2.0.1 UGC NET CSE | July 2016 | Part 3 | Question: 75

A software program that infers and manipulates existing knowledge in order to generate new knowledge is known as:

A. Data dictionary
C. Inference engine

B. Reference mechanism
D. Control strategy

ugcnetcse-july2016-paper3

Answer key ☞

2.0.2 UGC NET CSE | July 2016 | Part 3 | Question: 66

A perceptron has input weights $W_1 = -3.9$ and $W_2 = 1.1$ with threshold value $T = 0.3.$ What output does it give for the input $x_1 = 1.3$ and $x_2 = 2.2$?

A. -2.65 B. -2.30 C. 0 D. 1

ugcnetcse-july2016-paper3

Answer key ☞

2.1   Artificial Intelligence (18)

2.1.1 Artificial Intelligence: GATE DS&AI 2024 | Question: 13

Let h_1 and h_2 be two admissible heuristics used in A^* search.

Which **ONE** of the following expressions is always an admissible heuristic?

A. $h_1 + h_2$
C. $h_1/h_2, (h_2 \neq 0)$

B. $h_1 \times h_2$
D. $|h_1 - h_2|$

gate-ds-ai-2024   artificial-intelligence

Answer key ☞

2.1.2 Artificial Intelligence: UGC NET CSE | December 2013 | Part 3 | Question: 26

The mean-end analysis process centers around the detection of differences between the current state and goal state. Once such a difference is isolated, an operator that can reduce the difference must be found. But perhaps that operator cannot be applied to the current state. So a sub-problem of getting to a state in which it can be applied is set up. The kind of backward chaining in which operators are selected and then sub goals are set up to establish the precondition of operators is called

A. backward planning
C. operator subgoaling

B. goal stack planning
D. operator overloading

ugcnetcse-dec2013-paper3   artificial-intelligence

Answer key ☞

2.1.3 Artificial Intelligence: UGC NET CSE | December 2014 | Part 3 | Question: 72

Match the following learning modes $w.r.t.$ characteristics of available information for learning :

a. Supervised   i. Instructive information on desired responses, explicitly specified by a teacher.

b. Recording   ii. A priori design information for memory storing

c. Reinforcement   iii. Partial information about desired responses, or only "right" or "wrong" evaluative information

d.
Unsupervised   iv. No information about desired responses

Codes :

	a	b	c	d
A.	i	ii	iii	iv
B.	i	iii	ii	iv
C.	ii	iv	iii	i
D.	ii	iii	iv	i

2.1.4 Artificial Intelligence: UGC NET CSE | December 2015 | Part 3 | Question: 46

Language model used in LISP is

A. Functional programming
C. Object oriented programming

B. Logic programming
D. All of the above

2.1.5 Artificial Intelligence: UGC NET CSE | December 2015 | Part 3 | Question: 64

Consider the two class classification task that consists of the following points:

Class $C_1 : [-1, -1], [-1, 1], [1, -1]$

Class $C_2 : [1, 1]$

The decision boundary between the two classes C_1 and C_2 using single perception is given by:

A. $x_1 - x_2 - 0.5 = 0$
C. $0.5(x_1 + x_2) - 1.5 = 0$

B. $-x_1 - x_2 - 0.5 = 0$
D. $x_1 + x_2 - 0.5 = 0$

2.1.6 Artificial Intelligence: UGC NET CSE | January 2017 | Part 3 | Question: 55

Consider following two rules $R1$ and $R2$ in logical reasoning in Artificial Intelligence (AI):

$R1 :$ From $\alpha \supset \beta \frac{\text{and } \alpha}{\text{Inter } \beta}$ is known as Modulus Tollens (MT)

$R2 :$ From $\alpha \supset \beta \frac{\text{and } \neg\beta}{\text{Inter } \neg\alpha}$ is known as Modus Ponens(MP)

