the S-DES algorithm with its components and the key generator. 10 Marks (CO2, CO4)

3. (a) Explain the concept of Public-key cryptography. How is it different from Private key cryptography ? 10 Marks (CO3, CO5)

OR

- (b) What are the block cipher modes of operation ? Explain the concept of error propagation in any four modes. 10 Marks (CO3, CO5)

4. (a) Encrypt the message "The key is hidden under the door pad" using double Transposition cipher with keys : $K_1 = (3, 2, 6, 1, 5, 4)$ and $K_2 = (4, 5, 2, 6, 1, 3)$ with proper steps. 10 Marks (CO3, CO5)

OR

- (b) Alice often needs to encipher plaintext made of both letters (a to z) and digits (0 to 9). 10 Marks (CO3, CO5)

- (i) If she uses an additive cipher, what is the key domain ? What is the modulus ?

- (ii) If she uses a multiplicative cipher, what is the key domain ? What is the modulus ?

(3)

5. (a) Explain the Blowfish algorithm. How key generation takes place in Blowfish ?

10 Marks (CO4, CO5)

OR

- (b) Encrypt and decrypt the message "IT IS CRYPTOGRAPHY" using Playfair cipher where keyword is "MCAGEU". 10 Marks (CO4, CO5)

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TMC-403(5)

M. C. A. (FOURTH SEMESTER)

MID SEMESTER EXAMINATION, April/May, 2022

DATA MINING AND WAREHOUSING

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.
(ii) Each question carries 10 marks.

1. (a) What is Data Warehouse ? Define the various characteristics of data warehouse. 10 Marks (CO1)

OR

- (b) Differentiate between OLAP and OLTP briefly. 10 Marks (CO1)

2. (a) Illustrate the architecture of Data Warehouse System. Differentiate Data warehouse and Data Mart. 10 Marks (CO2)

OR

- (b) Suppose that the data for analysis includes the attribute age. The age values for the datatuples are (in increasing order) 13, 15, 16, 16, 19, 20, 20, 21, 22, 22, 25, 25, 25, 25, 30, 33, 33, 35, 35, 35, 35, 36, 40, 45, 46, 52, 70. 10 Marks (CO2)

- (i) What is the mean of the data ? What is the median ?

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- (ii) What is the mode of the data ? Comment on the data's modality (i. e., bimodal, trimodal, etc).
- (iii) What is the midrange of the data ?
- (iv) Can you find (roughly) the first quartile (Q1) and the third quartile (Q3) of the data ?
- (v) Give the five-number summary of the data.
3. (a) In real-world data, tuples with missing values for some attributes are a common occurrence. Describe various methods for handling this problem. 10 Marks (CO1)
- OR
- (b) What is data warehouse measures ? Define the classification of measures. 10 Marks (CO1)
4. (a) Define the various OLAP operations with example. 10 Marks (CO1)
- OR
- (b) What is Noisy Data ? Explain the various methods used to smoothen the data. 10 Marks (CO1)
5. (a) Explain the different types of data warehouse servers in detail. 10 Marks (CO2)

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Paper Code: TMI -401

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(M.Sc. (IT)) Midterm Semester Examination 2022

IV. Semester

Paper Name: Design and analysis of Algorithms.

Time: 1.30 Hours

Marks: 50

Note: All questions are compulsory. Each question is of 10 marks.

Q1.

(1X10=10 Marks)

a): Give the Rabin Karp algorithm of string matching.

Or

b): Discuss the Merge Sort algorithm, Set recurrence relation for Merge sort and compute the time complexity.

Q2.

(1X10=10 Marks)

a): What is minimal spanning tree? Give the Prims algorithm to find minimal spanning tree in a given connected weighted graph.

Or

b): Discuss the Back tracking approach, explain it with an example.

Q3.

(1X10=10 Marks)

a). Explain, how we can solve a given 0/1 knapsack problem with help of Branch and Bound techniques?

Or

b): Prove that if $t_1(n) \in O(g_1(n))$ and $t_2(n) \in O(g_2(n))$ then show that $\{t_1(n).t_2(n)\} \in O\{(g_1(n). (g_2(n))\}$.

Q4:

(1X10=10 Marks)

a): Express fractional knapsack problem as L.P.P., Give the Greedy algorithm to solve the fractional knapsack problem.

Or

b): Discuss the algorithms to find the minimum number of scalar multiplication for matrix chain multiplication problem using the dynamic programming approach.

Q5.

(1X10=10 Marks)

a). Give the algorithm of counting sort, discuss its time complexity

Or

b): Explain the Depth first search traversal, give an example.

Mid Semester Examination 2022

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Name of the Program: M.Sc IT
 Name of the Course: Advance Java Programming

Semester: IV
 Course Code: TMI 402

Time: 1-1/2 Hour

Maximum Marks: 50

Note:

- i. Answer all the questions by choosing any one of the sub questions.
- ii. Each question carries 10 marks

Q1	(10 marks) What is the role of statements in jdbc api? Explain use of Callable statement.	CO1 CO2
OR		
Q2	(10 marks) Write a program using prepared Statement to retrieve all the names from database table whose id contains digit '1'.	CO1 CO2
Q2	(10 marks) Why we are initializing through init method not by constructor in servlet?	CO1 CO2
OR		
Q3	(10 marks) Write a code to send two values from login form as login ,password to servlet. Servle will send response 'yes' if login and password fields having three common characters otherwise will send 'no'.	CO1
Q3	(10 marks) What do you understand by abstraction? How we can achieve abstraction? Differentiate between abstraction and full abstraction.	CO1
OR		
Q4	(10 marks) What is the advantage of handling session using HttpSession over cookies?	CO1 CO2
Q4	(10 marks) What are three types of execute methods available in JDBC Api?	CO1 CO2
OR		
Q5	(10 marks) What is transaction process in JDBC Api? Explain by the help of examples.	CO1 CO2
Q5	(10 marks) What are different type of data types used in MySql database? Write a program to insert an image into database.	CO1 CO2
OR		
Q6	(10 marks) What is MetaData ?Explain by the help of proper example.	CO1 CO2

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Mid Semester Examination 2022

Name of the Program: M.Sc. IT

Semester: 4

Name of the Course: .NET Programming using C# Language

Course Code: TMI 403

Time: 1-1/2 Hours

Maximum Marks: 50

Note:-

- (i) Answer all the questions by choosing any one of the sub questions
- (ii) Each question carries 10 marks

Q1	(10 marks)	CO1
(a)	Explain .NET Framework Compilation process with the help of diagram.	
OR		
(b)	What is Assembly? How to give assembly a strong name?	CO1
Q2	(10 marks)	
(a)	Write short notes on i. CLS ii. CTS	CO1
OR		
(b)	What is the difference between Managed code and Unmanaged code?	CO2
Q3	(10 marks)	
(a)	Explain C# with its features. Create a simple HelloWorld Program and define each element used in the program.	CO2
OR		
(b)	Explain Boxing and Unboxing in C# with the help of its code.	CO2
Q4	(10 marks)	
(a)	What is the difference between for loop and foreach loop?	CO2
OR		
(b)	Write a program to check odd or even using conditional(ternary) operator in C#, input should be given by the user.	CO2
Q5	(10 marks)	
(a)	In how many ways we can create string object explain with the help of code.	CO2
OR		
(b)	Explain Call by Value, Call by ref, Call by out parameters and Call by params.	