CONFIDENTIAL

Index

POA

1. Ssd and dram example and difference
2. Von Neuman
3. Explain Booth's algo
4. Can negative numbers be stored in registers
5. Advs and Disadv of booths algo over traditional methods
6. Virtual memory
7. What is a control bus?
8. SSD vs HDD
9. What are buses?
10. Types of buses
11. What are the different comp organisations?
12. Differentiate with example Microprocessor & Microcontroller
13. What are the different addressing modes?
14. Why are there addressing modes?
15. Difference between organization and architecture
16. Does OS come under organisation or architecture
17. What can 8086 do/where it is used
18. What is pipelining
19. How many stages of pipelining in 8086
20. Difference between 8085 and 8086
21. What is the latest windows version
22. What are segments?
23. What is cache?
24. Different types of caches and cache mapping techniques.
25. Instructions for 8051
26. Significance of RAM
27. Explain all data storages
28. What are flag registers? Where are they? What is their use? Name 2 of them
29. Discuss performance as a factor in memory hierarchy?
30. What are DDR and the difference between SSD and DDR?
31. Level in memory hierarchy?
32. Two states of pipelining?
33. Latest Pentium processor
34. Are Intel and Pentium the same? (we are doomed) 😣😞
35. Why do we use 2's complement in Booth's Algorithm and not 1's complement?
36. Do we use tags indirect mapping?-yes
37. Explain data delivery system in 8086
38. What Emulator did we use? emu8086
39. Different types of pipelining
40. Explain Instruction Format
41. Explain 5 stages of pipelining
42. Explain Direct and indirect Addressing Modes

43. What are assembler directives
44. Explain Pentium 2-way superscalar architecture
45. Explain last expand what tool was used
46. What are different types of computer architecture?
47. Solving Booth ka numerical for some damn reason 😱
48. How is Harvard architecture better than Von Neumann Architecture?
49. Give a real-life application of virtual Memory?
50. Addressing modes of 8086?
51. Interrupts in 8086?
52. Different types of memory other than Cache memory
53. What is Harvard Architecture?
54. Explain the Pentium Processor?
55. Associative and Interleaved memory
56. Dedicated Interrupts of 8086
57. Memory characteristics
58. Types of memory
59. Types of interrupts
60. Best algo to do Unsigned multiplication
61. What is signed and unsigned
62. Memory Hierarchy
63. Mixed-mode of programming
64. Explain booths, restoring, non-restoring
65. System design ISA HSA
66. Snooping protocol
67. Hazard in pipelining
68. Instruction cycle
69. Data transfer in 8051
70. Interrupts of 8051
71. If I want to perform some arithmetic operations, is using hardware or software better? Why? 🤔😔
72. Pentium Features
73. Pentium Architecture
74. 8051 microcontroller overview
75. Difference between intel and Pentium
76. What is pipelining, for example, 2 staged and 4 staged. (4??????)
77. Hardware Software Dedicated Interrupts
78. Where Virtual Memory is used and Example
79. Why 2's Complement in Booths
80. **PRACS LIST DEKH KE JAO**
81. booths kaise implement kiya
82. Name of emulators used
83. What language did you code in
84. Uses of interrupts
85. How many ALU's are present in 2 way superscalar architecture?

86. Is there any difference between addressing modes of the 8085 microprocessor and 8051 microcontrollers? Why?
87. 8086 architecture features
88. Maximum and Minimum Mode
89. Pin description of 8086
90. Harvard architecture
91. Comparison of processor architecture and processor organisation
92. What is a crystal oscillator
93. Addressing modes of 8086
94. Interrupts in 8086
95. Microcontroller brief
96. Pentium processor in brief
97. What is Pipelining
98. If there are many registers in a CPU what is the best way to arrange them?
99. What is a stack pointer?
100. Explain LIFO FIFO, stacks, queues, with real-life example

AI

1. What is AI, AI Agents?
2. Components of Agent
3. Diff between Goal-based and Utility-based agents with examples
4. Problem Formulation
5. What agent is used to solve this
6. Disadvantages of A*.
7. Difference between PL and FOL
8. There is a student who is loved by every other student (FOL conversion)
9. PEAS
10. Unification
11. Expert system
12. Applications and advantages of expert systems
13. PEAS
14. Examples and applications of game playing algos
15. Knowledge base Expert system
16. Wumpus world's knowledge base
17. Learning agents
18. Examples of learning agent
19. Example when to use minimax and alpha-beta
20. Uninformed & Informed search with algos
21. Genetic Algo with steps
22. What is a rational agent and intelligent agent
23. Types of agents
24. What is a model-based agent and example for the same
25. Inductive learning
26. What is ai
27. Hill Climbing Algo, its drawbacks and how to overcome it
28. Simulated Annealing
29. Real-life examples where heuristic function logic can be used
30. What are adversarial search, application, advantages
31. Uncertainty and ways to overcome it
32. Bayes belief network
33. Properties of the task environment
34. Components of problem formulation
35. Issues In Local beam search
36. Unification
37. Limitations of pl
38. Application in expert systems
39. Types of quantifiers
40. Adv / Disadv of Expert Sys
41. Application of Expert Sys
42. Informed vs Uninformed