A. Only $R1$ is correct.
C. Both $R1$ and $R2$ are correct.

B. Only $R2$ is correct.
D. Neither $R1$ nor $R2$ is correct.

2.1.7 Artificial Intelligence: UGC NET CSE | July 2018 | Part 2 | Question: 71

In artificial Intelligence (AI), an environment is uncertain if it is ___

A. Not fully observable and not deterministic
B. Not fully observable or not deterministic
C. Fully observable but not deterministic
D. Not fully observable but deterministic

2.1.8 Artificial Intelligence: UGC NET CSE | July 2018 | Part 2 | Question: 72

In artificial Intelligence (AI), a simple reflex agent selects actions on the basis of ___

A. current percept, completely ignoring rest of the percept history
B. rest of the percept history, completely ignoring the current percept
C. both current percept and complete percept history
D. both current percept and just previous percept

2.1.9 Artificial Intelligence: UGC NET CSE | July 2018 | Part 2 | Question: 73

In heuristic search algorithms in Artificial Intelligence (AI), if a collection of admissible heuristics $h_1 \ldots h_m$ is available for a problem and none of them dominates any of the others, which should we choose?

A. $h(n) = max\{h_1(n), \ldots, h_m(n)\}$
C. $h(n) = avg\{h_1(n), \ldots, h_m(n)\}$

B. $h(n) = min\{h_1(n), \ldots, h_m(n)\}$
D. $h(n) = sum\{h_1(n), \ldots, h_m(n)\}$

2.1.10 Artificial Intelligence: UGC NET CSE | July 2018 | Part 2 | Question: 74

Consider following sentences regarding A^*, an informed search strategy in Artificial Intelligence (AI).

a. A^* expands all nodes with $f(n) < C^*$
b. A^* expands no nodes with $f(n) \geq C^*$
c. Pruning is integral to A^*

Here, C^* is the cost of the optimal solution path. Which of the following is correct with respect to the above statements?

A. Both statements a and statement b are true
B. Both statements a and statement c are true
C. Both statements b and statement c are true
D. All the statements a, b and c are true

2.1.11 Artificial Intelligence: UGC NET CSE | June 2012 | Part 3 | Question: 2

In Delta Rule for error minimization

A. weights are adjusted w.r.to change in the output
B. weights are adjusted w.r.to difference between desired output and actual output
C. weights are adjusted w.r.to difference between output and output
D. none of the above

2.1.12 Artificial Intelligence: UGC NET CSE | June 2012 | Part 3 | Question: 21

A^* algorithm uses $f' = g + h'$ to estimate the cost of getting from the initial state to the goal state, where g is a measure of cost getting from initial state to the current node and the function h' is an estimate of the cost of getting from the current node to the goal state. To find a path involving the fewest number of steps, we should test,

A. $g = 1$ B. $g = 0$ C. $h' = 0$ D. $h' = 1$

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2.1.13 Artificial Intelligence: UGC NET CSE | June 2014 | Part 3 | Question: 28

Match the following :

	List − I		**List − II**
a.	Expert systems	i.	Pragmatics
b.	Planning	ii.	Resolution
c.	Prolog	iii.	means-end analysis
d.	Natural language processing	iv.	Explanation facility

Codes :

A. a-iii, b-iv, c-i, d-ii   B. a-iii, b-iv, c-ii, d-i
C. a-i, b-ii, c-iii, d-iv   D. a-iv, b-iii, c-ii, d-i

ugcnetjune2014iii   artificial-intelligence

2.1.14 Artificial Intelligence: UGC NET CSE | June 2014 | Part 3 | Question: 30

Slots and facets are used in

A. Semantic Networks   B. Frames   C. Rules   D. All of these

ugcnetjune2014iii   artificial-intelligence

2.1.15 Artificial Intelligence: UGC NET CSE | Junet 2015 | Part 3 | Question: 23

Which of the following is false for the programming language PROLOG?

