Assignment - 6 Solution.

(1) Answer - (d)
Explanation - As there are 3 numbers (1 3 2), so total of 6 combinations can be formed using three numbers but since (2,1,3) and (2,3,1) are same. So, in total there are 5 randomized binary search tree that can be formed.

(2) Answer - (a)

(3) Answer - (b)
Explanation - In a random mathematical model, the expected value of number of leaves in a randomized binary search tree is found to be exactly $(n+1)/3$ using probability.

(4) Answer - (a)
Explanation - In an AVL tree, the difference between heights of the two child subtrees of any node is at most one. If height differs by more than one, AVL tree performs rotations to balance the tree.

(5) Answer - (b)

(6) Answer - (c)
Explanation - All the tree data structures given in options are balanced, but B-tree can have more than two children.

(7) Answer - (a)
Explanation - Though both trees are balanced, when there are more insertions and deletions to make the tree balanced, AVL trees should have more rotations, it would be better to use red-black, but if more search is required AVL trees should be used.

(8) Answer- (b)
Explanation- In a balance binary tree the heights of two subtrees of every node never differ by more than 1.

(9) Answer- (c)
Explanation- RB tree is used for Linux Kernel in the form of completely fair schedular process in scheduling algorithm. It is used for faster insertions, retrievals.

(10) Answer- (d)