udent's Name:.....Student's ID.....

Question 1. [4 Marks: CLO (a)] Select ONLY ONE ANSWER (the best answer).

Copy your answer for question 1-1 to 1-16 in the table on page2. ONLY THAT TABLE WILL BE GRADED.

1.	How many successors are generated in backtracking search?
A.	1
B.	2
C.	3
D.	4

2.	Which algorithm is used to solve any kind of problem?
A.	Breath-first algorithm
B.	Tree algorithm
C.	Bidirectional search algorithm
D.	None of the mentioned

3.	Which of the Following problems can be modeled as CSP?
A.	8-Puzzle problem
B.	Queen problem
C.	Map coloring problem
D.	All of the above mentioned

4.	The BACKTRACKING-SEARCH algorithm has a very simple policy for what to do when a branch of the search fails: back up to the preceding variable and try a different value for it. This is called chronological-backtracking. It is also possible to go all the way to set of variable that caused failure. State whether True or False.
A.	Always True
B.	Always False
C.	Not always True
D.	Not always False

5.	Consider a problem of preparing a schedule for a class of student. This problem is a type of:
A.	Search Problem
B.	Backtrack Problem
C.	CSP
D.	Planning Problem

6.	Flexible CSPs relax on _____
A.	Constraints
B.	Current State
C.	Initial State
D.	Goal State

7.	A solution to a CSP is an assignment of a value to all of the variables such that every constraint is satisfied.
A.	Always True
B.	Always False
C.	Not always True
D.	Not always False

8.	A CSP is unsatisfiable if an assignment of a value to all of the variables such that every constraint is satisfied does not exist.
A.	Always True
B.	Always False
C.	Not always True
D.	Not always False

3.1

lease copy your answer for question 1-1 to 1-8 in the following table:

1.	2.	3.	4.	5.	6.	7.	8.
A	D	D	A	C	A	A	A

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rcise 2. (4 Marks).

A constraint satisfaction problem (CSP) consists of:

1	a set of variables {x1, x2, … xi};
2	a finite set of domain D
3	a set of constraints C
4	CSP is to assign values to variables so that all constraints are satisfied.

1 **Describe the elements in the definition**

	Variables represent: varables Represent value from domain (1 mark)
	The domain of a variable is: is aset of value can assigned to the variables (1 marks)
	Constraint is a: a Set of constraint the desid which vale of from domain I will assgined to the variables and we have 3 type of constraints unury, bainry higer-order of constraint (2 marks)

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cise 3 : (6 Marks)

1 Give the variables, Domains and Constraints of he SUDOKU problem.

(6)

Variables:

in SuDoKu we have 81 variables

V(1,1), V(1,2) ..... V(1,9)

V(2,1), V(2,2) ..... V(2,9)

V(9,1) ..... V(9,9)

(2)

Domains:

for each variables we have Domains {1,2,3,4,5,6,7,8,9}

Constraints:

(4)

We have 3 constraints in SuDoKu

1- Can't have the same Value in the same row.

2- Can't have the same value in the same column.

3- Can't have the same value in the sup squre.

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marks).

be the CSP as a traditional search problem: (2 Marks)

1- initual staut = with empty set {}.

2- successors funcan: assignd value to the variable is unassignd value that satisfid all constrains.

3- goal test = check if all variables assignd value with satisfid all constrains.

4.2 Write the Algorithm of the Backtracking Search: (4 Marks)

```
BacKtracKing(F,C){
  V= Unassinged variables;
  V= domain[V] → I will give V any valy from domain
                 that consset with constraint
                 satsfied;
then if (V.next() == Dwo){
then I have to chang the value of my variable}
else { go to the next variables}}
```

(4.

END OF THE EXAM