A. A PROLOG variable can only be assigned to a value once
B. PROLOG is a strongly typed language
C. The scope of a variable in PROLOG is a single clause or rule
D. The scope of a variable in PROLOG is a single query

ugcnetcse-june2015-paper3   artificial-intelligence

2.1.16 Artificial Intelligence: UGC NET CSE | Junet 2015 | Part 3 | Question: 56

Match the following knowledge representation techniques with their applications :

	List – I		List – II
(a)	Frames	(i)	Pictorial representation of objects, their attributes and relationships
(b)	Conceptual dependencies	(ii)	To describe real world stereotype events
(c)	Associative networks	(iii)	Record like structures for grouping closely related knowledge
(d)	Scripts	(iv)	Structures and primitives to represent sentences

Codes :

A. (a)-(ii), (b)-(iv), (c)-(i), (d)-(ii)
C. (a)-(iv), (b)-(iii), (c)-(i), (d)-(ii)

B. (a)-(iii), (b)-(iv), (c)-(ii), (d)-(i)
D. (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

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Answer key 👆

2.1.17 Artificial Intelligence: UGC NET CSE | Junet 2015 | Part 3 | Question: 59

Match the following with respect to heuristic search techniques :

	List – I		List – II
(a)	Steepest-acccent Hill Climbing	(i)	Keeps track of all partial paths which can be candiadate for further explaination
(b)	Branch-and-bound	(ii)	Discover problem state(s) that satisfy a set of constraints
(c)	Constraint satisfaction	(iii)	Detects difference between current state and goal state
(d)	Means-end-analysis	(iv)	Considers all moves from current state and selects best move

Codes :

A. (a)-(i), (b)-(iv), (c)-(iii), (d)-(ii)
C. (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)

B. (a)-(iv), (b)-(i), (c)-(ii), (d)-(iii)
D. (a)-(iv), (b)-(ii), (c)-(i), (d)-(iii)

ugcnetcse-june2015-paper3   artificial-intelligence

Answer key 👆

2.1.18 Artificial Intelligence: UGC NET CSE | October 2020 | Part 2 | Question: 36

Which of the following is NOT true in problem solving in artificial intelligence?

A. Implements heuristic search technique
C. Knowledge is imprecise

B. Solution steps are not explicit
D. It works on or implements repetition mechanism

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Answer key 👆

2.2   Artificial Neural Network (1)

2.2.1 Artificial Neural Network: UGC NET CSE | December 2013 | Part 3 | Question: 30

An artificial neuron receives n inputs $x_1, x_2, \ldots, x_n$ with weights $w_1, w_2, \ldots, w_n$ attached to the input links. The weighted sum _____ is computed to be passed on to a non-linear filter ϕ called activation function to release the output.

A. $\Sigma\, w_i$ B. $\Sigma\, x_i$
C. $\Sigma\, w_i + \Sigma\, x_i$ D. $\Sigma\, w_i \cdot \Sigma\, x_i$

Answer key 👈

2.3 Back Propagation (1)

2.3.1 Back Propagation: UGC NET CSE | December 2012 | Part 2 | Question: 46

Back propagation is a learning technique that adjusts weights in the neutral network by propagating weight changes.

A. Forward from source to sink   B. Backward from sink to source
C. Forward from source to hidden nodes   D. Backward from sink to hidden nodes

Answer key 👈

2.4 Blocks World Problem (1)

2.4.1 Blocks World Problem: UGC NET CSE | September 2013 | Part 3 | Question: 5

The Blocks World Problem in Artificial Intelligence is normally discussed to explain a

