

Roll No.

3085

B. Tech. 4th Semester (CSE)

Examination – May, 2026

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 Cartesian product and explain with example.
- (b) Define Euclidean Algorithm.
- (c) Find the generating function of $a_n = 5 \cdot 2^n, n \geq 0$.

- (d) Prove $(M, +)$ is a monoid, where m is set of all $n \times n$ matrices.
- (e) Set $S = \{a, b, c\}$, then find identity permutation of S .
- (f) Define weighted graph and explain with example.

UNIT – I

- 2. (a) Show that the relation of congruence modulo m on the set Z of integers is an equivalence relation.
- (b) If R is a partial order on A , then R^{-1} is also a partial order.
- 3. (a) Let n be a positive integer and D_n denote the set of all divisors of n . Considering the partial order of divisibility in D_n , draw Hasse diagram D_{24} , D_{30} and D_{36} .
- (b) Explain logical equivalence involving Tautologies and contradictions.

UNIT – II

- 4. (a) Among 2,00,000 peoples how many are born at the same time (hour, minute, seconds).
- (b) Solve the recurrence relation $d_n = 2d_{n-1} - d_{n-2}$ with initial conditions $d_1 = 1.5, d_2 = 3$.

5. (a) Find the particular solution of
 $a_n + 5a_{n-1} + 4a_{n-2} = 56.3^n$.

(b) Solve the recurrence relation
 $a_n - 4a_{n-1} = 6.4^n$; $a_0 = 1$.

UNIT – III

6. (a) Prove a finite subset B of group $(A, *)$ is subset of $(A, *)$ iff B is closed w. r. t. $*$.

(b) Prove that centre of a group is its normal subgroup.

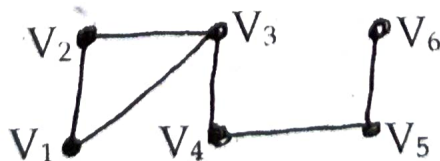
7. (a) Prove every permutation can be expressed as a product of pairwise cycles.

(b) Let B be a finite Boolean algebra and A be the set of atoms of B . If $P(A)$ is the Boolean algebra of all subsets of the set A of atoms. Then prove the mapping $f : B \rightarrow P(A)$ is an isomorphism.

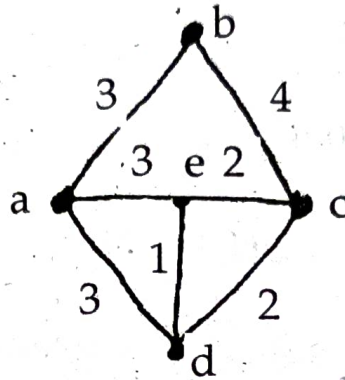
UNIT – IV

8. If G is a connected graph and every vertex of G has even degree, then prove G has an Euler circuit..

9. (a) Find all spanning tree for the graph shown as :



- (b) Find the minimal spanning tree of the following graph :



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3086

**B. Tech. 4th Semester (CSE)
Examination – May, 2026**

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 × 6 = 15

- (a) Arithmetic and logical micro-operations.
- (b) Memory Reference Instructions.
- (c) RISC
- (d) Direct and Indirect addressing modes.

(e) Cache initialization.

(f) Parallel processors.

UNIT – I

2. Solve the following :

$3 \times 5 = 15$

(i) $(r-1)$'s complement of $(10101)_2$

(ii) r 's complement of $(1100101)_2$

(iii) $(F4B)_{16} = (?)_{10}$

(iv) $(736.4)_8 = (?)_{10}$

(v) $(45.335)_{10} = (?)_2$

3. Explain common Bus system for register and memory transfers. 15

UNIT – II

4. (a) Explain Timing and control unit. 7.5

(b) Explain all registers used in basic computer. 7.5

5. What is memory stock ? Explain stack organisation of computer. 15

UNIT – III

6. What is pipelining ? Explain Arithmetic pipelining with diagram. 15

7. (a) Explain Attached array processors. 7.5
(b) What are various pipelining hazards ? Explain in detail. 7.5

UNIT – IV

8. Explain Direct and associative mapping in cache memory. 15
9. (a) What are software interrupts ? 5
(b) Explain interrupt driven architecture for I/O transfers. 10
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3087

**B. Tech. 4th Semester (CSE)
Examination – May, 2026**

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 is contiguous memory allocation.

$6 \times 2.5 = 15$

(b) What is a critical section problem ?

(c) How operating system works as an Interface B/w the user and computer H/w ?

