B. Tech. (CSE) 4th Semester (G. Scheme)

Examination, July–2022

DISCRETE MATHEMATICS

Paper–PCC-CSE-202G

Time allowed : 3 hours] [*Maximum marks : 75*

Note : **Question No. 1 is mandatory.** *Attempt one question from each unit.*

1. (a) Let $f : R \to R$ be defined by

    $f(x) = 2x + 1$ and $g(x)$ be

    defined as $g(x) = x^2 - 2$. Find the formula for composite function gof $6 \times 2\frac{1}{2} = 15$

   (b) Define Equivalence Relation with Example

   (c) State Pigeon Hole Principle.

   (d) Define Algebraic Structure "Monoid" with Example.

   (e) Consider the Set 'Q' of Rational Numbers and let '$*$' be the operation on Q defined by $a * b = a + b - ab$

      (i) Find $3 * 4$

      (ii) Find identity Element

P.T.O.

(f) Define Graph with its Application.

Unit-I

2. (a) (i) Prove that :

$$A \times (B \cup C) = (A \times B) \cup (A \times C) \qquad 3\frac{1}{2}$$

(ii) $(A \cup B)^c = A^c \cap B^c$

(b) Let A be the set of integers and the relation R on A defined by $b = a^r$ for some +ve integer 'r'. Show that R is a Partial order Relation. $7\frac{1}{2}$

3. (a) If f and g are one-one and onto functions. Then prove that composite function 'gof' is also one-one and onto function. $7\frac{1}{2}$

(b) Determine the validity of the following argument.

$$p \to q, \neg p + \neg q \qquad 7\frac{1}{2}$$

Unit-II

4. (a) Find the minimum number of Students that can be admitted to a college so that there are at least 15 Students from one of the 50 States. $7\frac{1}{2}$

(b) Suppose a Bookcase shelf has '5' History texts, 3 Sociology texts, 6 Anthropology texts, 4 Psychology texts. Find the number 'n' of ways a Student can choose　　　　　7½

    (i) one of the texts

    (ii) one of each type of text

5. (a) Solve the Recurrence Relation

$$a_n - a_{n-1} - a_{n-2} = 2n^2$$　　　　　7½

  (b) Solve the Recurrence Relation using concept of generating function.

$$a_n = a_{n-1} + a_{n-2} \ \forall \ n \geq 2, \ a_0 = 1, \ a_1 = 1$$

Unit-III

6. (a) Explain Group with properties and examples of finite Group and Infinite Group.　　　　　7½

  (b) Prove that order of a Subgroup is a divisor of order of a Group.　　　　　7½

7. (a) Explain 'Field' with its Application　　　　　7½

  (b) Convert the given function in conjuctive Normal form; $f(x, y, z) = x'yz' + x'y'z$　　　　　7½

Unit-IV

8. (a) State the Differences between Eulerian Graph and Hamiltonian Graph with Example. 7

   (b) Define the following terms : 7

   (i) Planar Graph and Bipartite Graph

   (ii) Regular Graph and Complete Graph

9. (a) State and Prove Euler's Formula for Graph 7

   (b) What do you mean by Spanning Tree ? Explain algorithm to find Minimal Spanning Tree. 7

B.Tech. (CSE) 4th Semester (G Scheme)

Examination, July–2022

OMPUTER ORGANIZATION AND ARCHITECTURE

Paper– PCC-CSE-204-G

me allowed : 3 hours]   [*Maximum marks : 75*]

ote : *Attempt any five questions in all. Questions No. 1 is compulsory.*

(a)   What do you mean by term "register transfer"?

(b)   Convert octal 736.4 to decimal.

(c)   What is the requirement of common bus System?

(d)   Discuss Relative Address Mode.

(e)   What is role of Strobe Control in asynchronous data transfer?

(f)   Define Write-through and Write-back cache.

$6 \times 2.5 = 15$

(a)   Explain Subtraction of Unsigned Numbers in Complement number system with appropriate example.   8

(b)   Explain Floating - Point Representation in detail.   7

3. (a) Explain selective set, selective complement selective clear.