43. Resolution in AI
44. Modus Ponens
45. Fuzzy Set
46. N queen prop
47. Uncertainty
48. Backpropagation in fuzzy set
49. Steepest hill climbing
50. The problem in hill climbing
51. Genetics better than other algos
52. Heuristics example
53. Steps in genetic algo
54. Think of an application and define your heuristic function used to tackle it
55. Forward chaining and backward chaining advantage disadvantage
56. Wumpus world
57. Which will use pl or fol for wumpus world
58. Activation function
59. And to fol
60. Types of agents
61. Alpha-beta pruning
62. Uncertainty
63. Example for problem formulation. Explain examples with stages.
64. Difference between Uninformed search , Informed Search and Adversarial Search based on Time Complexity?
65. Explain env of the agents specified
66. Explain Different types of Activation used in Neural Network?
67. Define AI? (AI has 4 different definitions based on different concepts, state those concepts in definition).
68. What is planning and explain different types of planning(open to all 4 anyone can answer)
69. PEAS of taxi driver and part picking robot and explain env (Given to all 4 each person one)
70. N queens hill climbing
71. What other algos you can use for n queens for complete good result
72. Simulated annealing
73. Difference between Delta Learning and Perceptron learning
74. Best algo for n queen
75. List types of agents
76. Explain model based with real life example
77. Explain utility based agent with real life example
78. Explain learning agent with real life example
79. Steps for FOL to CNF
80. How are belief networks drawn
81. Genetic algo fitness function for example case
82. Can min max be applied to n queen problem.

83. Activation function and different activation functions.
84. Inductive learning
85. Alpa-Beta Pruning
86. 4 Definitions of AI
87. What is Resolution?
88. In order to represent Knowledge Base which language is used?
89. Difference between Propositional Logic and First Order Logic.
90. All students are smart. Convert to FOL.
91. Driving a Taxi comes in which environment and why?
92. Perceptron and Delta Learning are used in which neural networks and why?
93. Best algo for n queens?
94. What are kb agents?
95. Difference between perception learning and delta learning.
96. Difference between PL and FOL
97. Types of environments
98. Peas description for part picking robot
99. Current scenario of teams is which type of agent
100. Planning
101. How to measure that an algo(optimality,completeness,space,time)
102. Utility theory in fuzzy logic 😭😭(**research topic**)
    https://www.sciencedirect.com/science/article/abs/pii/S1573438205800086
103. Ant colony search
104. Advantages of FOL
105. Why do we use multiple layers in NN
106. Hill climbing and how to overcome the problems
107.

Python

1. Mini project - What was the project and what was your contribution
2. Adding element at a particular index in array- array.insert(index,value)
3. Python interrupt prompt - ctrl+C
4. Function - a block of organised, reusable code that is used to perform a single action
5. Continue, break - break is used to terminate the execution of the current loop whereas continue is used to skip one iteration of the current loop.
6. Reverse a list - 1) lst[::-1], 2) lst.reverse(), 3) [ele for ele in reversed(lst)]
7. Block (Set of statements written together and executed as a unit.Eg: Class, function)
8. Difference between list and tuple (**List** - mutable, better for insertion-deletion, consumes more memory, has several built in operations. **Tuple** - immutable, better for accessing elements, consumes lesser memory, doesn't have several built in operations)
9. Ternary operators - used to determine if a condition is true or false. Requires one line of code, making it more compact than if-else.
   Syntax: {when_true} if {expression} else {when_false}
10. Data Types - **Text**:str; **Numeric**:int,float,complex; **Sequence**:list,tuple,range; **Mapping**:dict; **Set**:set,frozenset; **Boolean**:bool
11. What are the core features of python? - Easy To code, OOP, Supports GUI, High Level Language, Large standard library, Open source and free to use.
12. What did you use while developing the Mini Project?
13. Explain mini project in brief
14. Global variables in python - a variable declared outside of the function or in global scope is known as a global variable
15. **Flask vs Django** (WHY FLASK????? 😭😣) - Click here and zoom
16. Type conversion - Process of converting one data type to another. Two categories- Implicit (done automatically) and explicit (done by user)
17. Mini project
18. Django REST Framework - DRF is a powerful and flexible toolkit for building Web APIs.
19. Python libraries - collection of related modules containing bundles of code used repeatedly in different programs. Eg: math, TensorFlow, Matplotlib, Pandas, Numpy
20. What is pandas - Python library used for working with data sets.
21. Deleting from list : lst.clear(), lst.remove({item}), lst.pop
22. Name of error when index greater than list size is called :(**IndexError: list index out of range)**
23. Capitalise, lowercase string → to Capitalise use upper(), to make lowercase use lower()
24. Pass , continue, break
25. data types in python -> Numeric, String, list, tuple, set, boolean, dictionary
26. Functions, builtin lambda ,recursive, with example -> x = lambda a : a + 10 x(5)
27. Python Libs
28. Slicing - Slicing a list or string based on index numbers.
29. str to number : int(string)
30. str to number which is in octal format : int(a,base)

