## Question Bank-1

1. The 8-puzzle sliding block consists of a 3X3 board with 8 numbered tiles and a blank space. A tile adjacent to the blank space can slide into the space. A state description specifies the location of each of the eight tiles and the blank in one of the nine squares. An example state of the puzzle is shown here.


   The object is to reach the specified state called goal state. On such goal state is shown her


2. Compare and contrast the definitions of Artificial Intelligence from the following point of views: Thinking Humanly, Acting Humanly, Thinking Rationally and Acting Rationally.
3. What is the Turing test? What are the capabilities a computer must possess to meet the Turing test.
4. Write five applications of AI.
5. What is Breadth First Search?
6. Define a rational agent.
7. Explain PEAS with an example.
8. What is Depth First Search?
9. Define the following terms with respect to an intelligent agent:
   (i) Agent, (ii) Environment, (iii) Sensors, (iv) Actuators, (v) percepts
10. Explain briefly A* search and Recursive best-first search algorithm.
11. Compare and contrast four types of agent programs? Explain in details the properties of the task environment.
12. In AI a problem can be formulated using 5 components. What are those 5 components? Explain each of these components?
13. You are designing a “shopping AI books on Internet” Agent. What are its PEAS?
14. Explain an Iterative deepening depth first search algorithm with an example.
15. Formulate a problem for a toy problem like vacuum world or 8-puzzle?

# Question Bank-2

Q.1 Define the following terms: (i) unconditional or prior probability (ii) Conditional probability (iii) Independence.

Q.2 What is uncertainty? Explain with real-life examples.

Q.3 Describe an Expert system. Discuss how to represent the Domain Knowledge.

Q.4 Explain the Bayers rule or theorem.

Q.5 Define Forward chaining and Backward chaining.

Q.6 Difference between Forward chaining and Backward chaining.

Q.7 Explain Joint Probability Distribution.

Q.8 What is normalization?

Q.9 Calculate the normalization constant '$\alpha$' for the evidence variable "toothache".

| | *toothache* | | *~toothache* | |
|---|---|---|---|---|
| | *catch* | *~catch* | *catch* | *~catch* |
| *cavity* | **.108** | **.012** | **.072** | **.008** |
| *~cavity* | **.016** | **.064** | **.144** | **.576** |

Q.10 What is the probability of a *cavity* given a *toothache*? What is the probability of a *cavity* given the probe *catch*es?

| | *toothache* | | *~toothache* | |
|---|---|---|---|---|
| | *catch* | *~catch* | *catch* | *~catch* |
| *cavity* | **.108** | **.012** | **.072** | **.008** |
| *~cavity* | **.016** | **.064** | **.144** | **.576** |

Q.11 What is the Chain rule?

Q.12 What do you mean by expert system shells?

Q.13 What is knowledge acquisition?

Q.14 Describe entailment and model checking.

Q.15 What is CNF? What is the procedure to convert the sentence into CNF?

Q.16 What is First Order Logic?

Q.17 What is Quantification? Explain the types of Quantifiers with examples.

Q.18 Write four Quantified inference rules with examples.

Q.19 What are the types of Quantifiers?

Q.20 Explain the PEAS of the WUMPUS world.