COMPUTER SCIENCE

PAPER-2

ALL PYQs 2018-2021

MAHA MARATHON

ARTIFICIAL INTELLIGENCE

heuristic

LIVE

SUBSCRIBE

DAILY 4-5PM | 7-8PM

By Rashmi Ma'am

Combine CS
The Extra Step

June 1st - 15th Schedule	Marathon Session + Practice Ques	
youTube Free Class	PAPER-1 Practice Ques.	PAPER-2 CS Practice Ques.
Way to JRF 2022	4:00 pm - 5:00 pm	7-8 pm
Monday		
Tuesday, 31st May 2022	Practice MCQ Teaching	Practice PYQ AI
Wednesday, 1st June 2022	Practice MCQ Research	Practice Expected MCQ AI
Thursday, 2nd June 2022	Practice MCQ Communication	Practice PYQ SE
Friday, 3rd June 2022	Practice MCQ ICT	Practice Expected MCQ SE
Saturday, 4th June 2022	Practice MCQ LR	Practice PYQ DBMS
Sunday, 5th June 2022	Practice MCQ HE	Practice Expected Bigdata + NoSQL
Monday, 6th June 2022	Practice MCQ PDE	Practice Expected Data Mining
Tuesday, 7th June 2022	Practice MCQ Indian Logic	Practice SQL
Wednesday, 8th June 2022	Practice PYQ TOC + Compiler	Practice PYQ TOC + Compiler
Thursday, 9th June 2022	Practice PYQ CN	Practice PYQ CN
Friday, 10th June 2022	Practice PYQ OS	Practice PYQ OS
Saturday, 11th June 2022	Practice PYQ Discrete Math	Practice PYQ Discrete Math
Sunday, 12th June 2022	Practice DSA	Practice DSA
Monday, 13th June 2022	Practice COA	Practice COA
Tuesday, 14th June 2022	Practice CG	Practice CG
Wednesday, 15th June 2022	Practice Cloud Computing	Practice Web Programming

Free set Ready Yes/No

Q1 Match List I with List II

List I	List II
(A) Branch-and-bound	(I) Keeps track of all partial paths which can be candidate for further exploration.
(B) Steepest-accent hill climbing	(II) Detects difference between current state and goal state
(C) Constraint satisfaction	(III) Discovers problem state(s) that satisfy a set of constraints.
(D) Means-end-analysis	(IV) Considers all moves from current state and selects best move

Choose the correct answer from the options given below:

(1) A-I, B-IV, C-III, D-II

(2) A-I, B-II, C-III, D-IV

(3) A-II, B-I, C-III, D-IV

(4) A-II, B-IV, C-III, D-I

Q1 Match List I with List II

List I	List II
(A) Branch-and-bound	(I) Keeps track of all partial paths which can be candidate for further exploration.
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(C) Constraint satisfaction	(III) Discovers problem state(s) that satisfy a set of constraints.
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(3) A-II, B-I, C-III, D-IV

(4) A-II, B-IV, C-III, D-I

Match List I with List II

List I	List II
(A) Greedy Best-First Search	(I) Space complexity is O(d) where d=depth of the deepest optimal solution
(B) A*	(II) Incomplete even if the search space is finite.
(C) Recursive Best-First Search	(III) Optimal if optimal solution is reachable; otherwise, returns the best reachable optimal solution.
(D) SMA*	(IV) Computation and space complexity is too high.

Choose the correct answer from the options given below:

(1) A-II, B-IV, C-I, D-III

(2) A-II, B-III, C-I, D-IV

(3) A-III, B-II, C-IV, D-I

(4) A-III, B-IV, C-II, D-I

Q2

Match List I with List II

List I	List II
(A) Greedy Best-First Search	(I) Space complexity is O(d) where d=depth of the deepest optimal solution
(B) A*	(II) Incomplete even if the search space is finite.
(C) Recursive Best-First Search	(III) Optimal if optimal solution is reachable; otherwise, returns the best reachable optimal solution.
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Choose the correct answer from the options given below:

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(3) A-III, B-II, C-IV, D-I

(4) A-III, B-IV, C-II, D-I

TM

elimination

Q3 2017 | 2020

Match List I with List II and choose the correct answer from the code given below.