31. **Mini Proj (Compulsory)**
32. What is namespace - system that has a unique name for each and every object in Python
33. dir() command - dir() tries to return a valid list of attributes of the object it is called upon. Also, dir() function behaves rather differently with different types of objects, as it aims to produce the most relevant one, rather than the complete information.
    - For Class Objects, it returns a list of names of all the valid attributes and base attributes as well.
    - For Modules/Library objects, it tries to return a list of names of all the attributes contained in that module.
    - If no parameters are passed it returns a list of names in the current local scope.
34.
35. How to delete a file (os.remove)
36. Py and pyc difference - py files contain the source code of a program. Whereas, . pyc file **contains the bytecode of your program, when you import new code file**
37. Pep-8 - used for beautification of the code
38. Director?? (Directory hoga 😂) Decorator bhi ho sakta…
39. Local and global variables
40. Difference between list and tuples - answered above
41. What is identifier, rules of defining identifier - A Python identifier is **a name used to identify a variable, function, class, module or other object**. An identifier starts with a letter A to Z or a to z or an underscore (_) followed by zero or more letters, underscores and digits (0 to 9). ... All other identifiers start with a lowercase letter.
42. Keywords
43. Drawbacks of sqlite3 : - schema issues/ storage is only 2gb

ADBMS

> there will be questions open to all

1. **B/B+ Tree karo**
2. **NoSQL karo**
3. What are fragments and replications, how is it done?
4. How database updation takes place in fragments? Iska ans anyone?? I think the 4 phases in DDB is the ans.(A better q what are the 4 phases)
5. Query optimization (how to do it :2 ways cost - physical schema and heuristic - logical schema)
6. Comment on data replication and data fragmentation (types and advantages)
7. **Diff between sql no sql (Most common : 3 ka grp h 3 points yaad rakho 1-1 point bol do)**
8. **B and b+ tree (Sabko ye puchege bcz yehi padhaya h)**
9. **What is indexing : how indexing is beneficial:**
10. Graph Database
11. Application of Object Oriented DB
12. What are heterogeneous DB
13. What are document oriented databases
14. What are advantages of fragmentation
15. Example and application of Document oriented databases
16. What are object oriented databases
17. What new have you learnt in ADBMS over DBMS
18. Difference between primary and secondary storage in DDB
19. Types of DDBMS
20. Use and advantages of indexing and hashing
21. Advantages of indexing, query optimization, nosql
22. Why we use relational algebra for query execution
23. Types of transparency in distributed database
24. Types of fragmentation
25. What do you mean by heterogeneous distributed database?
26. Security in ADBMS (flow control, access control, etc)
27. What are temporal databases
28. Real life application of adbms
29. Security in distributed database
30. How do you join fragmented databases by union or join query
31. What kind of NoSQL database is used for making the cart of an e-commerce application
32. Why do we create parsing graphs
33. What is a heterogeneous database in DDB?
34. What makes relational algebra easier for the compiler to understand?
35. What is the significance of using primary and secondary sites?

