**Practice Assignment Questions**

1. **Can machine think? Explain your reasons both for agreement and disagreement.**

Ans – I think that machines can think, this is because we have seen much advancement in the technological fields in past couple of decades, we can now see more and more things which can act and think similar to humans, hence we can say that in near future we will have machines which not only look and feel like humas but can also think like humans.

1. **Can machine be comparable to human beings on behaving terms?**

Ans – As far as my knowledge goes, at this instance the humanoids or the robot machines which are being developed by many institutes have not been able to achieve the feat that their robot can behave like humans, but certainly in near future this also can be possible in my opinion.

1. **What is your opinion on the statement, “Machine will have minds”?**

Ans – I think this statement is not very apt as I think that machines already has mind i.e. the machines have a central processing unit which is responsible for the machine to act like humans, make decisions and interact with the environment using this processing unit which acts like a human brain, hence we can actually say that machine has minds.

**4. Is it possible for machines to be intelligent?**

Ans – According to me I think the machines are capable to get intelligent, we can see that automation is already taking over all the digital industry, similarly personalisation is also present in all aspects of products nowadays, all these features make the system predict, analyse and make intelligent decisions in the real world scenarios, hence we can say that if we are able to integrate all these in the machines then yes it is evident that the machines will possess intelligence and behave like humans in very short span of time.

**5. Discuss the working of the Minimax algorithm using Tic-Tac-Toe Game.**

Ans- Minimax is a sort of backtracking calculation that is utilized in dynamic and game hypothesis to track down the ideal move for a player, accepting that your adversary additionally plays ideally. It is generally utilized in two player turn-based games like Tic-Tac-Toe, Backgammon, Mancala, and Chess.

In Minimax the two players are called maximiser and minimizer. The maximiser attempts to get the most noteworthy score conceivable while the minimizer attempts to do the inverse and get the least score conceivable. Each board state has a worth related with it. In a given state assuming the maximiser has advantage, the score of the board will in general be some sure worth. Assuming the minimizer has the advantage in that board state, it will in general be some bad worth. The upsides of the board are determined by certain heuristics which are special for each kind of game.

A Minimax algorithm can be best defined as a recursive function that does the following things in a tic tac toe game :

1. return a value if a terminal state is found (+1, 0, -1) 🡪 goal state.
2. go through available spots on the board 🡪 find and search empty cells.
3. call the minimax function on each available spot (recursion)
4. evaluate returning values from function calls 🡪 feasibility
5. and return the best value 🡪 best move / best position on the board.

The minimax algorithm work stops as soon as the it finds the best value for the ai player to be played on the board in order to either win or to atleast draw the match with the actual player.