A. Search technique   B. Planning system
C. Constraint satisfaction system   D. Knowledge base system

Answer key 👈

2.5 Chaining (1)

2.5.1 Chaining: UGC NET CSE | December 2015 | Part 3 | Question: 8

Forward chaining systems are _____ where as backward chaining systems are _____

A. Data driven, Data driven   B. Goal driven, Data driven
C. Data driven, Goal driven   D. Goal driven, Goal driven

Answer key 👈

2.6 Expert System (2)

2.6.1 Expert System: UGC NET CSE | December 2012 | Part 3 | Question: 67

An expert system shell is an expert system without

A. domain knowledge   B. explanation facility
C. reasoning with knowledge   D. all of the above

Answer key 👈

2.6.2 Expert System: UGC NET CSE | December 2015 | Part 3 | Question: 45

Reasoning strategies used in expert systems include

A. Forward chaining, backward chaining and problem reduction
B. Forward chaining, backward chaining and boundary mutation
C. Forward chaining, backward chaining and back propagation
D. Forward chaining, problem reduction and boundary mutation

2.7   Fuzzy Logic (1)

2.7.1   Fuzzy Logic: UGC NET CSE | June 2019 | Part 2 | Question: 94

A fuzzy conjunction operator denoted as $t(x,y)$ and a fuzzy disjunction operator denoted as $s(x,y)$ form a dual pair if they satisfy the condition:

A. $t(x,y) = 1 - s(x,y)$
C. $t(x,y) = 1 - s(1-x, 1-y)$

B. $t(x,y) = s(1-x, 1-y)$
D. $t(x,y) = s(1+x, 1+y)$

2.8   Genetic Algorithms (1)

2.8.1   Genetic Algorithms: UGC NET CSE | June 2019 | Part 2 | Question: 97

Consider the following:

  i. Evolution
 ii. Selection
iii. Reproduction
iv. Mutation

Which of the following are found in genetic algorithms?

A. b, c and d only   B. b and d only   C. a, b, c and d   D. a, b and d only

2.9   Heuristic Search (1)

2.9.1   Heuristic Search: UGC NET CSE | December 2013 | Part 3 | Question: 25

If h* represents an estimate from the cost of getting from the current node N to the goal node and h represents actual cost of getting from the current node to the goal node, then A* algorithm gives an optimal solution if

A. h* is equal to h
C. h* underestimates h

B. h* overestimates h
D. none of these

2.10   Linear Programming (1)

2.10.1   Linear Programming: UGC NET CSE | September 2013 | Part 3 | Question: 13

If an artificial variable is present in the 'basic variable' of optimal simplex table then the solution is

A. Alternative solution
C. Unbounded solution

B. Infeasible solution
D. Degenerate solution

2.11.1 Machine Learning: UGC NET CSE | December 2012 | Part 3 | Question: 73

Match the following:

a. Supervised learning   1. The decision system receives rewards for its action at the end of a sequence of steps

b. Unsupervised learning   2. Manual labels of inputs are not used

c. Re-inforcement learning   3. Manual labels of inputs are used

d. Inductive learning   4. System learns by example

	a	b	c	d
A	1	2	3	4
B	2	3	1	4
C	3	2	4	1
D	3	2	1	4

ugcnetcse-dec2012-paper3   machine-learning

Answer key 👆

2.11.2 Machine Learning: UGC NET CSE | June 2014 | Part 3 | Question: 09

Perceptron learning, Delta learning and LMS learning are learning methods which falls under the category of

A. Error correction learning - learning with a teacher
B. Reinforcement learning - learning with a critic
C. Hebbian learning
D. Competitive learning - learning without a teacher

ugcnetjune2014iii   machine-learning

Answer key 👆

2.12.1 Map Coloring: UGC NET CSE | June 2013 | Part 3 | Question: 71

The map colouring problem can be solved using which of the following technique?

A. Means-end analysis   B. Constraint satisfaction
C. AO* search   D. Breadth first search

ugcnetcse-june2013-paper3   artificial-intelligence   map-coloring

Answer key 👆

2.13.1 Means End: UGC NET CSE | September 2013 | Part 3 | Question: 6

Means-Ends Analysis process centres around the detection of difference between the current state and the goal state. Once such a difference is found, then to reduce the difference one applies