DWM

1. What is a data warehouse and why is a data warehouse used for analytics?
2. What is etl process why is it used
3. What are types of olap
4. Difference between data lake and data warehouse and data marts
5. What is difference between ROLAP and MOLAP
6. Difference between OLTP and OLAP
7. Example based question - *check q 27*
8. What is web mining and the three types of web mining
9. Difference between web structure and web content
10. How to choose seed points for K means
11. What is “append” in the loading process of ETL?? Update ig
12. How DBSCAN is different from traditional clustering
13. Sequential pattern mining|
14. What is spatial data - used to store geographical data like coordinates, latitude or longitude
15. What is more dangerous, false positive or false negative? (False Negative)|
16. What is the nature of outcomes for classifications and precision models? Discrete or continuous
17. What is the correlation coefficient? Chi sq
18. What is a confusion matrix?| matrix used for evaluating the performance of a classification model TP TN FP FN
19. What is conditional independency?explain with an example.|
20. Diff btw classification and prediction|
21. Way to calc number of clusters
22. Selecting attribute subset used to reduce data
23. What is a hypercube **if the number of dimensions is greater than 3**.
24. What are drawbacks of k means
25. What are attributes
26. Frequent Itemset
27. Example vala Question - RIP (for eg create info packet for university for payroll analysis)
28. How to overcome drawback of k means
29. Error Metrics
30. What is a cross validation dataset?
31. What are factless tables? Explain with example.
32. Classification vs clustering
33. Star schema vs snowflake
34. Top down vs bottom up
35. Slice vs Dice (OLAP)
36. Cardinality of Star Scheme one to many
37. What is data visualisation?
38. What is ensemble models and explain bagging and boosting
39. Which is sequential and parallel in bagging and boosting

40. What are extrinsic and intrinsic methods in clustering evaluation
41. What is overfitting
42. What is tree pruning
43. Explain ROC curve
44. Voting method
45. Quantile Quantile plots
46. What is a box plot?
47. What is regression? Types of regression.
48. WHAT IS CLARANS😭😭
49. What normal form are dimension tables in, in snowflake schema? **3NF**
50. Q-Q PLOT - Determine whether two samples are from the same population.
51. Q-PLOT
52. What is entropy - represents the level of randomness in the data
53. What is boxplot - graph that gives you a good indication of how the values in the data are spread out.
54. What are different ways to calculate distance?Hamming Distance. Euclidean Distance.Manhattan Distance.Minkowski Distance. Which is used in K medoid? Euclidean
55. How to improve efficiency of Apriori- hashing, sampling, transaction reduction, partitioning
56. What is imbalanced data and how to handle it
57. What NF is snowflake schema 3nf
58. Types of crawlers? focused , incremental, distributed, parallel. Difference between Traditional Crawler and Focused Crawler.|
59. Page Rank comes under what type of web mining? Structure mining
60. What is pruning? Deleting of a child node from the branch
61. Drawbacks of Apriori cannot be used for large volumes of data since the number of scan increases.
62. Hierarchical clustering types and its termination condition
63. Adaboost|
64. Boosting methods - **adaboost & gradient boosting**|
65. Slowly changing dimensions = **a dimension that stores and manages both current and historical data over time in a data warehouse**.
66. Explain data warehouse
67. What is dendogram
68. Strategic information | Strategic information is required for an enterprise to decide the business strategies and establish the goals for the business
69. What is information package diagram (ipd)| **defines the relationships between subject matter and key performance measures**.
70. What is semi-additive attribute - **measures that have a different way of aggregation over time**
71. What is apriori and list methods to improve it - is an algorithm to generate association rules. Hash based technique, transaction reduction, sampling, partitioning
72. What is pre-pruning

73. What is true positive, explain with example
74. Explain precision, recall, specificity. Which is useful| Precision – how many of the positively classified were relevant. sensitivity/recall – how good a test is at detecting the positives.
75. Slice and dice operations in OLAP
76. What is an iceberg query? Queries that have group by and having clauses
77. What is data reduction? Reducing the data by decreasing its quantity but maintaining the quality.
78. Explain different techniques of data reduction in brief - data cube aggregation, dimension reduction : stepwise forward, step wise backward, data compression, discretization and concept hierarchies.
79. What is the difference between subject-oriented and application-oriented data warehouses?**Same difference b/w database and data warehouse**
80. Explain the need of a data warehouse in brief.
81. Explain what you know about clustering.
82. What other parameter is used to find frequent itemsets other than support and confidence. (Lift)
83. What is junk dimension table
84. Features of data warehouse
85. Can more than one concept from concept hierarchy exist in a single fact table, give example
86. Data mining tasks = Prediction, classification, association, clustering
87. Techniques to improve efficiency of apriori= hash based technique, sampling, reduction, partitioning
88. What is confidence and support
89. Spatial Data
90. How can you overcome the disadv of K-Means? Distance measure used in it
91. Tree Pruning
92. Business intelligence vs data mining
93. Information delivery component
94. Types of report generated by info delivery
95. Granularity
96. Steps in preprocessing
97. HITs hypertext induced topic search
98. Explain multilevel association mining in detail
99. Define support and its role in Apriori
100. Is confidence important to find frequent itemset?
101. What is the use of confidence?