Roll No. .....

3085

B. Tech. 4th Semester (CSE)

Examination – May, 2025

DISCRETE MATHEMATICS

Paper : PCC-CSE-202-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 ***five*** questions in all, selecting ***one*** question from each Unit. Question No. **1** is ***compulsory***. All questions carry equal marks.

1. ***Compulsory questions :***

(a) Define equivalence relation.

(b) Define universal quantifier.

(c) Define proper subgraph, give example.

(d) With example define weighted graph.

(e) State fundamental theorem of Arithmetic.

(f) Define Semi group and Monoids groups.

UNIT – I

2. (a) If R and S are equivalence relations in the set X, prove $R \cap S$ is a equivalence relation.

(b) Let (A, R) and (B, R') be posets. Then (A × B, R") is a poset, with R" defined as (a, b) R" (a', b') if a Ra' & bR' b' in A & b respectively.

3. (a) If $|A| = n$ then prove $|P(A)| = 2^n$, where P(A) is power set of A.

(b) Let A = {1, 2, 3, 4, 12}. Draw Hasse diagram by considering the partial order of divisibility on A; that is if a, b are in A, $a \leq b$ iff a/b.

UNIT – II

4. (a) If n pigeons fly into n pigeonholes and $m < n$. Then prove one of the pigeonhole with contains atleast $\left(\frac{n-1}{m}\right)+1$ pigeons.

(b) Find an explicit formula for the sequence defined by the recurrence relation $a_n = a_{n-1} + 2a_{n-2} n \geq 2$. With the initial conditions $a_0 = 1$ and $a_1 = 8$.

5. (a) Find the particular solution of the difference equation $a_n - a_{n-1} - 2a_{n-2} = 2n^2$.

(b) Find the explicit formula for the recurrence relation $a_n = 3a_{n-1} + 1 \; n \geq 2$. With initial condition $a_0 = 0, a_1 = 1$.

UNIT – III

6. (a) Let H_1 and H_2 be two subgroups of G. Then product H_1H_2 is subgroup of G iff $H_1H_2 = H_2H_1$.

(b) Let $f : G =$ H be homomorphism of a group G onto H. Then $K(f)$ = Kernal of f, is normal subgroup of G.

7. (a) Prove every subgroup of a cyclic group is cyclic.

(b) Let $n = p_1p_2.....p_n$, where p_i are distinct primes, known as set of atoms. Then prove D_n is a Boolean algebra.

UNIT – IV

8. State and prove Euler's formula for connected Planar Graphs.

9. A finite connected graph G has Euler circuit iff every vertex of G has even degree.

Roll No. .....

3086

B. Tech. 4th Semester (CSE) Examination – May, 2025

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 ***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 : $2.5 \times 6 = 15$

(a) ASCII code.

(b) Convert $(1110)_2$ into Grey code.

(c) Hardwired and Microprogrammed control unit.

(d) Use of IEN and R flip-flop.

(e) MISD computers.

(f) Writing into Cache Memory.

UNIT – I

2. (a) Explain (r's) and (r-l)'s complement for decimal numbers with example. 8

   (b) Explain the applications of Logic microoperations with examples. 7

3. (a) Construct a common bus with three-state gates. 8

   (b) Explain Arithmetic Shift Microoperation with example. 7

UNIT – II

4. (a) Explain BSA instruction with the suitable example. 8

   (b) Differentiate RISC and CISC. 7

5. Explain all Addressing Modes with example. 15

UNIT – III

6. (a) Explain Loosely coupled and Tightly coupled computers. 8

   (b) Explain Amdhal's Law. 7

7. (a) Explain Pipeline hazards. 8

   (b) Explain instruction Pipeline with example. 7

UNIT – IV

8. (a) Explain Privileged and Non-privileged instructions. 8

   (b) Explain the concept of Virtual Memory. 7

9. Explain with example Direct and Set-associative mapping with their limitations. 15

Roll No. .....

3087

B. Tech. 4th Semester (CSE) Examination – May, 2025

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. Question No. 1 is ***compulsory***, selecting ***one*** question from each Section. All questions carry equal marks.

1. (a) What do you mean by Non-contigious memory allocation ? $6 \times 2.5 = 15$

(b) What is semaphore ?

(c) What is context switching ?

(d) What is the difference b/w Multiprograming and Multitasking ?

(e) What are system calls ?

(f) How operating system do the resource management ?

SECTION – A

2. What is operating system ? Explain different types of operating system ? 15

3. What is Process Scheduler ? How many types of process schedulers are in operating system ? Explain with examples. 15

SECTION – B

4. What do you mean by deadlock ? How system could prevent the occurence of deadlock ? 15

5. What is semaphores ? Implement read. Write problem using semaphores. 15

SECTION – C

6. What is Paging ? Describe various page replacement algorithm ? 15

7. What is memory management ? Explain virtual memory management in detail. 15

SECTION – D

8. What is Disk Scheduling ? Explain FCFS, Shortest seek time First, Scan C-Scan, disk algorithm by using these requests :

{176, 79, 34, 60, 92, 11, 41, 114} 15

Current Head Position –50

9. What is file management system ? Explain file access methods in detail. 15

Roll No. .....

3088

B. Tech. 4th Semester (CSE) Examination – May, 2025

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

1. ***Compulsory question :*** $3 \times 5 = 15$

(a) Explain function with default argument.

