

Name: \_\_\_\_\_

Roll No: \_\_\_\_\_

### Algorithms and Complexity

**Note:** STRICTLY NO MARKS for cutting, over-writing and more than one answers.

**Problem 1 (7 + 3 = 10 marks):**

**(a)** Encircle the correct choice.

**(1) Which of the following have higher order of growth than  $n^2$ ?**

- (a)  $3n^2$  only.
- (b)  $n^3$  only.
- (c)  $2^n$  only.
- (d) Both 'b' and 'c'

**(2) Which of the following(s) is/are conditions for existence of Euler path in a graph?**

- (a) The graph must have all vertices with degree odd.
- (b) The graph must have all vertices with degree even.
- (c) The graph must have exactly two vertices of degree odd.
- (d) Both 'a' and 'c'

**(3) Which of the following degree sequence(s) is/are graphic?**

- (a) 3 2 1 1 1 only.
- (b) 3 3 3 3 2 2 only.
- (c) 2 2 1 1 1 only.
- (d) Both 'a' and 'b'

**(4) Complete bipartite graph has following properties.**

- (a) It must be 2-colorable.
- (b) It must have even-length cyclic path.
- (c) It must have same degree of all vertices.
- (d) Both 'a' and 'b'

**(5) Which of the following graph(s) is/are NOT regular graphs?**

- (a) Complete graphs only.
- (b) Wheel graphs only.
- (c) Cube graphs.
- (d) Both 'b' and 'c'

**(6) Which of the operator is NOT considered while calculating cost of an algorithm?**

- (a) Assignment (=) operator only.
- (b) Addition (+) operator only.
- (c) Comparison (==) operator only.
- (d) Both 'a' and 'c'

**(7) Which of the following properties in a graph define a tree structure?**

- (a) Edges must be one less than vertices.
- (b) Cyclic path must be there.
- (c) Vertices must be odd in number.
- (d) None of above

**(8)** Graph may have only one vertex of degree odd. ( T / F )

**(9)** Algorithm may have infinite number of instructions. ( T / F )

**(10)** Two variables cannot be interchanged without using third variable. ( T / F )

GOOD LUCK