COMP3411/9814

23T1

QUIZ 5

Question 1

We wish to write Prolog code for summing the items in a list. The base case is:

```
sum([],0).
```

Which of the following correctly implements the recursive case?

- sum([H|T], S) :- S is H+S, sum(T,S).
- sum([H|T], S) :- sum(T, S), S is H+S.
- **sum([H|T], S) :- sum(T,R), S is H+R.**
- sum([H|T], S) :- S is H + sum(T,S).

Question 2

Assume the following rules have been loaded into Prolog:

```
p(_, 0, 1).
p(A, A, 1).
p(A, B, N) : -
    A > 0,
    B > 0,
    A1 is A - 1,
    B1 is B - 1,
    p(A1, B, N0),
    p(A1, B1, N1),
    N is N0+N1.
```

What will be the first value returned by this query?

```
p(5, 2, N).
```

- (●) N = 10
- ( ) N = 8
- ( ) N = 6
- ( ) N = 4

Question 3

Given the predicate:

p(X, [X]).

p(X, [_|L]) :- p(X, L).

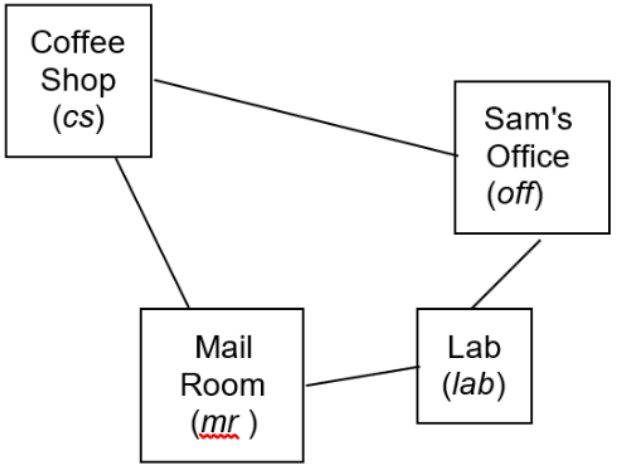
What is the relationship expressed between the first and second arguments of the predicate:

- **X** is deleted from the list given in the second argument
- **X** is a member of the list given in the second argument
- **X** is the last element of the list given in the second argument
- The second argument splits on **X**
- **X** is the first element of the list given in the second argument

Question 4

Consider the planning domain shown in the figure below. Which STRIPS representations is correct for the pickup mail (pum) action?

Features:	**Actions:**
RLoc – Rob's location	*mc* – move clockwise
RHC – Rob has coffee	*mcc* – move counterclockwise
SWC – Sam wants coffee	*puc* – pickup coffee
MW – Mail is waiting	*dc* – deliver coffee
RHM – Rob has mail	*pum* – pickup mail
	dm – deliver mail



- (●) Preconditions: (RLoc = mr) ∧ mw, Effects: [¬mw, rhm]
- ( ) Preconditions: (RLoc = cs) ∧ rhc, Effects: [rhc]
- ( ) Preconditions: (RLoc = off) ∧ rhc, Effects [¬rhm]
- ( ) Preconditions: (RLoc = off) ∧ rhm, Effects: [¬rhm]

Question 5

Which set of assumptions applies to task level planning assumptions?

- The world is stochastic; there can be multiple agents affecting the world; the agent knows what state it is in; time is continuous
- **The world is stochastic; there is only one agent that can affect the world; the agent knows what state it is in; time progresses discretely**
- The world is deterministic; there is only one agent that can affect the world; the agent knows what state it is in; time progresses discretely
- The world is deterministic; there is only one agent that can affect the world; the agent knows what state it is in; time is continuous
- The world is stochastic; there is only one agent that can affect the world; the agent's state may be uncertain; time progresses discretely