Total No. of Questions : **08** Roll No. : 0701.....

B.Tech FIFTH SEMESTER EXAMINATION JUNE-2025

(Branch : Computer Science & Engineering)

CS-5301 DISTRIBUTED SYSTEM

Time : Three Hours ***Maximum Marks : 70***
Min. Pass Marks : 22

Note : Attempt any five questions. Each question carries equal marks.

1(a)	Discuss the architecture of distributed systems.	***07***
(b)	List some advantages and disadvantages of distributed systems.	***07***
2(a)	Explain characteristics of good distributed file system.	***07***
(b)	Explain basic concepts of Distributed shared memory and its types.	***07***
3(a)	Explain Bully and Ring election algorithm with suitable examples.	***07***
(b)	What do you understand by remote procedure call (RPC). Also explain its implementation and mechanism.	***07***
4(a)	Explain challenges in distributed deadlock detection and resolutions.	***07***
(b)	What is distributed scheduling? Also explain components of load distributing algorithm.	***07***
5(a)	Explain distributed database management system and its types.	***07***
(b)	Explain case study of Amoeba distributed system.	***07***
6(a)	Explain the Lamport's logical clock and their limitations? Also explain the vector clock.	***07***
(b)	Explain different approaches for deadlock handling.	***07***
7(a)	Enlist load distribution algorithm and explain any one of them.	***07***
(b)	Differentiate among the following properties of a distributed file system - Availability, Recoverability and Robustness.	***07***
8	Explain **any two** (i) Design issues in Distributed systems (ii) Distributed Multimedia (iii) Fault tolerant services	***14***

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Total No. of Questions : **08** Roll No. : 0701.....

B.Tech FIFTH SEMESTER EXAMINATION JUNE-2025

(Branch : Computer Science & Engineering)

EC-5351 (OEL-I) MICROPROCESSOR & INTERFACING

Time : Three Hours ***Maximum Marks : 70***
Min. Pass Marks : 22

Note : Attempt any five questions. Each question carries equal marks. All parts of a question must be attempted at the same place.

1(a) Discuss the evolution, types and architecture of microprocessors with suitable diagrams.

(b) Enlist the type of memories of microprocessors and discuss RAM and ROM clearly.

2(a) Draw the PIN Diagram of 8086 and discuss the function of each pin clearly. Give some applications of 8086 also.

(b) Draw the functional block diagram of 8086 and explain the function of each block clearly also enlist the general-purpose registers of 8086.

3(a) Discuss the 80386, 80486 and Pentium microprocessor system with suitable diagram.

(b) Write an assembly language program for 8086 microprocessors to arrange a given series of hexadecimal bytes in ascending order and the series are 53,25,19,02.

4(a) Draw and discuss the main features of 8259A Programmable Interrupt controller.

(b) Draw the PIN diagram of 8257 DMA controller and discuss the function of each pin clearly.

5(a) Draw the block diagram of 8051 micro-controller and explain the function of each block clearly.

(b) Explain the various operating modes of 8051 microcontroller and name the special function registers of 8051.

6(a) Draw the functional block diagram of 8254 programmable interval timer explain the function of each block clearly.

(b) Compare the microprocessor and microcontroller on the basis of the components used in them and functionality of both.

7(a) Discuss various addressing modes of 8086 giving suitable examples.

(b) Write down the PIN description and signal description in maximum and minimum modes of 8086.

8 Write short notes on **any two** :

(i) Memory segmentation of 8086
(ii) 8279 programmable key board and display I/O Interface
(iii) Interrupts and flag registers of 8086
(iv) Addressing modes and interrupts of 8051

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Total No. of Questions : **08** Roll No. : 0701.....

B.Tech FIFTH SEMESTER EXAMINATION JUNE-2025

(Branch : Computer Science & Engineering)

CS-5303 THEORY OF COMPUTATION

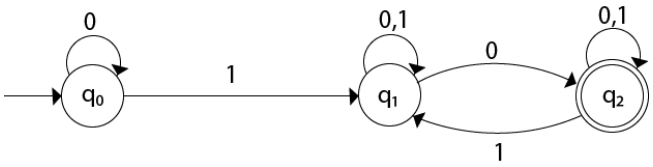
Time : Three Hours ***Maximum Marks : 70***
Min. Pass Marks : 22

Note : Attempt any five questions. Each question carries equal marks.

1(a) Define DFA with suitable example. ***07***

(b) Describe regular set and regular grammar with suitable example. ***07***

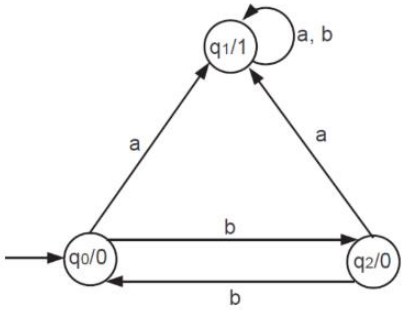
2(a) Convert following NFA into its equivalent DFA. ***07***



(b) For $\Sigma = \{a, b\}$, construct DFA that accept the sets consisting of ***07***

(i) All strings with at least one a
(ii) All strings such that each string should have '011' as substring.

