JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- APRIL-2023

COURSE CODE(CREDITS): 18B1WEC838(3)   MAX. MARKS: 25

COURSE NAME: ARTIFICIAL INTELLIGENCE TECHNIQUES

COURSE INSTRUCTORS: DR. NISHANT JAIN   MAX. TIME: 1.5 Hour

Note: All questions are compulsory. Marks are indicated against each question in square brackets.

Q1. Explain the architecture of Knowledge based AI agents with the help of suitable diagram.

[3] CO2

Q2. Considering a vocabulary with only four propositions, A, B, C and D. How many valid models are there for the following sentences:

   i. $(A \wedge B) \vee (B \wedge C)$

   ii. $\neg(A \wedge B) \vee \neg C$

   iii. $(A \wedge B) \wedge \neg A$

[1.5 X 3 = 4.5] CO3

Q3. Represent the following sentences using logical connectives:

   i.   Rohan does not play cricket and football. It is given that P= Rohan plays cricket, and Q= Rohan plays football.

   ii.   Rohan plays cricket or football. It is given that P= Rohan does not play cricket, and Q= Rohan does not play football.

   iii.   If it is raining, then the street is wet. It is given that P= It is raining, and Q= Street is wet.

[3] CO3

Q4. Explain and proof (by Truth Table) the following inference rules:

   a. Modus Tollens.
   b. Disjunctive Syllogism.
   c. Resolution.

[1.5 X 3 = 4.5] CO3

Q5. Why is it important to define PEAS for an AI agent? Define PEAS for the Wumpus world.

[4]CO4

Q6. Considering AI agent for minesweeper game, explain how AI agent agent could infer if the mines are present at location A, B, C, D, E, F, and G for the situation given below. It is given that one mine is present at H. Support your answer with the knowledge base of an AI agent and with AI logical statements.

C	D	E
B	1	F
A	H	G

[3]CO4

Q7. Explain AI agent program for playing Tic-Tac-Toe game.

[3] CO4