

SSESA's Science College, Congress Nagar, Nagpur.
M.Sc. - Semester-I
Assignment List
2019-20

Paper I: Discrete Mathematical Structure

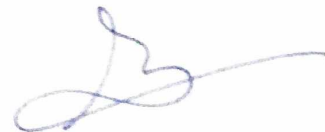
- Q.1 Explain the principle of mathematical induction.
- Q.2 Prove De'Morgan's theorem for set.
- Q.3 Explain the different Connectives used for mathematical logic.
- Q.4 State and explain pigeonhole principle.
- Q.5 Explain properties of Relations. What is equivalence relation?
- Q.6 Explain transitive closure and Warshall's algorithm with suitable example.
- Q.7 What is permutation functions? Explain.
i) Cyclic permutation
- Q.8 Explain the terms:
i) Euler paths and Circuits
ii) Hamiltonian paths and Circuits
- Q.9 Explain with example:
i) Partially ordered set
ii) Hasse diagrams
- Q.10 What is lattice? Explain with example.
- Q.11 What is minimal spanning trees? Explain.
i) Kruskal's algorithm
ii) Prim's algorithm
- Q.12 Explain Isomorphism and Homomorphism.
- Q.13 What is Phase structure grammar? Explain with example
- Q.14 Explain: i) Semigroup ii) Monoid
- Q.15 What is Finite state machine? Explain with example.



Co-ordinator(M.Sc.)
Department of Computer Science

Assignment List
M.Sc.(Computer Science)Semester-III
Software Engineering
2019-2020


1. Explain Software Myths and also explain role of software engineering in detail.
2. Describe the Capability Maturity Model Integration (CMMI).
3. Describe the different characteristics of software & Also explain changing nature of software in brief.
4. Write a short note on: a) Waterfall model b)Spiral model.
5. What is mean by Process? Explain process framework activities.
6. Explain Requirement Engineering & functions used in RE.
7. What is system Modeling ? How graphical model can be used to present software system.
8. Explain a) Context model b) Behavioural model.
9. Explain Validation testing with its importance.
10. Describe Software testing and also explain fundamental testing goals.
11. What is system design? Explain characteristics of good design.
12. Explain design evolution & interface analysis.
13. Write a short note on: a)White box testing b)Black box testing.
14. What is Software quality & its quality factors.
15. What is Software Quality Management? Explain 9000 Quality standards.
16. Explain the features of Risk Identification and Risk Projection.
17. Explain Software risk? What is RMMI plan.
18. What is risk management? Explain the strategies of risk management.
19. Explain a)Software Quality Assurance(SQA) b) Formal technical Review.
20. Write a note on Architectural Design



Co-Ordinator(M.Sc.)
Department of Computer Science

SSEB's Science College, Coimbatore, Pongalur
M.Sc. (Computer Science) - Semester II
Assignment (Last Session, 2015-20)
Paper II - Mobile Computing

1. What is mobile communication? Explain mobile computing architecture.
2. What are handheld devices? Explain the innovations of mobile devices.
3. What is high speed circuit switched net?
4. Explain the automotive system architecture.
5. Explain the types of medium access control.
6. Write down the coding methods in CDMA.
7. Explain mobile IP network layer.
8. Explain methods of TCP layer transmission for mobile networks.
9. Explain Database Flooding and caching techniques.
10. Explain in brief two user and three user client-server architecture for mobile computing and adaptation.
11. Explain in detail unicast mode broadcasting architecture for communication systems.
12. Explain mobile agent-based method using offset, type and flag.
13. Explain MANET (Mobile Ad-hoc Network).
14. Explain security aspects in mobile ad-hoc network.
15. Explain wireless application environment.



Co-Ordinator (M.Sc.)

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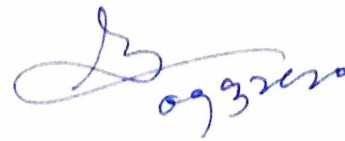
M.Sc. - Semester-II

Assignment List

2019-20

Paper II: Theory of Computation & Compiler Construction

- Q.1 Explain Deterministic and Non Deterministic finite automata with example.
- Q.2 State and Prove the pumping lemma for Regular Expression.
- Q.3 What do you mean by Context Free Grammar? Explain.
- Q.4 Explain Useless Symbol with the help of example.
- Q.5 Explain Chomsky Normal form and Greibach normal form with example.
- Q.6 Design a PDA for the language $L = \{WcW^R/W \text{ is in } (0+1)^*\}$.
- Q.7 Design Turing machine for the language $L = \{WW^R/W \text{ is in } (0+1)^*\}$.
- Q.8 Design compiler .Discuss the structure of compiler.
- Q.9 What is operator precedence parser? explain in detail.
- Q.10 What are register and address descriptor.
- Q.11 Explain Three address code, Quadruples and Triples.
- Q.12 Explain Shift reduce parsing with example.
- Q.13 Explain the construction of SLR parsing table.
- Q.14 Explain the contents and data structures used for symbol tables.
- Q.15 Explain the process of code generation from DAG's.