3(a) Convert the following Moore machine into Mealy machine : ***07***



(b) Prove that $L = \{a^n : n \text{ is a perfect square}\}$ is not regular using pumping lemma. ***07***

4(a) What is a derivation tree? Also explain ambiguity with suitable example. ***07***

(b) Construct a grammar that generates the following language : ***07***

(i) $L = \{a^n b^{n+1} : n \geq 0\}$ (ii) $L = \{a^{2n} b^n : n \geq 0\}$

5(a) Construct an PDA for the language : $L = \{w \in \{a, b\}^* : n_a(w) = n_b(w)\}$ ***07***

(b) Describe the closure properties of CFLs. ***07***

6(a) Construct an PDA for the language : $L = \{ww^R : w \in \{a, b\}^+\}$ ***07***

(b) Illustrate the decision properties of CFLs. ***07***

7(a) Construct Turing machines that will accept the following languages on {a, b} : ***07***

$L = \{a^n b^m a^{n+m} : n \geq 0, m \geq 1\}$

(b) Illustrate the various variations of Turing machine with example. ***07***

8(a) Describe the Halting problems of Turing machine. ***07***

(b) Differentiate among P, NP, NP hard problems with examples. ***07***

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Total No. of Questions : **08** Roll No. : 0701.....

B.Tech FIFTH SEMESTER EXAMINATION JUNE-2025

(Branch : Computer Science & Engineering)

CS-5304 SOFTWARE ENGINEERING & PROJECT MANAGEMENT

Time : Three Hours ***Maximum Marks : 70***
Min. Pass Marks : 22

Note : Attempt any five questions. Each question carries equal marks.

1(a) What is the principle aim of software engineering discipline? Explain in details. ***07***

(b) What is SDLC? Explain the phases of SDLC in software engineering. ***07***

2(a) What are software crisis? What are the main reasons of software crisis? ***07***

(b) Explain CMM with its various levels. ***07***

3(a) What are the activities of requirement elicitation and analysis? Explain. ***07***

(b) Describe various software prototyping techniques. ***07***

4(a) Explain how a software development effort is initiated and finally terminated in the spiral model. Also explain why the spiral life cycle model is to be considered as meta model? ***07***

(b) Discuss about the basic principles of software design in software engineering. ***07***

5(a) Differentiate between top down and bottom up design strategies. ***07***

(b) Discuss the impact of Cohesion and Coupling in software design phase. ***07***

6(a) What is black box testing? Is it necessary to perform it? Explain various test activities. ***07***

(b) What is unit testing in software engineering? Explain with suitable example. ***07***

7(a) Write down comparison between code inspection and code walk-through. ***07***

(b) List and explain the steps in Risk management process. ***07***

8(a) Define Scheduling of Project and how task network helps in scheduling. ***07***

(b) Write short note on ***any two*** : ***07***

(i) Software Maintenance
(ii) COCOMO model
(iii) Use case approach

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Total No. of Questions : **08** Roll No. : 0701.....

B.Tech FIFTH SEMESTER EXAMINATION JUNE-2025

(Branch : Computer Science & Engineering)

CS-5305 COMPUTER NETWORK

Time : Three Hours ***Maximum Marks : 70***
Min. Pass Marks : 22

Note : Attempt any five questions. Each question carries equal marks.

1(a) Compare the OSI Reference Model and the TCP/IP Model in terms of architecture, layers, and functionality. What are the major differences and similarities? ***07***

(b) Analyze the differences among circuit switching, packet switching, and message switching in terms of latency, resource allocation and efficiency. Provide examples where each would be most suitable. ***07***

2(a) Explain the working principle of CSMA (Carrier Sense Multiple Access). How does it help reduce collisions in a network? ***07***

(b) Examine how IEEE 802 protocols define MAC and physical layer standards for LANs. Choose two specific standards (e.g. 802.3 and 802.11) and compare their purpose and functionality. ***07***

3(a) A company has been assigned the IP address block 192.168.10.0/24. Design a subnetting scheme to create at least 6 subnets with equal number of hosts. Show all calculations. ***07***

(b) Define routing in computer networks. List and briefly describe any three commonly used routing algorithms. ***07***

4(a) Discuss how TCP manages connection release. Compare it with connection establishment in terms of process and complexity. ***07***

(b) Describe the structure of a TCP header. Briefly explain the purpose of any five fields. ***07***

5(a) Discuss the differences between POP3 and IMAP in email access. In what scenarios is each protocol more suitable? ***07***

(b) What is remote login? Describe the working of TELNET or SSH and mention their differences in terms of security and use. ***07***

6(a) Discuss the characteristics and applications of various transmission media : Twisted Pair, Coaxial Cable, Fiber Optic Cable and Wireless Transmission. ***07***

(b) What is framing in data communication? Explain the different techniques used for framing in a data link layer. ***07***

7(a) Discuss how poor routing decisions and inadequate network design can lead to congestion and inefficiency in large-scale networks. Suggest ways to mitigate these problems. ***07***

(b) How does TCP handle error recovery and ensure in-order delivery? Discuss the mechanisms used for detection and correction. ***07***

8 Write short notes on **any two** : ***14***

(i) Cabling system (ii) Piggy bagging
(iii) Address Resolution Protocol (iv) Types of Firewalls

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