Roll No. .....

3085

B. Tech. 4th Semester (CSE) Examination – May, 2023

DISCRETE MATHEMATICS

Paper : PCC-CSE-202G

Time : Three hours] *[Maximum Marks : 75*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt ***five*** questions in all, selecting ***one*** question from each Unit. Question No. 1 is ***compulsory***. All questions carry equal marks.

1. (a) Define equivalence relation.

(b) Describe Hasse diagram in short.

(c) State Pigeon-Hole principle.

(d) Define semi group.

(e) Define binary operation.

(f) Define planar graph.

UNIT – I

2. (a) Explain in detail different operations and laws of sets.

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(b) Describe lattices and its different types with the help of suitable examples.

3. Explain the following in short :

(a) propositions

(b) tautologies

(c) logical equivalence

UNIT – II

4. Find the number of arrangements of the letters of the word INDEPENDENCE. In how many of these arrangements :

(a) do the words start with P

(b) do all the vowels always occur together

(c) do the vowels never occur together

(d) do the words begin with I and end in P

5. Solve the difference equations :

(a) $4a_r - 20a_{r-1} + 17a_{r-2} - 4a_{r-3} = 0$

(b) $a_r + 5a_{r-1} + 6a_{r-2} = 3r^2 - 2r + 1$

UNIT – III

6. Define following terms with the help of suitable examples :

(a) congruence relation

(b) group

(c) normal subgroup

7. Define the following terms with the help of suitable examples :

(a) rings

(b) Boolean algebra

(c) principle of duality

UNIT – IV

8. Explain the following terms with the help of suitable example :

(a) graph

(b) isomorphic graph

(c) weighted graph

9. Write short note on :

(a) Binary trees and its traversals

(b) Eulerian paths and circuits

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B. Tech. 4th Semester (CSE) Examination – May, 2023

COMPUTER ORGANIZATION & ARCHITECTURE

Paper : PCC-CSE-204-G

Time : Three hours] *[Maximum Marks : 75*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt any *five* questions in all, selecting *one* question from each Unit. Question No. 1 is *compulsory*. All questions carry equal marks.

1. (a) Convert the following binary numbers to decimal: 111010; 100101.

   (b) Why Gray code is called reflected code ? Explain.

   (c) Write down the list of registers and their functions of the basic computer.

   (d) What is direct associative memory ? Describe.

   (e) What is interrupt ? Explain types of interrupt.

   (f) Explain cache memory mechanism. $2.5 \times 6 = 15$

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UNIT – I

2. Convert the following numbers with the indicated bases to decimals : 15

   (a) $(12121)_3$

   (b) $(4310)_5$

   (c) $(50)_7$

   (d) $(198)_{12}$

   (e) $(125)_7$

3. (a) Explain Logic Microoperations in detail. 7.5

   (b) Explain Shift Microoperations in detail. 7.5

UNIT – II

4. Explain design of accumulator logic in detail. 15

5. Define addressing modes. Explain different types of addressing modes in detail. 15

UNIT – III

6. Describe parallelism. What are its objectives ? Also explain pipelining technique. 15

7. How parallel processing enhances the system performance ? Explain. 15

UNIT – IV

8. Write short notes on the following : 15

   (a) Direct Memory Access

   (b) Software Interrupts

9. What is associative memory? Explain direct mapped cache organization in detail. 15

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B. Tech. 4th Semester (CSE) Examination – May, 2023

OPERATING SYSTEM

Paper : PCC-CSE-206-G

Time : Three hours] *[Maximum Marks : 75*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt any ***five*** questions in all, selecting ***one*** question from each Unit. Question No. 1 is ***compulsory***. All questions carry equal marks.

1. Explain the following briefly:

   (a) Differentiate between paging and segmentation.

   (b) Difference between process and program.

   (c) What is the main purpose of system calls and system program ?

   (d) Explain process state transition diagram.

   (e) Difference between contiguous and noncontiguous memory allocation.