    (b) List and explain Logic Micro operation details.

4. (a) Explain Stored Program Organization in detail

    (b) Draw and explain input-output configuration basic computer.

         Also explain Input-Output instructions.

5. (a) Explain four types of instruction formats in de with suitable example.

    (b) Explain various Data Transfer Instruction details with suitable example.

6. (a) Discuss four-segment instruction pipeline diagram(s).

    (b) How the throughput of a system can be enhan with parallel mechanisms?

7. (a) Explain Flynn's classification of Computer details.

    (b) Explain Asynchronous data transfer Handshaking method.

8.   (a)   What is priority interrupt? Explain Daisy Chaining
             in details   7

      (b)   Write a detailed note on Direct Memory Access
             (DMA).   8

9.   (a)   What do you mean by cache memory? Draw and
             explain the block diagram of cache Memory.
             Discuss associative mapping in organization of
             cache memory. Discuss direct mapping in
             organization of cache memory.   8

      (b)   What do you mean by address space and memory
             space in virtual memory? Also explain the relation
             between address space and memory space in virtual
             memory.   7

B.Tech. (CSE) 4th Semester (G-Scheme)
Examination, July–2022
OPERATING SYSTEM
Paper– PCC-(CSE-206-G)

Time allowed : 3 hours]   [Maximum marks : 75

Note : Attempt any *five* questions in all. **Question number 1 is compulsory**. Select **one** question from each section.

1. (a) What is the difference between multitasking and multiprogramming operating system?

   (b) What is critical section problem?

   (c) What is a Process? Explain state transition diagram.

   (d) What is contiguous memory allocation?

   (e) What is context switching?

   (f) What is Schedular in operating system? 6×2.5=15

Section - A

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

3. What is Process Scheduling? What is the Scheduling criteria for SRTF and Found Robin Scheduling?   15

[P. T. O.

Section - B

4. What is Semaphores? Implement Readers-Writers problem using Semaphores. 15

5. What is deadlock? What are the conditions to Prevent deadlock in system? 15

Section - C

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

7. (a) What is memory management? Explain Contiguous and Non-Contiguous memory allocation? 8

   (b) Explain Internal and External fragmentation with example. 7

Section - D

8. What is File management system in operating system? Explain all File access methods. 15

9. What is Disk scheduling? Explain FCFS, SSTF Scan and C-Scan disk scheduling algorithm with example? 15

B.Tech. (CSE) 4th Semester (G-Scheme)
Examination, July–2022
OBJECT ORIENTED PROGRAMMING
Paper– PCC-(CSE-208-G)

Time allowed : 3 hours]　　　　[Maximum marks : 75

Note : **Question No. 1 is compulsory.** The students have to attempt **five** questions, in total and **one** question from each unit.

1. Write short note on the following:　　　$6 \times 2.5 = 15$

   (i) Class and object

   (ii) Dangling pointers

   (iii) Abstract class

   (iv) Early and late binding

   (v) Access/Visibility specifiers

   (vi) Header files and library files

Unit - I

2. (a) Differentiate between procedural programming and object-oriented programming.　　7

   (b) Explain basic concepts of objects oriented programming.　　8

3. (a) What is friend function? What are the merits a demerits of using friend functions? Illustrate w example.

   (b) When do we declare a member of a class stati Explain with example. Also write the properti of static members.

Unit - II

4. (a) Define inheritance? Explain various types inheritance with example.

   (b) What is the ambiguity in multiple and multip inheritance? How is it resolved?

5. (a) Explain dynamic initialization with new ( ) a delete ( ) function.

   (b) Write a program to show the need of virtual ba class.

Unit - III

6. (a) What is constructor? Explain various types constructor with the help of program.

   (b) Explain virtual functions with example.

7. (a) Define operator overloading? What are the ru for overloading Operators? List the operators cannot be overloaded using friend function member function.