Co-ordinator(M.Sc.)
Department of Computer Science

Professor
Department of Computer Science
S.P.E.S. Group's Institute of Technology
Pune

PAPER III
COMPUTER ARCHITECTURE AND ORGANIZATION
ASSIGNMENT LIST
M.Sc. (Semester II)
Session 2019-20

1. Explain in detail the different buses used in Computer architecture.
2. Draw the block diagram of Computer System and explain how software and hardware interact with each other.
3. What are the various types of instructions? Explain with suitable examples.
4. Explain in detail the different types of addressing modes used in Computer system with example.
5. Explain the most common traps found in an instruction format.
6. What are different methods of designing hardware control unit? Explain any one method in brief.
7. Differentiate between 100% and 100% .
8. Design a control unit of four channel DMA controller. Draw and discuss:
 - (a) State transition graph
 - (b) Combinational logic table
9. Compare:
 - (a) Microprogrammed versus hardwired control
 - (b) 100% and 100%
10. Explain VLSI and Classical design for control unit of the μ processor.
11. What are the different storage technologies? Give the advantages and disadvantages of each.
12. What is optical memory? Explain the concept of paging and segmentation.
13. Explain organization of a multibank memory system in a computer.
14. Design a memory unit of 16 KB RAM using sufficient number of available 4 KB RAM. Draw a designed diagram using decoder circuit. Give its address table.
15. What is a cache memory? What are its advantages? Explain its working in brief.
16. Describe the busy-beat priority interrupt control in brief.
17. What is P.I bus? Discuss the role of P.I bus in computer system organization.
18. Describe the Transaction processing benchmark in brief.
19. What is asynchronous data transfer? Explain the concept of hand shaking mode in non-buffered data transfer.
20. Draw a block diagram of DMA data transfer scheme and explain its operation in brief.



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Department of Computer Science

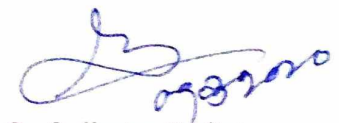
SSESA's, Science College, Congress Nagar, Nagpur

Assignment 2019-20

M. Sc. Semester - IV

Paper: - II – Artificial Intelligence and Expert System

1. Explain different techniques of Artificial Intelligence.
i) Question Answering ii) Tic Tac Toe
2. Explain:
i) Breadth First Search ii) Depth First Search
3. Describe Water Jug Problem in detail.
4. Explain:
i) Knowledge representation ii) Mapping.
5. Explain Predicate logic with suitable example.
6. Explain Expert system in detail.
7. Describe Semantic and Syntactic Analysis.
8. What is Planning? Explain components of planning system.
9. Write short note on Alpha-beta cutoffs
10. Explain distributed and parallel AI.
11. Explain minimax search procedure in game playing.
12. Write note on Natural Language Processing.



Co-Ordinator (M.Sc.)

Department of Computer Science

Professor
Department of Computer Science
S. S. P. J. and S. S. P. J. College
Congress Nagar, Nagpur

Bhri Shivaji Education Society Amravati's SCIENCE COLLEGE
DEPARTMENT OF COMPUTER SCIENCE
Congress Nagar, Nagpur
M.Sc Semester - IV
Paper - IV
Parallel Computing
Assignment List

1. What is implicit parallelism and explain trends in microprocessor architectures?
2. Describe the communication costs in parallel machines.
3. How works routing mechanisms for interconnection networks.
4. Explain the network topologies in parallel computing.
5. Write notes on principles of parallel algorithm design and explain its performance.
6. How to perform decomposition techniques.
7. What are the methods for containing interaction overheads?
8. Explain All-to-All personalized communication.
9. What is the performance metrics for parallel systems?
10. Explain the building blocks send and receive operations.
11. Write the principles of message passing programming.
12. What are the collective communication and computation operations?
13. Explain matrix-vector multiplication.
14. Explain the serial algorithm in FFT.
15. Describe parallel depth-first search.
16. Describe the transpose algorithm in details.



Coordinator M.Sc.
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