(d) What is the content switching ?

- (e) What is the role of Dispatcher ?
- (f) Explain single user and multi user operating system.

SECTION – A

- 2. What is an operating system ? Explain functions of an operating system and also explain Real time os with suitable example. 15
- 3. What is CPU process scheduling ? Explain FCFS & SJF with suitable example. 15

SECTION – B

- 4. What do you mean by deadlock ? How system could Recover and avoid the deadlock from the system ? 15
- 5. What is Semaphore ? Implement Read-writers problem using semaphore. 15

SECTION – C

- 6. (a) What is memory management ? What is the role of paging in memory management ? 7
- (b) Explain various page replacement algorithms in detail. 8

7. (a) What is virtual memory and how it Play an important role in memory management ? 8
- (b) Explain Internal and External fragmentation with example. 7

SECTION – D

8. What is Disk Scheduling ? Explain FCFS, SSTF, SCAN Disk Scheduling algorithm with example. 15
9. What is file management system in operating system ? Explain all file access methods. 15
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**B. Tech. 4th Semester (CSE)
Examination – May, 2026**

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 following :

15

(i) URL

(ii) CSS

(iii) SAX

(iv) Cookies

(v) AJAX Database

(vi) PHP

UNIT – I

2. Describe the concept of Internet. Also explain its Protocols and advantages. 15

3. Explain the following : 15

(i) Structure of HTML Document

(ii) Internal and external CSS

UNIT – II

4. Explain the following : 15

(i) Types of XML

(ii) Current Applications of XML

5. Describe the following : 15

(i) Document object Model

(ii) SOAP

UNIT – III

6. What is PHP ? Why it is used ? 15

7. Explain the following : 15

(i) String Processing in PHP.

(ii) PHP Database Connection

UNIT – IV

8. Define AJAX. What are the advantages of AJAX in PHP ? 15
9. (i) How to connect My SQL database with PHP ? 8
- (ii) How to create a live search in PHP ? 7
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Roll No.

3171

**B. Tech. 4th Semester (Common for all
Branches) Examination – May, 2026**

**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. Answer the following questions briefly : $6 \times 2.5 = 15$

(a) What is the purpose of Value Education ?

(b) Explain 'Harmony in Family'.

(c) Why do Human Relationships require fulfilment ?

- (d) Briefly explain the necessity of both, value education and skill education.
- (e) How can we say prosperity and happiness are different ideas ?

UNIT – I

2. Write short notes on the following : $2 \times 7.5 = 15$
- (i) Co-existence
 - (ii) Human Consciousness
3. What are the basic guidelines for value education ? 15

UNIT – II

4. Write short notes on any *two* of the following : $2 \times 7.5 = 15$
- (i) Harmony in Family
 - (ii) Basic Aspirations
 - (iii) Body as an instrument of the self
5. Explain and illustrate the basic elements of Self Exploration with relevant examples. 15

UNIT – III

6. What is the relevance of 'Justice' as a Universal Human Value ? Is it a matter of continuous need ? Substantiate your answer with clear examples. 15

7. Elaborate "The major crisis in today's society is that of trust and respect". 15

UNIT – IV

8. Comment briefly on any *two* of the following :

$$2 \times 7.5 = 15$$

- (i) Harmony in Nature
- (ii) Self Regulation
- (iii) Difference between Human and Animal Order

9. Discuss how we can address the Depletion of Natural Resources. 15

OR

Comment on how technology help in regulating the imbalance in nature.

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**B. Tech. 4th Semester (Bio-Tech)
Examination – May, 2026**

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 nature of Management.
- (b) Define organizational Behavior.
- (c) What is Communication ?
- (d) Define Leadership.
- (e) What is organizational structure ?
- (f) Define Planning.

UNIT – I

2. What do you understand by Management ? Explain in brief the main functions of Management. 15
3. What is planning ? State what advantages does planning confer to an organization ? 15

UNIT – II

4. Explain the concept of organizational Behaviour. Discuss its importance and relationship with other fields. 15
5. Define perception. Explain their determinants and applications in organizational Behaviour. 15

UNIT – III

6. Define group and Team. Explain the stages of group development and difference between team and group. 15
7. What is Leadership ? Discuss the concept, function and qualities of an effective Leader. 15

UNIT – IV

8. Define Organizational structure. Explain the types of organizational structure and their impact on human behaviour. 15
9. What is Organizational Change ? Discuss the factors affecting organizational change and resistance to change. 15
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