Exam 2011

Q1)

A)

	Psm1	**PSM2**	**PSM3**
Name of PSM	Greedy	A*	Hill Climbing
Improvement due to usage of heuristic	Uses minimal estimated cost h (n) to the goal state as measure. This reduces the search time but the algorithm is neither complete nor optimal.	Combines uniform cost and greedy search F (n) = g (n) + h (n). A* is complete , optimal but its space complexity is still bad	**Hill-climbing algorithms** : Keep only a single state in memory , But can get stuck on local optima.

B)

KR Scheme	**Inference 1**	**Inference 2**	**Inference 3**
Frames	Inheritance	Multiple Inheritance	
Semantic networks	Intersection search	Inheritance	
First Order logic	Resolution	Resolution By Contradiction	Unification

Q2)True, False

1- False → more powerful
2- True
3- False → because there is exist infinite domain
4- False → the KR is define by syntax, semantic and proof theory and inference
5- True
6- Ma3taktsh 5adnaaah
7- Ma3taktsh 5adnaaah
8- False → is the configuration of all possible states and how they connect to each other
9- True
10- False → is a basis for alpha beta prunning as both apply depth first search mechanism

B)

1.1- R

1.2- W

2- !W v (S v !T)

3- !W v U

4- !R v !U v T

5- Goal !S

(1.2 with 2) → (S v !T) **(6)**

(6 with 4) → (S v !R v !U) **(7)**

(7 with 1.1) → (S v !U) **(8)**

(8 with 3) → (S v !W) **(9)**

(9 with 1.2) → (S) **(10)**

(10 with 5) → NIL

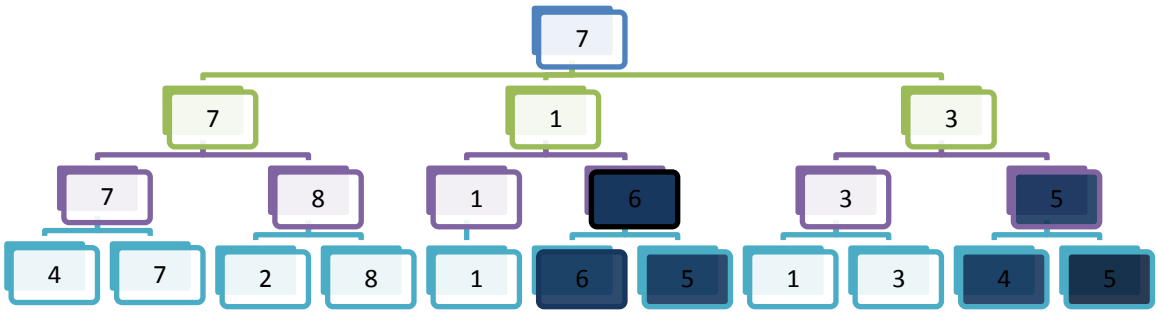
Q3)

Class Precedence list:

1- Cairo University
2- CTA member
3- Cairo Resident
4- American Express
5- Egypt Airline
6- Company member

2- 40%

B)



The filled box → not evaluted

Q4)

1-Greedy

	Open List	closed List
	{S}	{}
S	{A(3) , B(4) }	{S}
A	{ C (3) , B(4) }	{S,A}
C	{E(1) , D(2) , B(4) }	{S,A,C}
E	{D(2) , B(4) }	{S,A,C,E}
D	{F(0) , B(4) }	{S,A,C,E,D}
F	{B(4)}	{S,A,C,E,D,F}
B	{G(0)}	{S,A,C,E,D,F,B}
G	{}	{S,A,C,E,D,F,B,G}

2-Hill Climbing

Path is S-A-C-E, won't reach any goal

3-Uniform Cost

	Open List	closed List
	{S}	{}
S	{A(2) , B(3) }	{S}
A	{ B(3) , C (4) }	{S,A}
B	{ C(4) , C'(7) , G(9) }	{S,A,B}
C	{ D(6),C'(7),E(8),G(9) }	{S,A,B,C}
D	{c'(7) , E(8) , F(8) , G(9)}	{S,A,B,C,D}
C'	{ E(8) , F(8) , G(9) , D'(9) , E'(11)}	{ S,A,B,C,D,C'}
E	{ F(8) , G(9) , D'(9) , E'(11) }	{ S,A,B,C,D,C',E}
F	{ G(9) , D'(9) , E'(11) }	{ S,A,B,C,D,C',E,F}
G	{D'(9) , E'(11)}	{ S,A,B,C,D,C',E,F,G}

4) A*

	Open List	closed List
	{S}	{}
S	{A(5) , B(7) }	{S}
A	{ B(7) , C (7) }	{S,A}
B	{ C(7) , G(9) }	{S,A,B}
C	{D(8) ,G(9) , E(9) }	{S,A,B,C}
D	{ F(8) , G(9) , E(9) }	{S,A,B,C,D}
F	{ G(9) , E(9) }	{ S,A,B,C,D,F}
G	{ E(9) }	{ S,A,B,C,D,F ,G}