   (f) Difference between long-term scheduler and short-term scheduler. $2.5 \times 6 = 15$

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UNIT – I

(a) Difference between multiprogramming and multitasking operating system. 5

(b) What is an operating system and its functions ? Explain the functions and services of operating systems. 10

(a) Write short notes on: Short term scheduler and Dispatcher. 5

(b) What do you understand by CPU Scheduling ? What are scheduling criteria for FCFS, SJF and SRI F ? 10

UNIT – II

4. (a) What is Deadlock ? Explain various methods for detection, prevention, and recovery of deadlocks. 10

(b) How to avoid deadlocks ? Explain Banker's algorithm briefly. 5

5. (a) What is Interprocess communication (IPC) ? Explain Dinning Philosopher IPC Problem in detail. 8

(b) What is Semaphore ? Explain counting and binary semaphore in detail. 7

UNIT – III

6. (a) Explain the concept of virtual memory and how it is obtained by demand paging and segmentation ? 10

(b) What is Fragmentation ? Explain difference between Internal and External fragmentation briefly. 5

7. Explain the following : 15

(a) Optimal Page Replacement and Least Recently used (LRU)

(b) Demand Paging

UNIT – IV

8. (a) Explain the concept of booting from disk and bad block recovery in disk management. 10

(b) Briefly describe various access methods of file system. 5

9. (a) Explain architecture of Windows operating system in detail. 7

(b) Describe any *two* disk scheduling algorithms with the help of example. 8

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B. Tech. 4th Semester (CSE) Examination – May, 2023

OBJECT ORIENTED PROGRAMMING

Paper : PCC-CSE-208-G

Time : Three hours] *[Maximum Marks : 75*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt any *five* questions in all, selecting *one* question from each Unit. Question No. 1 is ***compulsory***. All questions carry equal marks.

1. Write short notes on :

   (a) What is an interface ? How it is different from class ? $2.5 \times 6 = 15$

   (b) How we can define a class ? How we can access class members ?

   (c) What is encapsulation ? Explain with example.

   (d) What are nested class ? Explain.

   (e) What is virtual base class ? Explain.

   (f) Explain exception handling mechanism.

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UNIT – I

2. Explain the following : 15

   (a) Data hiding

   (b) Container classes

   (c) Polymorphism

3. What is class ? How we create a class ? Explain with example. Also explain empty classes and how it is different from nested classes ? 15

UNIT – II

4. What is inheritance ? What are different forms of inheritance ? Also explain the concept of overriding member functions.

5. (a) What are pointers ? How we declare and initialize pointers ? Also explain the concept of accessing data through pointers. 7.5

   (b) Explain dynamic memory management using new and delete operators. 7.5

UNIT – III

6. Explain the following : 15

   (a) Copy constructor

   (b) Dynamic constructor

   (c) Initializer lists

7. What is operator overloading ? Write a program in C++ to overload '+' operator using friend function. 15

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B. Tech. 4th Semester (CSE) Examination – May, 2023

WEB TECHNOLOGIES

Paper : PCC-CSE-210-G(A)

Time : Three hours] *[Maximum Marks : 75*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt ***five*** questions in all, selecting ***one*** question from each Unit. Question no. 1 is ***compulsory***. All questions carry equal marks.

1. Explain the following : $5 \times 3 = 15$

   (a) URL

   (b) WWW

   (c) XSL

   (d) PHP

   (e) Network

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UNIT – I

2. (a) What is Internet ? Write its history, working, advantages & disadvantages. 8

   (b) Explain web servers with their types also. 7

3. (a) Explain following HTML tags : $2 \times 5 = 10$

   (i) Image tag

   (ii) Frame tag

   (iii) Font tag

   (iv) Table tag

   (v) List tag

   (b) What are cascading style sheets ? Explain the types of CSS in detail. 5

UNIT – II

4. Define XML. Write applications and features of XML. 15

5. Explain SAX (Simple API in XML) and SOAP (simple object access protocol). 15

UNIT – III

6. Write structure and functions of PHP in detail. 15

7. Explain cookies and operator precedence in PHP. 15

UNIT – IV

8. Write short note on :

   (a) AJAX database. 8

   (b) AJAX with PHP 7

9. Write complete description of AJAX technology. 15

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