



**JSPM's**  
**Bhivarabai Sawant Institute of Technology & Research, Wagholi**  
**Department of Computer Engineering**  
**Academic Year 2020-21 Semester -II**

**Class:** SE (A)  
**Marks:** 40

**Subject:** DSA (210253)  
**Unit no:** 5 Indexing and Multiway Trees



**Two Mark One Sentence Answer Question (2M)**

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**ANSWER KEY OF 20 QUESTIONS OF 2 MARKS**

<b>Q.1</b>	<b>What Is Indexing</b>
<b>Ans:</b>	Indexing is used to speed up the retrieval Records.
<b>Q.2</b>	<b>List the Indexing technique?</b>
<b>Ans:</b>	1) Cylinder-surface indexing 2) hashed Indexing 3) Tree indexing 4) trie Indexing.
<b>Q.3</b>	<b>Which data structure Used In Multiway Tree?</b>
<b>Ans:</b>	Array
<b>Q.4</b>	<b>What is Main Advantage of BST?</b>
<b>Ans:</b>	The BST Gives Less Time Complexity In Terms of Searching and Deletion.
<b>Q.5</b>	<b>What is Multiway Search Tree?</b>
<b>Ans:</b>	In Multiway Search tree Of order m is an Ordered tree Where Each Has at the Most m children.
<b>Q.6</b>	<b>Let m (Order)=5, Then How many Childs To each Node Has?</b>
<b>Ans:</b>	5 Childs.
<b>Q.7</b>	<b>If The Order Is 5 , So How many keys can Each Node Contain?</b>
<b>Ans:</b>	If Order is 5 then, Each node Has $(m/2)-1$ Keys I.e 2 Keys.
<b>Q.8</b>	<b>How We Can Store (order) The keys in Each Node?</b>
<b>Ans:</b>	The Keys in Each Node Are in Ascending Order.
<b>Q.9</b>	<b>What are the feature Of M-Way Search tree?</b>
<b>Ans:</b>	The M-Way Search tree Are Generalized Version Of Binary Search Tree.
<b>Q.10</b>	<b>What Is B-Tree?</b>
<b>Ans:</b>	A B-tree is a tree data structure that keeps data sorted and allows searches, insertions, and deletions in logarithmic amortized time.
<b>Q.11</b>	<b>What Is Trie Tree?</b>



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<b>Ans:</b>	Trie is an efficient information retrieval data structure. Using Trie, search complexities can be brought to optimal limit (key length).
<b>Q.12</b>	<b>List Two The That Include In trie tree?</b>
<b>Ans:</b>	1) Map for Store The Key value Pair. 2) Boolean is Use to notate The End Of String in Trie Tree.
<b>Q.13</b>	<b>Write A Short Note On Map(Data-structure)?</b>
<b>Ans:</b>	A map is an ADT (Abstract Data Type) where key-value pair (k-v) are stored in an array. The 'key' is an identifier for some kind of data, and the 'value' is the content that is being identified or saved.
<b>Q.14</b>	<b>In Trie Tree, Is it necessary That Every New String Insertion starts From ROOT Node? If Yes Why?</b>
<b>Ans:</b>	Yes. Because It Must to Insert The Data From Root Node For reuse The Alphabet Which are Already Exist in trie Tree.
<b>Q.15</b>	<b>What Is Red-Black Tree?</b>
<b>Ans:</b>	Red-Black Tree is a self-balancing Binary Search Tree (BST) where every node follows following rules. 1) Every node has a color either red or black. 2) Root of tree is always black. 3) There are no two adjacent red nodes (A red node cannot have a red parent or red child).
<b>Q.16</b>	<b>What Is Splay tree?</b>
<b>Ans:</b>	A splay tree is a self-balancing binary search tree with the additional property that recently accessed elements are quick to access again.
<b>Q.17</b>	<b>What Are The Special Operation Performed In Splay Tree?</b>
<b>Ans:</b>	The Operation Performed In Splay Tree is Splaying Operation I.e Zig step, Zig-zig step, Zig-zag step.
<b>Q.18</b>	<b>List The Application Of Splay Tree?</b>
<b>Ans:</b>	Implementing The Garbage And Cache Collection Algorithms.
<b>Q.19</b>	<b>What Is AA Tree?</b>
<b>Ans:</b>	AA trees use the concept of levels to aid in balancing binary trees. The level of node (instead of color) is used for balancing information.
<b>Q.20</b>	<b>What Are The Properties Of AA Tree?</b>



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<b>Ans:</b>	-The level of every leaf node is one. -The level of red nodes are same as the level of their parent nodes and the links are called horizontal links. -The level of black nodes are one less than the level of their parent node.
<b>Q.21</b>	<b>What Is Heap?</b>
<b>Ans:</b>	A Heap is a special Tree-based data structure in which the tree is a complete binary tree.
<b>Q.22</b>	<b>What Is Time Complexity Of Heap Sort?</b>
<b>Ans:</b>	Time complexity of heapify is $O(N \cdot \log N)$ . Time complexity of create And Build Heap() is $O(N)$ and overall time complexity of Heap Sort is $O(N \cdot \log N)$ where N is the number of elements in the list or array.
<b>Q.23</b>	<b>What is a max Heap?</b>
<b>Ans:</b>	Max-Heap: In a Max-Heap the key present at the root node must be greatest among the keys present at all of it's children.
<b>Q.24</b>	<b>What is a min Heap?</b>
<b>Ans:</b>	Min-Heap: In a Min-Heap the key present at the root node must be minimum among the keys present at all of it's children.