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B.Tech. (CSE) 5th Semester (G-Scheme)
Examination, December–2025

MICROPROCESSOR

Paper– ESC-CSE-301-G

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

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

1. Write short notes on the following: 15

   (a) Interrupt

   (b) Physical Address

   (c) Logical Instruction

   (d) 8237

   (e) ALE

   (f) Memory Segmentation

Unit-I

2. Draw and explain Architecture of 8085. 15

3. (a) Explain the concept of Demultiplexing of address and data Lines in 8085. 7.5

   (b) Write an Assembly Language program on multiplication of 8 bit numbers. 7.5

Unit-II

4. Explain the functional block diagram of 8086. 15

5. (a) Explain various data types addressing modes of 8086. 7.5

   (b) Describe instruction formats of 8086. 7.5

Unit-III

6. (a) Describe various arithmetic Instructions of 8086. 7.5

   (b) Explain various branch types Instruction of 8086. 7.5

7. Explain the following Instruction: 15

   (a) STC

   (b) Test

   (c) RRC

   (d) LAHF

   (e) XOR

Unit-IV

8. Explain 8255 programmable peripheral Interface chip in detail. 15

9. (a) Discuss 8253 in detail. 7.5

   (b) Explain the working of 8259 A chip 7.5

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B.Tech (CSE) 5th Semester G-Scheme

Examination, December-2025

COMPUTER NETWORKS

Paper-PCC-CSE-303-G

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

Note : *Attempt **five** questions in total. **Question No. 1 is compulsory** and **one** question from each unit. All questions carry equal marks.*

1. Write short note on the following : 6×2.5=15

(a) Connectionless and Connection-Oriented Services

(b) UDP

(c) Transmission Modes

(d) ARP

(e) Types of Attacks

(f) VLANs

Unit-I

2. (a) What is computer Network ? Explain Goals and Usages of Computer Networks. 7

(b) Explain OSI Model in detail. 8

3. (a) What is Topology ? Explain different types of topologies with example. 7

(b) Explain function and services of Data link Layer in detail. 8

Unit-II

4. What is Medium Access Control ? Explain Random Access Protocols with the help of suitable example. 15

5. (a) Define IP Addressing. Explain IPv4 addressing with Subnetting and Supernetting with example. 8

(b) Given the IP address **23.58.16.45** with subnet mask **255.0.0.0**, determine the answers to the following questions: 7

(i) What is the IP class (A, B or C) of the address 23.58.16.45 ?

(ii) How many network bits are used with the subnet mask 255.0.0.0 ?

(iii) How many host bits remain in this network ?

(iv) How many host addresses are available per network (total addresses) ?

(v) What is the Network ID (network address) for this IP and mask ?

(vi) What is the network broadcast address for this network ?

(vii) What are the first and last usable host addresses in the network ?

Unit-III

6. Explain different types of Unicast Routing Algorithms with example. 15

7. Write short on the following:

(a) TCP 8

(b) FTP 7

Unit-IV

8. (a) Explain standard and fast ethernet in detail. 8

(b) What is congestion ? Explain various types of congestion control techniques. Also explain quality of service. 7

9. (a) Explain SONET/SDH in detail. 7

(b) What is Cryptography ? Explain different types of techniques used for Cryptography. 8

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B.Tech. (CSE) 5th Semester (G-Scheme)
Examination, December–2025
FORMAL LANGUAGES & AUTOMATA
Paper–PCC-CSE-305-G

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

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

1. Explain the following: 2.5×6=15

(i) Epsilon NFA

(ii) FSM

(iii) Regular Language

(iv) GNF

(v) Halting Problem

(vi) Multitape Turing Machine

Section-A

2. Write down a short note on: 15

(a) Minimization of finite automata

(b) Acceptability of a string by a finite automata

3. Construct a Mealy Machine from the given transition table of Moore Machine. 15

Present State	Next State		
	a = 0	a = 1	λ
→ q_0	q_3	q_1	0
q_1	q_1	q_2	1
q_2	q_2	q_3	0
q_3	q_3	q_0	0

Section-B

4. State and prove Arden's method with example. 15

5. State and prove pumping lemma for regular languages. Also show that $L = \{a^i b^i c^i \mid i \geq 1\}$ is not regular. 15

Section-C

6. Design a PDA for the language. 15

$L = \{a^n b^n c^m \mid n \geq 1, m > 1\}$

7. Explain chomsky hierarchy of grammar in detail. 15

Section-D

8. What do you mean by Turing Machine? Explain the design and Halting problem of Turing Machine. 15

9. Write a short note on the following: 15

(a) Undecidability

(b) Rice's theorem

B.Tech. (CSE) 5th Semester (G-Scheme)
Examination, December–2025
DESIGN AND ANALYSIS OF ALGORITHMS
Paper– PCC-CSE-307-G

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

Note: *Attempt **five** questions selecting one question from each section and **question no. 1 is compulsory.***

1. (a) Write the Selection sort algorithm briefly. 15

(b) What is time and space complexity?

