CLASS: BTECH   SEMESTER : VII
BRANCH: CSE / IT   SESSION : MO/2022

SUBJECT: IT420 ARTIFICIAL INTELLIGENCE
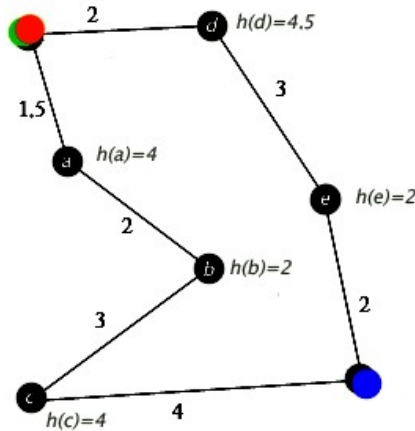
TIME: 3:00 Hours   FULL MARKS: 50

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. **Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Show relationship between Artificial Intelligence, machine learning and deep learning with the help   [2]
        of diagram.   [CO1][BT2]
Q.1(b) Define PEAS for self driving cars.   [CO1][BT4]   [3]
Q.1(c) Compare knowledge based agents with reflexive, utility and learning agents.   [CO2][BT2]   [5]

Q.2(a) Compare steepest ascent version of Hill climbing from traditional Hill climbing. Write justification.   [2]
        [CO2][BT3]
Q.2(b) Apply A* algorithm to solve given graph problem and write steps.   [CO3][BT3]   [3]

Q.2(c) Write genetic algorithm for scheduling of classes.   [CO4][BT5]   [5]

Q.3(a) Differentiate between frames and semantic network.   [CO3][BT3]   [2]
Q.3(b) Make a semantic network of given statement.   [CO3][BT4]   [3]
        a) Tom is an instance of dog.
        b) Tom caught a cat
        c) Tom is owned by roshan.
        d) Tom is brown in colour.
        e) Dogs like bones.
        f) The dog sat on the mat.
        g) A dog is a mammal.
        h) A cat is an instance animal
        i) All mammals are animals.
        j) Mammals have fur.

Q.3(c) Prove that "Robert is criminal." using backward chaining.   [CO4][BT5]   [5]
        Given than:
        1. It is a crime for an American to sell weapons to hostile nations.
        2. Country A has some missiles.
        3. All of the missiles were sold to country A by Robert.
        4. Missiles are weapons.
        5. Enemy of America is known as hostile.
        6. Country A is an enemy of America.
        7. Robert is American.
        Please show your proof step wise.

Q.4(a) Plausibility is upper bound of possibility? Justify the statement. [CO4][BT3] [2]
Q.4(b) Explain belief network with an example. [CO3][BT3] [3]
Q.4(c) Show neural network learning in digit recognition system with the help of figure/flowchart/algorithm. [CO5][BT5] [5]

Q.5(a) Google assistance is an example of natural language generation or understanding or both. Justify your answer. [CO5][BT5] [2]
Q.5(b) To design a vacuum cleaner robot write planning steps in details. [CO5][BT4] [3]
Q.5(c) Discuss various components of robot software architecture. [CO5][BT5] [5]

:::::23/11/2022:::::M