SSESA's, Science College, Congress Nagar, Nagpur

Department of Computer Science

Practical List
Session 2022-23
Practical - I (Discrete Mathematical Structure)
M. Sc. – Semester-I

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.

Head
Department of Computer Science

Professor & Head
Department of Computer Science
S.S.E.S Amt's Science College,
Congress Nagar, Nagpur

Assignment List
Session 2022-23
M. Sc. - Semester-III (Practical – I)
Paper-II (Software Engineering)

1. What is software? Give different characteristics of software and explain changing nature of software in detail.

2. Explain role of software engineering and software myths in detail.

3. Explain a) waterfall model b) spiral model.

4. What is process? Explain process framework activities.

5. What is requirement engineering? Explain functions used in requirement engineering.

6. What is system modeling? How graphical model can be used to present software system.

7. Write note on a) context model b) behavioral model

8. What is design? Explain characteristics of good design.

9. What is software testing? Explain fundamental testing goals.

10. Explain a) white box testing b) black box testing.

11. What is software quality? Explain its quality factors.

12. Write note on design evolution and interface analysis.

13. Explain a) software quality assurance b) formal technical review

14. What is risk management? Explain strategies of risk management

15. What is software Quality management? Explain 9000quality standards.

16. What is software risk? Explain RMMI plan.

Head
Department of Computer Science
Professor & Head
Department of Computer Science
S S E S Amt's Science College,
Congress Nagar, Nagpur

Shri Shivaji Education Society Amravati's
SCIENCE COLLEGE
DEPARTMENT OF COMPUTER SCIENCE
Congress Nagar, Nagpur.
Practical List
Practical-II (Mobile Computing)
M.Sc –Semister-III
Session (2022-2023)

1. Explain mobile computing Architecture.
2. What is Mobile Computing? Write different limitations of mobile devices.
3. What are the GSM services? Draw GSM architecture diagram and explain it in detail.
4. Explain Pocket Radio Service in detail. Give its features.
5. Explain spread spectrum in CDMA system.
6. Explain Tunneling and Encapsulation Route optimization.
7. Discuss methods of TCP-layer transmission for mobile network.
8. Explain IP and mobile IP network layer. Also explain how pocket delivery and handover management done.
9. What do you mean by data dissemination? Explain data dissemination broadcast model.
10. Discuss issues related to Quality of service (Qos).
11. Explain process of digital audio broadcasting.
12. Discuss various database Hoarding Techniques.
13. Explain the properties of MANETs.
14. Explain wireless sensor network in detail.
15. Explain Bluetooth-enabled devices network. Explain layers in Bluetooth protocol.
16. Explain in detail IRDA.

Head
Department of Computer Science
Professor & Head
Department of Computer Science
S. S. E. S. Amt's Science College,
Congress Nagar, Nagpur

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

Head

Department of Computer Science

Professor & Head
Department of Computer Science
S.S.E.S. Amt's Science College,
Congress Nagar, Nagpur

1. Explain in detail the different layers used in Computer architecture.

2. What is hardware and software? What are their roles in computer design? Explain how they interact with each other.

3. What is instruction ? What are its types ? Explain each one with its formats.

4. What are addressing modes ? Explain different types of addressing modes with suitable example.

5. Draw the overall structure of carry-look ahead adder.

6. Discuss control path design in detail.

7. What is RISC and CISC ? Difference between RISC and CISC and give their advantages and disadvantages.

8. Explain superscalar processors in detail.

9. What is storage device ? Explain the different storage technologies with an example .

10. 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.

11. Design a memory map for 4 KB RAM and 8 KB ROM. The available chips are:

    - 2 KB RAM x 2 Number
    - 2 KB- ROM x4 Numbers respectively

    Design a decoder using address table method.

12. What is virtual memory? Explain the concept of paging and segmentation.

13. Describe the daizy-chain priority interrupt system in detail.

14. What is PCI bus? Discuss the role of PCI bus in computer system organization.

15. Discuss the Transaction processing benchmarkin detail .

16. What is DMA ? What are its advantages ? Explain the cycle-stealing mode of operation of DMA in brief.

Head
Department of Computer Science

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. Write the AO* algorithm for problem reduction.

5. Explain:

   i) Knowledge representation   ii) Mapping.

6. Explain Predicate logic with suitable example.

7. Explain Expert system in detail.

8. Explain Forward versus Backward reasoning.

9. What is Planning? Explain components of the planning system.

10. Write a short note on Alpha–beta cutoffs.

11. Explain minimax search procedure in game playing

12. Explain goal stack planning.

13. What is understanding? Explain understanding as constraint satisfaction.

14. Describe Semantic and Syntactic Analysis.

15. Explain distributed and parallel AI.

16. Write a note on Natural Language Processing.
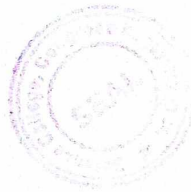
Head
Department of Computer Science

SSESA's, Science College, Congress Nagar, Nagpur
M.Sc. Semester - IV
Parallel Computing (Paper – IV)
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 preliminaries.
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.

Head
Department of Computer Science