(c) Explain general method of divide and .conquer method.

(d) Write the algorithm for binary search tree with the help of example.

(e) Briefly explain Stack and its operations.

(f) Discuss the Queue and its operations.

Section-A

2. (a) What is Quick- sort? How it performs? Write a recursive algorithm for same. Also calculate time complexity and space complexity. 8

(b) Sort the following using Bubble sort: 7

70, 40, 20, 50, 15, 35, 20, 60

Also calculate its running time complexity.

3. (a) Explain Strassen's matrix multiplication with example. 10

(b) Discuss the Asymptotic Notation (Big OH, Omega and Theta) with the help of diagram. 5

Section-B

4. (a) There are 5 jobs whose profits (p1, p2, ... p5) = (20; 15, 10, 5, 1) and deadlines (d1, d2, ... d5) = (2, 2, I, 3, 3). Find the optimal solution that maximizes profit on scheduling these jobs. 8

(b) We are given n objects and a knapsack or bag Object i has a weight w I and the knapsack has a capacity m. If a fraction xi, 0 <=x i <=1, of object i is placed into the knapsack, then a profit of pi xi is earned. The objective is to obtain a filling of the knapsack that maximizes the total profit earned. How to solve this problem using Greedy method? 7

5. (a) Explain optimal binary search tree with example using dynamic programming. 8

(b) What is minimum spanning tree? Explain Prim's Algorithm with the help of example. 7

Section-C

6. (a) What is 8 queen's problem? How 8 queen's problem can be solved using backtracking? 8

(b) What are Hamiltonian cycles? How Hamiltonian cycle problem can be solved using backtracking? 7

7. (a) Discuss the Traveling Salesperson problem using branch & bound method. 8

(b) Explain the 0/1 knapsack problem using branch & bound method taking suitable example. 7

Section-D

8. (a) Show that the Hamiltonian-path problem is NP-complete. 8

(b) Define the classes problems P, NP and NP Complete. How are they related to each other? Explain. 7

9. (a) What are NP Hard and NP Complete Problems? Briefly explain. 8

(b) What are NP hard graph and NP scheduling problems? Explain in detail. 7

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B.Tech. (CSE) 5th Semester (G-Scheme)
Examination, December–2025
PROGRAMMING IN JAVA
Paper– PCC-CSE-309-G

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

Note: *Attempt **five** questions selecting **one** question from each unit and **question no. 1 is compulsory.***

1. Write a short note on:
   (a) What is type casting? Explain. 2.5
   (b) How we compile and execute a program in JAVA? Explain. 2.5
   (c) What do you mean by Java Virtual Machine? Explain. 2.5
   (d) What is method chaining? Explain. 2.5
   (e) What is the use of string buffer class? 2.5
   (f) What are abstract classes & methods? 2.5

Unit–I

2. Write a program in JAVA to explain client-side programming. How client sends a request to server? Explain. 15

3. Explain the Object-Oriented programming structure of Java. Also explain different data types and operators used in Java programming language. 15

Unit-II

4. Explain the following:
   (a) Implicit & Explicit class loading
   (b) Method overriding 15

5. (a) Write a program in JAVA to show the use of super keyword. 7.5
   (b) What is Interface? Why multiple inheritance is not possible In JAVA? Explain interface with writing a program in JAVA. 7.5

Unit III

6. What is exception handling? Write a program in JAVA to explain exception handling mechanism in detail. 15

7. (a) How we declare a thread class in java? Explain with example program. 7.5
   (b) What is AWT programming? Explain AWT components in detail. 7.5

Unit-IV

8. Write a short note on following: 15
   (a) Comparable and Comparator Interfaces
   (b) Prepared statements

9. What is javap tool? How we can create javap tool? Write a program in java that works as javap tool. 15

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B.Tech. (CSE) Elective-I 5th Semester (G-Scheme)
Examination, December–2025
SOFTWARE ENGINEERING
Paper– PEC-CSE-311-G

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

Note: ***Question No. 1 is compulsory .*** *Attempt **five** questions in total selecting **one** question from each unit.*

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

(a) Staffing

(b) Transform Mapping

(c) Software reliability

(d) Data Dictionary

(e) DFD

(f) Transform Flow

Unit-I

2. (a) Explain Spiral model of Software life cycle model in detail. 7.5

(b) What is Software Crisis? Explain. 7.5

3. Explain the following: 15

(c) Empirical Estimation Techniques.

(d) RAD model

Unit-II

4. (a) What do you mean by SRS? Explain in detail. 7.5

   (b) Explain in detail about Classical Analysis Methods. 7.5

5. (a) Define different effective modular design techniques in detail. 7.5

   (b) Explain design concepts of System Design in detail. 7.5

Unit-III

6. Explain the following: 15

   (a) Architectural Complexity

   (b) Verifications and Validation

7. Explain Recovery testing, stress testing, security testing and Performance Testing in detail. 15

Unit-IV

8. Give a complete description about Computer Aided Software Engineering. 15

9. Explain the ISO 9001 Standard. Also explain Software configuration management. 15