(b) What is meant by garbage collection in OOPS world ?

(c) Purpose of 'this' keyword.

(d) Concept of Generalization.

(e) Name of operators that can't be overloaded.

UNIT – I

2. (a) Explain basic concepts of OOPS in detail. 7

(b) What is significance of static data & member function in C++ ? 8

3. (a) Write down a C++ pgm to implement function overloading. 5

(b) Write a program to demonstrate friend function of two different classes. 10

UNIT – II

4. Explain different types of combustor in C++ along with Dynamic initialization. 15

5. (a) Write down example to overload unary and binary operator. 10

(b) When is a friend function compulsory in operator overloading. 5

UNIT – III

6. (a) What are different forms of Inheritance ? Give an example for multiple Inheritance. 10

(b) What is containership ? how does it differ form inheritance ? 5

7. (a) When do we make a virtual function 'Pure' ? What are implication of making function a pure virtual function. 7

(b) Explain Dynamic Memory Allocation in C++. 8

UNIT – IV

8. (a) Write down a detailed C++ pgm to demonstrate use of try catch throw & nested try. 7

(b) Write a function template for finding the minimum value contained in an array. 8

9. (a) Write a C++ pgm using function template to find product of two integer or floating point type of data. 7

(b) What is generic programming ? How is it implemented in it ? 8

Roll No. .....

3079

B. Tech. 4th Semester (Bio-Tech) Examination – May, 2025

ORGANIZATIONAL BEHAVIOUR

Paper : HSMC-02-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 ***five*** questions in all, selecting ***one*** question from each Unit. Question No. **1** is ***compulsory***. All questions carry equal marks.

1. Answer the following questions in short : $2.5 \times 6 = 15$

(a) Explain the function of Management.

(b) What are the different sources of conflict ?

(c) What are the different Channels of communication ?

(d) Explain Organizational Structure.

(e) Explain the Concept of Motivation.

(f) Differentiate between Management and Organization.

UNIT – I

2. What do you understand by management ? Explain the various functions of management. How the various functions of management are helpful in achievement of organizational objectives ? 15

3. Explain the difference between management and administration. Also discuss the scope and importance of Management. 15

UNIT – II

4. Define perception and explain the process of perception from the point of view of Organizational Behaviour. 15

5. 'Motivation is the core of management'. Comment. What suggestion would you offer to the management to motivate its staff in an industrial organization ? 15

UNIT – III

6. Explain the concept of team ? How is a team different from a group ? Explain the stages in group development and their implications. 15

7. Identify the leadership styles describing the situation under which each style is useful. What factors influence the choice of leadership style ? 15

UNIT – IV

8. What do you understand by Organizational structure? Explain the different types of Organizational structure and also discuss their effect on human behaviour. 15

9. What is Organizational Change ? Explain the types and factors affecting Organizational Change. 15

Roll No. .....

3142

B. Tech. 4th Semester (CSE) Examination – May, 2025

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. Write short notes on the following : 15

(a) WWW

(b) HTML

(c) SOAP

(d) Cookies

(e) AJAX

(f) Operator Precedence

UNIT – I

2. Describe the following : 15

(i) Web Server

(ii) Protocols of Internet

3. Define CSS. Explain its need and structure. 15

UNIT – II

4. Define XML. Explain its features in detail. 15

5. Explain the following : 15

(i) XML Namespace

(ii) SAX

UNIT – III

6. Give a complete description about PHP. 15

7. Describe the following : 15

(i) Regular expressions in PHP

(ii) PHP operators

UNIT – IV

8. What is AJAX and explain its working ? 15

9. (i) How to connect a database using PHP and AJAX ? 8

(ii) How to create a live search in PHP ? 7

Roll No. .....

3171

B. Tech. 4th Semester (Common for all Branches) Examination – May, 2025

UNIVERSAL HUMAN VALUES-II : UNDERSTANDING HARMONY

Paper : MC-UHV-II

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. Write note on : $2.5 \times 6 = 15$

(a) Sources of happiness

(b) Basic human aspiration

(c) Trust

(d) Health

(e) Universal human order

(f) Prosperity

UNIT – I

2. (a) What is happiness and program for happiness ? How can meaning of happiness be universal ? 7.5

(b) What is basic human aspiration ? How to fulfill these basic aspirations ? 7.5

3. (a) What are guidelines for value education ? What is its content and dimensions covered ? 7.5

(b) What are implications of assuming human being as body ? How are self and body connected ? 7.5

UNIT – II

4. (a) What will be the outcome of feelings based on understanding and based on assumptions & events ? 7.5

(b) What is self-evolution ? How it can be achieved ? 7.5

5. (a) What is self regulation ? What is program for it and its priority ? 7.5

(b) What is physical facility ? What is its role in harmony of self with body ? 7.5

UNIT – III

6. (a) What is right evaluation and its basis ? What are other types of evaluation ? 7.5

(b) What are natural characteristics of human living with animal and human consciousness ? 7.5

7. (a) What is program for human beings in existence for undivided society and universal human order on earth ? 10

(b) What is competence ? What is included in competence ? 5

UNIT – IV

8. How to achieve definitiveness of ethical human conduct ? 15

9. (a) What are steps for transition to humane society ? 7.5

   (b) What should be criteria for technologies for holistic world view ? 7.5

———