A. a forward search that can reduce the difference
B. a backward search that can reduce the difference
C. a bidirectional search that can reduce the difference
D. an operator that can reduce the difference
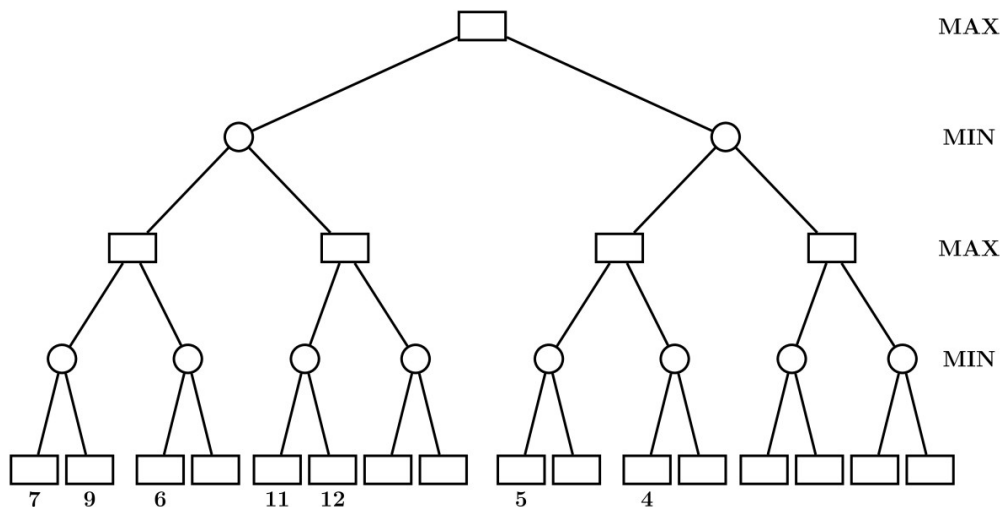
Answer key ✍

2.14   Minimax Procedure (1)

2.14.1 Minimax Procedure: UGC NET CSE | June 2019 | Part 2 | Question: 91

Consider the game tree given below:

Here ◯ and ☐ represents MIN and MAX nodes respectively. The value of the root node of the game tree is

A. 4   B. 7   C. 11   D. 12

Answer key ✍

2.15   Neural Network (3)

2.15.1 Neural Network: UGC NET CSE | December 2012 | Part 3 | Question: 9

You are given an OR problem and XOR problem to solve. Then, which one of the following statements is true?

A. Both OR and XOR problems can be solved using single layer perception
B. OR can be solved using single layer perception and XOR problem can be solved using self organizing maps
C. OR problem can be solved using radial basis function and XOR problem can be solved using single layer perception
D. OR can be solved using single layer perception and XOR problem can be solved using radial basis function

Answer key ✍

2.15.2 Neural Network: UGC NET CSE | June 2019 | Part 2 | Question: 98

Which of the following is an example of unsupervised neural network?

A. Back-propagation network

B. Hebb network

C. Associative memory network

D. Self-organizing feature map

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2.15.3 Neural Network: UGC NET CSE | September 2013 | Part 3 | Question: 28

In a single perceptron, the updation rule of weight vector is given by

A. $w(n+1) = w(n) + \eta[d(n) - y(n)]$

B. $w(n+1) = w(n) - \eta[d(n) - y(n)]$

C. $w(n+1) = w(n) + \eta[d(n) - y(n)] * x(n)$

D. $w(n+1) = w(n) - \eta[d(n) - y(n)] * x(n)$

ugcnetcse-sep2013-paper3   neural-network   machine-learning

2.16   Planning (1)

2.16.1 Planning: UGC NET CSE | July 2018 | Part 2 | Question: 78

Consider the following two sentences:

a. The planning graph data structure can be used to give a better heuristic for a planning problem

b. Dropping negative effects from every action schema in a planning problem results in a relaxed problem

Which of the following is correct with respect to the above sentences?