3088

(b) Write a program to overload binary (+) operator using member function and friend function.   8

Unit - IV

8. (a) What is generic programming? How it is implemented in C++? Write a program for multiple parameterized class template.   8

(b) Define exception handling. What are the benifits of using exception handling mechanism in a program?   7

9. (a) What are the benefits of using function template in C++? Illustrate with example.   7

(b) WAP to handle multiple exceptions using single catch block. Also discuss the concept of returning an exception.   8

B. Tech. (CSE) 4th Semester (G Scheme)

Examination, July-2022

WEB TECHNOLOGIES

Paper–PCC-CSE-210 G (A)

(Only For Fresh Students)

Time allowed : 3 hours]   [Maximum marks : 75

Note : Attempt *five* questions in all, selecting **one** from each Unit. **Q. No. 1 is compulsory.**

1. Write short note on following :   15
    - (i) URL
    - (ii) DOM
    - (iii) PHP
    - (iv) Query
    - (v) Web Server

Unit–I

2. Define Internet. Explain History and Protocols of Internet.   15

3. Give a complete description about Cascading Style Sheet. (CSS).   15

Unit–II

4. Describe the following :   15
    - (i) XSL
    - (ii) SOAP

5. Describe XML namespace and features of XML in detail.   15

Unit–III

6. Give a complete description about PHP. 15

7. Explain the following : 15
    (i) Client/Server Environment
    (ii) Cookies

Unit–IV

8. Describe the following : 15
    (i) AJAX with PHP
    (ii) AJAX Database

9. Give a complete description about AJAX. 15

B. Tech. (CSE) 4th Semester (G Scheme)

Examination, July-2022

WEB TECHNOLOGIES

Paper–PCC-CSE-210 G (A)

(Only For Fresh Students)

Time allowed : 3 hours]   [Maximum marks : 75

Note : Attempt *five* questions in all, selecting **one** from each Unit. **Q. No. 1 is compulsory**.

1. Write short note on following :   15
    (i) URL
    (ii) DOM
    (iii) PHP
    (iv) Query
    (v) Web Server

Unit–I

2. Define Internet. Explain History and Protocols of Internet.   15

3. Give a complete description about Cascading Style Sheet. (CSS).   15

Unit–II

4. Describe the following :   15
    (i) XSL
    (ii) SOAP

5. Describe XML namespace and features of XML in detail.   15

3142-P-2-Q-9(22)   [P. T.O.

Unit–III

6. Give a complete description about PHP. 15

7. Explain the following : 15
   (i) Client/Server Environment
   (ii) Cookies

Unit–IV

8. Describe the following : 15
   (i) AJAX with PHP
   (ii) AJAX Database

9. Give a complete description about AJAX. 15

**B.Tech. (Bio-Tech) 4th Semester (G Scheme)
Examination, July–2022
ORGANIZATIONAL BEHAVIOUR
Paper– HSMC-02G**

Time allowed : 3 hours]   *[Maximum marks : 75*

Note : Section-A is compulsory. Attempt total five questions, selecting at least one question from each unit. All questions carry equal marks.

Section-A

1. Attempt **all** the six questions: 2.5×6 = 15

    (i)   Explain the difference between management and administration.

    (ii) What do you mean by Learning?

    (iii) Explain the scope of Perception.

    (iv) What do you mean by Organizational Development?

    (v)   Define the concept of conflict management.

    (vi) Define the importance of organization structure.

Section-B

Unit - I

2. What do you mean by management? Discuss the characteristic and importance of management in present scenario in India.

3. What role are performed by the Managers? Explain each role in the context of a business enterprise.

Unit - II

4. What do you mean by Organizational Behavior? Explain the importance of OB in present scenario in an industrial environment.

5. "Motivation is the core management". Discuss. What can management do to motivate the worker in an industrial organization?

Unit - III

6. Define communication. Why has communication assumed importance in modern industrial organization? Explain with suitable examples.

7. Give a comprehensive definition of leadership. Enumerate the traits of a good leader.

Unit - IV

8. Describe the nature and significance of organizational culture. What is an organic culture?

9. Why is change resisted in organization? What can the management do to overcome it?