Newport Institute of Communications and Economics

Assignment 01			
Course Title:	Artificial Intelligence (CSC-317)		
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(CLO_1): (Cognitive Level C2 i.e. Understanding (PLO_1 i.e. Engineering Knowledge)

Question 1: For each of the following agents, develop a PEAS description of the task environment:
a. Robot soccer player;
b. Internet book-shopping agent;
c. Autonomous Mars rover;
d. Mathematician's theorem-proving assistant.

Question 2: What about a reflex agent with state? Design such an agent. How do your answers to **a** and b change if the agent's percepts give it the clean and dirty status of every square in the environment?

Question 3: Explain the basic principles of BFS and DFS, including how they traverse a graph. Discuss the advantages and disadvantages of each algorithm. Provide examples of scenarios where one is preferred over the other. Also Compare the performance of BFS and DFS in terms of time complexity and space complexity.

Question 4: Fill in the blank

i. **List** is a collection which is and _____._____ duplicate members.
ii. **Tuple** is a collection which is _____ and _____. _____ duplicate members.
iii. **Set** is a collection which is _____, _____*, and _____. _____ duplicate members.
iv. **Dictionary** is a collection which is _____and _____. _____duplicate members

Question 5: Find the output of the following below python codes:

i.
```
def f(value, values):
    a= 1
    values[0] = 78
    t = 3
    a = [1, 2, 3]
    f(t, a)
    print(t, a[0])
```

ii.
```
mytuple = ("apple", "banana", "cherry")
print(type(mytuple))
```

iii.
```
thisdict = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964
}
thisdict.update({"color": "red"}
```

Question 6 *Write down a Python Code for following array output using built in insert() function*

```
Array before insertion : 1 2 3
Array after insertion :  1 4 2 3
```