Q1 (38%)
(a)4%

(b)6%
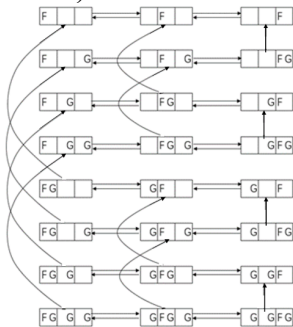RFRF

(c)6%
RRFLFLF or LLFRFRF or …

(d)8%
State space graph: F for knight and G for monster (24 states)
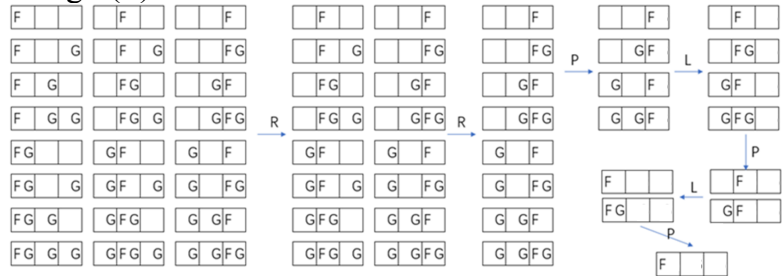

(e)6%
Current believe state: (24 states)

(f)8%
P: fight(F)

Q2 (30%)

(a)3%

Yes, because the goal is to find the shortest path. The straight-line distance is heuristic admissible.

(b)9%

7b)

→ Chongqing   Chongqing   Chongqing

505 → Wuhan   562 Guilin   Wuhan → Guilin

Changsha Nanchang Xiamen   Changsha

Chongqing

Wuhan   Guilin   changsha → Nanchang Xiamen

→ changsha Nanchang Xiamen   Guangzhou Changsha   Guilin Guangzhou Nanchang

图6+路3

Nanchang → Xiamen (find !)   Chongqing - Wuhan - Xiamen

Changsha Xiamen   545+ 646 = 1191

(c)9%

9c) 当前点, 利目标. $f(n) = h(n) + g(n)$

Wuhan   Wuhan

Chongqing Changsha Nanchang Xiamen   CQ   CS   NC   XM

860 +105   (400)=618   425 =718   400 +646 =1046

GL GZ NC   218+ 412 = 630

280   0↑ 485   WH → CS → GZ

= 810   = 962   643

(d)9%

9d) 利目标点.   取 $f(n) = h(n) + g(n)$

WH   WH   WH → CS → GZ

CQ CS NC XM   CQ CS NC XM

545+ 860 218+400 233+485 646+400   1405   718 1096   630

1405   618   718   1046   GL GZ NC

218+312 218 28   643

+280 +412 +224

= 810 = 630

Q3 (12%)
(a)4%
Agent Function
1. Describe behaviors of an agent
2. Maps any given percept sequence to an action
Agent Program

1. Internally, the agent function of an intelligent agent is implemented by an agent program Concrete implementation and running on the agent architecture

Rational Agent

2. The one does the right thing
3. Every entry of the agent function is filled out correctly

Utility-based Agent: The agent selects action optimizing a utility which evaluates how far we are from the goal.

(b)4%

Performance Measures vs. Utility function

1. A performance measure (typically **imposed by the designer**) is used to **evaluate the behavior of the agent in environment**. It tells does agent do what it's supposed to do in the environment.
2. A utility function is used **by an agent itself** to evaluate how desirable states are. Some paths to the goal are better (more efficient) than others –which path is the best
3. Does agent do what it's supposed to do vs. does agent do it in optimal way
4. The utility function may not be the same as the performance measure
5. An agent may have no explicit utility function at all, whereas there is always a performance measure

(c)4%

P: Taste of coffee, Production speed, etc.

E: Coffee beans, Water, Milk, etc.

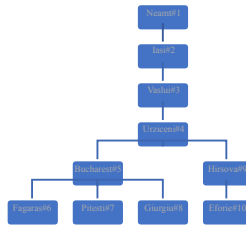A: Grinding of the machine, Filter cooking and extraction, etc.

S: Bean Grinder, Thermostat, etc.

Q4 （20%）
(a)8%
Oradea-Sibiu-Rimnicu Vilcea-Pitesti

(b)8%

deep=1   deep=2   deep=3   deep=4
  deep=5   deep=6

(c)4%
Reasonable answers are accepted.
Relatively fast running speed.
Require to store all nodes generated, memory consumption is high.