

Department of Information Technology
Salalah College of Applied Sciences

SFDV3004 Mid-Term Exam – 09SP

Maximum Marks 20

Duration 1hour 15 Minutes

Student Name _____

Student ID _____ Section _____ Date _____

PART A – Answer All (8 * 1 = 8 Marks)

1. In bucket sort elements are inserted in to the list by calculating

- A) $B[n * B[i]]$
- B) $B[n * A[i]]$
- C) $B[n * B[i]]$
- D) $B[n * A[i]]$

2. Suppose $f(n) = 15$ for all n . Then

- A) $f = O(n^2)$
- B) $f = O(1)$
- C) $f = O(n)$
- D) $f = O(n \log n)$

3. $\frac{3}{2}n^2 - 7n$ is equal to

- A) $\Theta(n^2)$
- B) $\Theta(n)$
- C) $\Theta(1)$
- D) $\Theta(\log n)$

4. Select the worst function among the given

- A) $O(n^2)$
- B) $O(n \log n)$
- C) $O(2^n)$
- D) $O(\log n)$

5. Which of the following algorithms time complexity is $O(n^2)$

- A) Counting sort
- B) Radix sort
- C) Insertion Sort
- D) Quicksort worst case

6. How many passes are required to sort the following list of numbers using radix sort?

8929, 3888, 1193, 9237, 7377, 8237, 9839, 0398, 0938, 9838

- A) d
- B) 9
- C) 4
- D) 3

7. By time complexity of an Algorithm we mean

- A) how fast an Algorithms operations decrease in size as the input n gets bigger
- B) how fast an Algorithms operations increase in size as the input n gets bigger
- C) how fast an Algorithms operations decrease in size as the input n gets smaller
- D) how fast an Algorithms operations increase in size as the input n gets smaller

8. $f = O(g)$ means that

- A) f is no better no worse than g
- B) g is no better no worse than f
- C) f is no worse than g
- D) f is no better than g

PART B - Answer Any One (1 * 4 = 4 marks)

9. Write the Counting sort algorithm and explain it.

(OR)

10. Write the Quicksort algorithm and explain it.

PART C - Answer Any One (1 * 4 = 4 Marks)

11. Analyze the quicksort algorithm for the average case.

(OR)

12. Analyze the mergesort algorithm.

PART D - Answer All (2 * 2 = 4 Marks)

13. Partition the given array A using quicksort partition procedure diagrammatically.

3	7	9	4	8	2	10	1	6
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14. Sort the given array A using bucket sort diagrammatically.

.72	.29	.77	.14	.98	.33	.66	.71	.95	.94
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