✅ Unit-III: File Organization – PYQ-Based MCQs (1–30)

1. Which file organization allows both sequential and direct access?
A) Heap file
B) Sequential file
C) Indexed sequential access method (ISAM)
D) Hashing
Answer: C

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2. In B+ trees, data is stored:
A) Only in internal nodes
B) In both internal and leaf nodes
C) Only in leaf nodes
D) Only in root node
Answer: C

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3. What is the purpose of an index in file organization?
A) To store data in files
B) To provide a backup
C) To speed up data retrieval
D) To encrypt the file
Answer: C

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4. Which of the following is true about B-trees and B+ trees?
A) B-trees have data only in leaves
B) B+ trees have data in internal nodes
C) B+ trees store data only at leaf nodes
D) B-trees don't use indexing
Answer: C

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5. In hashing, a collision occurs when:
A) Two data items share the same value
B) Data is not inserted
C) Different keys map to the same hash address
D) Hashing function fails
Answer: C

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6. Which method is *not* used for collision resolution in hashing?
A) Chaining
B) Open addressing

C) Linear probing
D) Normalization
Answer: D

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7. Extendible hashing adjusts:
A) Disk space
B) Global and local depth of hash directory
C) Block size
D) Primary key size
Answer: B

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8. What is the main advantage of B+ trees over B-trees?
A) Better encryption
B) Less height
C) Better range queries
D) More root nodes
Answer: C

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9. Which of these file organization methods is best for range queries?
A) Hashing
B) Heap file
C) B+ Tree
D) Clustered index
Answer: C

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10. The B-tree of order *m* can have at most:
A) m leaf nodes
B) m children per node
C) m records
D) m height
Answer: B

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11. What is the time complexity of searching in a B-tree of order *m* with *n* keys?
A) O(log n)
B) O(m)
C) O(n)
D) O(n log m)
Answer: A

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12. What is dynamic hashing?
A) Hashing with fixed table size
B) Hashing that grows and shrinks dynamically
C) Hashing for encryption
D) Hashing without indexes
Answer: B

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13. Which file organization uses buckets?
A) Sequential files
B) ISAM
C) Hashing
D) B-tree
Answer: C

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14. Which of the following provides best performance for exact-match queries?
A) B+ trees
B) Sequential files
C) Hashing
D) ISAM
Answer: C

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15. Overflow pages are used in:
A) B-trees
B) Hashing
C) ISAM
D) Both B and C
Answer: D

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16. The term "fanout" in tree structures refers to:
A) Number of leaf nodes
B) Number of parent nodes
C) Number of pointers per node
D) Height of the tree
Answer: C

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17. The *root node* in a B+ tree must:
A) Be a leaf node
B) Have at least two children
C) Contain only one record
D) Be empty
Answer: B

18. Which of the following allows faster search in a large file?
A) Heap file
B) Indexed file
C) Flat file
D) Linked list
Answer: B

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19. Bucket overflow in hashing is resolved by:
A) Duplicating buckets
B) Creating secondary buckets
C) Rehashing
D) All of the above
Answer: D

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20. Hashing is most efficient when:
A) There are many duplicate keys
B) Access patterns are random
C) The data is sorted
D) Range queries are frequent
Answer: B

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21. Which file organization is best for transaction systems with random access?
A) Sequential
B) Heap
C) Hashing
D) ISAM
Answer: C

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22. In ISAM, index entries point to:
A) Next record
B) Overflow block
C) Actual data block
D) Tree node
Answer: C

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23. In dynamic hashing, doubling the directory size is needed when:
A) Bucket is full
B) Global depth equals local depth
C) Bucket size decreases

D) Directory becomes empty
Answer: B

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24. Leaf nodes in a B+ tree are:
A) Connected to parent only
B) Unordered
C) Linked sequentially
D) Same as internal nodes
Answer: C

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25. The term *blocking factor* in file organization refers to:
A) Size of hash bucket
B) Number of records per block
C) Number of indexes
D) Depth of tree
Answer: B

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26. Which collision resolution technique links all items in a list?
A) Linear probing
B) Quadratic probing
C) Separate chaining
D) Double hashing
Answer: C

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27. Internal nodes in B+ tree contain:
A) Data and pointers
B) Only keys and pointers
C) Only data
D) No information
Answer: B

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28. Hash function should:
A) Map different keys to the same location
B) Distribute keys uniformly
C) Be simple and non-deterministic
D) Always use ASCII values
Answer: B

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29. In B-trees, a node with m children contains:
A) m keys
B) m + 1 keys
C) m - 1 keys
D) 2m keys
Answer: C

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30. Which of these is best for equality search with minimum disk access?
A) Binary search
B) B-tree
C) Hash index
D) Merge sort
Answer: C