A. Both sentence a and sentence b are false

B. Both sentence a and sentence b are true

C. Sentence a is true but sentence b is false

D. Sentence a is false but sentence b is true

ugcnetcse-july2018-paper2   planning

2.17   Prolog (2)

2.17.1 Prolog: UGC NET CSE | June 2013 | Part 3 | Question: 67

Which one of the following is the correct implementation of the meta-predicate "not" in PROLOG (Here G represents a goal)?

A. not(G):- !, call(G), fail. not(G).

B. not(G):- call(G), !, fail. not(G).

C. not(G):- call(G), fail, !, not(G).

D. not(G):- call(G), !, fail.not(G):- !.

ugcnetcse-june2013-paper3   artificial-intelligence   prolog

2.17.2 Prolog: UGC NET CSE | June 2014 | Part 3 | Question: 14

Which one of the following describes the syntax of prolog program?

I. Rules and facts are terminated by full stop(.)

II. Rules and facts are terminated by semi colon(;)

III. Variables names must start with upper case alphabets.

IV. Variables names must start with lower case alphabets.

A. I, II   B. III, IV   C. I, III   D. II, IV

ugcnetjune2014iii   artificial-intelligence   prolog

2.18 Reinforcement Learning (1)

2.18.1 Reinforcement Learning: UGC NET CSE | June 2019 | Part 2 | Question: 100

Reinforcement learning can be formalized in terms of ____ in which the agent initially only knows the set of possible _____ and the set of possible actions.

A. Markov decision processes, objects
B. Hidden states, objects
C. Markov decision processes, states
D. objects, states

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Answer key 🖉

2.19 Searches (1)

2.19.1 Searches: UGC NET CSE | June 2019 | Part 2 | Question: 92

Math List-I with List-II:

	List-I		List-II
(a)	Greedy best-first	(i)	Minimal cost $(p) + h(p)$
(b)	Lowest cost-first	(ii)	Minimal $h(p)$
(c)	A^* algorithm	(iii)	Minimal cost (p)

Choose the correct option from those given below:

A. (a) – (i) ; (b) – (ii); (c) – (iii)
B. (a) – (iii) ; (b) – (ii); (c) – (i)
C. (a) – (i) ; (b) – (iii); (c) – (ii)
D. (a) – (ii) ; (b) – (iii); (c) – (i)

ugcnetcse-june2019-paper2   artificial-intelligence   searches

Answer key 🖉

2.20 Sigmoid Function (1)

2.20.1 Sigmoid Function: UGC NET CSE | June 2019 | Part 2 | Question: 99

The value of the derivative of Sigmoid function given by $f(x) = \dfrac{1}{1 + e^{-2x}}$ at $x = 0$ is

A. 0 B. $\frac{1}{2}$ C. $\frac{1}{4}$ D. ∞

ugcnetcse-june2019-paper2   artificial-intelligence   sigmoid-function

Answer key 🖉

2.21 Strips (1)

2.21.1 Strips: UGC NET CSE | June 2019 | Part 2 | Question: 93

The STRIPS representation is

A. a feature-centric representation
B. an action-centric representation
C. a combination of feature-centric and action-centric representations
D. a hierarchical feature-centric representation

Answer Keys

2.0.1	C	2.0.2	C	2.1.1	D	2.1.2	C	2.1.3	A
2.1.4	C	2.1.5	B	2.1.6	D	2.1.7	B	2.1.8	Q-Q
2.1.9	Q-Q	2.1.10	Q-Q	2.1.11	B	2.1.12	A	2.1.13	D
2.1.14	B	2.1.15	B	2.1.16	A	2.1.17	B	2.1.18	D
2.2.1	D	2.3.1	B	2.4.1	B	2.5.1	D	2.6.1	A
2.6.2	B	2.7.1	C	2.8.1	C	2.9.1	C	2.10.1	B
2.11.1	D	2.11.2	A	2.12.1	B	2.13.1	D	2.14.1	B
2.15.1	D	2.15.2	D	2.15.3	C	2.16.1	Q-Q	2.17.1	B
2.17.2	C	2.18.1	C	2.19.1	D	2.20.1	B	2.21.1	B