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First and last name .....

### Question 1/20

What are the properties of task environment involved in chess with clock?

- A. Fully observable, Dynamic ,Discrete, Multi Agent
- ☒ B. Fully observable, Static,Discrete, Multi Agent
- C. Fully observable, Static,Discrete, Single Agent
- D. Partially observable, Static, Discrete, Multi Agent

### Question 2/20

What is true about Iterative Deepening DFS?

- ☒ A. It's a Depth First Search, but it does it one level at a time, gradually increasing the limit, until a goal is found.
- B. It is the preferred informed search method
- C. It does not perform DFS in a BFS fashion.
- D. Is a depth-first search with a fixed depth limit l

### Question 3/20

Consider the following logical inferences :

I1 : If it is Sunday then school will not open.

The school was open.

Inference : It was not Sunday.

I2 : If it is Sunday then school will not open.

It was not Sunday.

Inference : The school was open.

Which of the following is correct?

- A. Both I1 and I2 are not correct inferences.
- B. Both I1 and I2 are correct inferences.
- C. I1 is not correct but I2 is a correct inference.
- ☒ D. I1 is correct but I2 is not a correct inference

### Question 4/20

The first order logic (FOL) statement  $((R \vee Q) \wedge (P \vee \neg Q))$  is equivalent to which of the following?

- A.  $((R \vee \neg Q) \wedge (P \vee \neg Q) \wedge (R \vee P))$
- B.  $((R \vee Q) \wedge (P \vee \neg Q) \wedge (R \vee P))$
- C.  $((R \vee Q) \wedge (P \vee \neg Q) \wedge (\neg R \vee P))$
- ☒ D.  $((R \vee Q) \wedge (P \vee \neg Q) \wedge (R \vee P))$

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### Question 5/20

We can find a function similar to a given function and having approximately the same value at a point with the help of:

- A. None of the above
- ☒ B. Taylor Series
- C. Linearization
- D. Gradient descent

### Question 6/20

We can find the approximate root of a number with the help of:

- A. Taylor Series
- B. Gradient descent
- ☒ C. Linearization
- D. None of the above

### Question 7/20

What is the time complexity in Bidirectional search algorithm?

- A.  $O(bd/2)$
- ☒ B.  $O(b^{d/2})$
- C.  $O(bm)$
- D.  $O(b^d)$

### Question 8/20

In first-order logic, how would you express that “something likes something”?

- ☒ A.  $xyLikes(x, y)$
- B.  $xyLikes(x, y)$
- C.  $xyLikes(x, y)$
- D.  $xyLikes(x, y)$

### Question 9/20

An orthogonal Matrix is a matrix, which when multiplied by its transpose results in

- A. Any Singular matrix
- ☒ B. Identity Matrix
- C. Any Non-Singular matrix
- D. None of these

### Question 10/20

Singular matrix is?

- A. invertible
- ☒ B. non-invertible
- C. None Of the above
- D. Both non-invertible and invertible

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### Question 11/20

Matrix C has Hadamard product of two matrices A and B each element C is:

- A. sum of the product of each row of matrix A with each column of matrix B
- B. A random value
- ☒ C.  $c_{ij} = a_{ij} \times b_{ij}$
- D. None of the above

### Question 12/20

\_\_\_\_\_ algorithm keeps track of k states rather than just one.

- A. Hill-Climbing search
- ☒ B. Local Beam search
- C. Stochastic hill-climbing search
- D. Random restart hill-climbing search

### Question 13/20

Suppose that price of 2 ball and 1 bat is 100 units, then What will be representation of problems in Linear Algebra in the form of x and y?

- A.  $x + y = 100$
- B.  $2x + 2y = 100$
- ☒ C.  $2x + y = 100$
- D.  $2x + y = 200$

### Question 14/20

If a function is differentiable at a point, then function is?

- A. not necessarily continuous at that point
- B. none of these
- C. not continuous at that point
- ☒ D. continuous at that point

### Question 15/20

What is true regarding Determinant of a Matrix?

- A. To find determinant, subtract diagonal elements together.
- B. determinant is a vector value that can be computed from the elements of a Trace matrix
- C. Both A and C
- ☒ D. The concept of determinant is applicable to square matrices only.

### Question 16/20

Alpha-beta is guaranteed to compute the same value for the root node as computed by... ..... with less or equal computation.

- A. Depth First search
- B. Breadth First search
- ☒ C. Minimax
- D. Bidirectional Search

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### Question 17/20

Let  $v(x)$  mean  $x$  is a vegetarian,  $m(y)$  for  $y$  is meat, and  $e(x, y)$  for  $x$  eats  $y$ . Based on these, consider the following sentences:

- I.  $x \vee (x \rightarrow (y \wedge e(x, y) \rightarrow \neg m(y)))$
- II.  $x \vee (x \rightarrow (\neg(y \wedge m(y) \wedge e(x, y))))$
- III.  $x \vee (y \wedge m(y) \wedge e(x, y) \rightarrow \neg v(x))$

One can determine that

- A. Only II and III are equivalent sentences
- ☒ B. I, II, and III are equivalent sentences
- C. Only I and III are equivalent sentence
- D. Only I and II are equivalent sentences

### Question 18/20

Norm of a vector is its:

- ☒ A. unit vector in its direction
- B. none of the above
- C. direction
- D. magnitude

### Question 19/20

A \_\_\_\_\_ is an educated guess about a solution, such as a rule of thumb that points to the direction of a desired outcome but can't tell exactly how to reach it.

- A. Knowledge
- B. Learning
- ☒ C. Heuristics
- D. Explanation

### Question 20/20

The scalar product of  $8i + j - 5k$  and  $3i - 6j + 7k$  is:

- A. 10
- B. -15
- ☒ C. -17
- D. 25