List I	List II
(a) Greedy Best-First Search	(i) Selects a node for expansion if optimal path to that node has been found
(b) A* Search keeping the	(ii) Avoids substantial overhead associated with sorted queue of nodes
(c) Recursive Best-First Search	(iii) Suffers from excessive node generation
(d) Iterative-deepening A* Search	(iv) Time complexity depends on the quality of heuristicCode:

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

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

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

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

Match List I with List II and choose the correct answer from the code given below.

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(c) Recursive Best-First Search	(iii) Suffers from excessive node generation
(d) Iterative-deepening A* Search	(iv) Time complexity depends on the quality of heuristic

Code:

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

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

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

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

Q3

Consider the following argument with premise $\forall_x\big(P(x) \vee Q(x)\big)$ and conclusion $(\forall_x P(x)) \wedge (\forall_x Q(x))$

(A)	$\forall_x\big(P(x) \vee Q(x)\big)$	Premise
(B)	$P(c) \vee Q(c)$	Universal instantiation from (A)
(C)	$P(c)$	Simplification from (B)
(D)	$\forall_x P(x)$	Universal Generalization of (C)
(E)	$Q(c)$	Simplification from (B)
(F)	$\forall_x Q(x)$	Universal Generalization of (E)
(G)	$(\forall_x P(x)) \wedge (\forall_x Q(x))$	Conjunction of (D) and (F)

(1) This is a valid argument.

(2) Steps (C) and (E) are not correct inferences

(3) Steps (D) and (F) are not correct inferences

(4) Step (G) is not a correct inference

Q3

Consider the following argument with premise $\forall_x(P(x) \vee Q(x))$ and conclusion $(\forall_x P(x)) \wedge (\forall_x Q(x))$

(A)	$\forall_x(P(x) \vee Q(x))$	Premise
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(C)	$P(c)$	Simplification from (B)
(D)	$\forall_x P(x)$	Universal Generalization of (C)
(E)	$Q(c)$	Simplification from (B)
(F)	$\forall_x Q(x)$	Universal Generalization of (E)
(G)	$(\forall_x P(x)) \wedge (\forall_x Q(x))$	Conjunction of (D) and (F)

(1) This is a valid argument.

(2) Steps (C) and (E) are not correct inferences

(3) Steps (D) and (F) are not correct inferences

(4) Step (G) is not a correct inference

Q4

Concept 4+5

Given below are two statements:

Statement I : A genetic algorithm is a stochastic hill-climbing search in which a large population of states is maintained.

Statement II : In nondeterministic environments, agents can apply AND-OR search to generate contingent plans that reach the goal regardless of which outcomes occur during execution.

In the light of the above statements, choose the Correct answer from the options given below

(1) Both Statement I and Statement II are true

(2) Both Statement I and Statement II are false

(3) Statement I is correct but Statement II is false

(4) Statement I is incorrect but Statement II is true

Environment

1. When the environment is fully observable and deterministic, then we can say agent knows what action to be taken & what will be the effects, percepts provide no new information after the agent determines the initial state.
2. In nondeterministic environments, future percepts cannot be determined in advance and the agent's future actions will depend on those future percepts. (Problem Case)

- A solution to this type of problem is a contingency plan (also know as a strategy) that specifies what to do depending on what percepts are received .

Q4

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Q5

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

open-ended.

(1) Implements heuristic search techniques

(2) Solution steps are not explicit

(3) Knowledge is imprecise

(4) It works on or implements repetition mechanism

. 1

Q5

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

(1) Implements heuristic search techniques

(2) Solution steps are not explicit

(3) Knowledge is imprecise

(4) It works on or implements repetition mechanism

. 1

Q6

What kind of clauses are available in conjunctive normal form?

(1) Disjunction of literals

(2) Disjunction of variables

(3) Conjunction of literals

(4) Conjunction of variables.

CNF

2021 KR ↓ 2022

CNF

$(P_1) \wedge (P_2)$

$(P_1) \vee (P_2) \vee (P_2)$ DNF

Q6

What kind of clauses are available in conjunctive normal form?

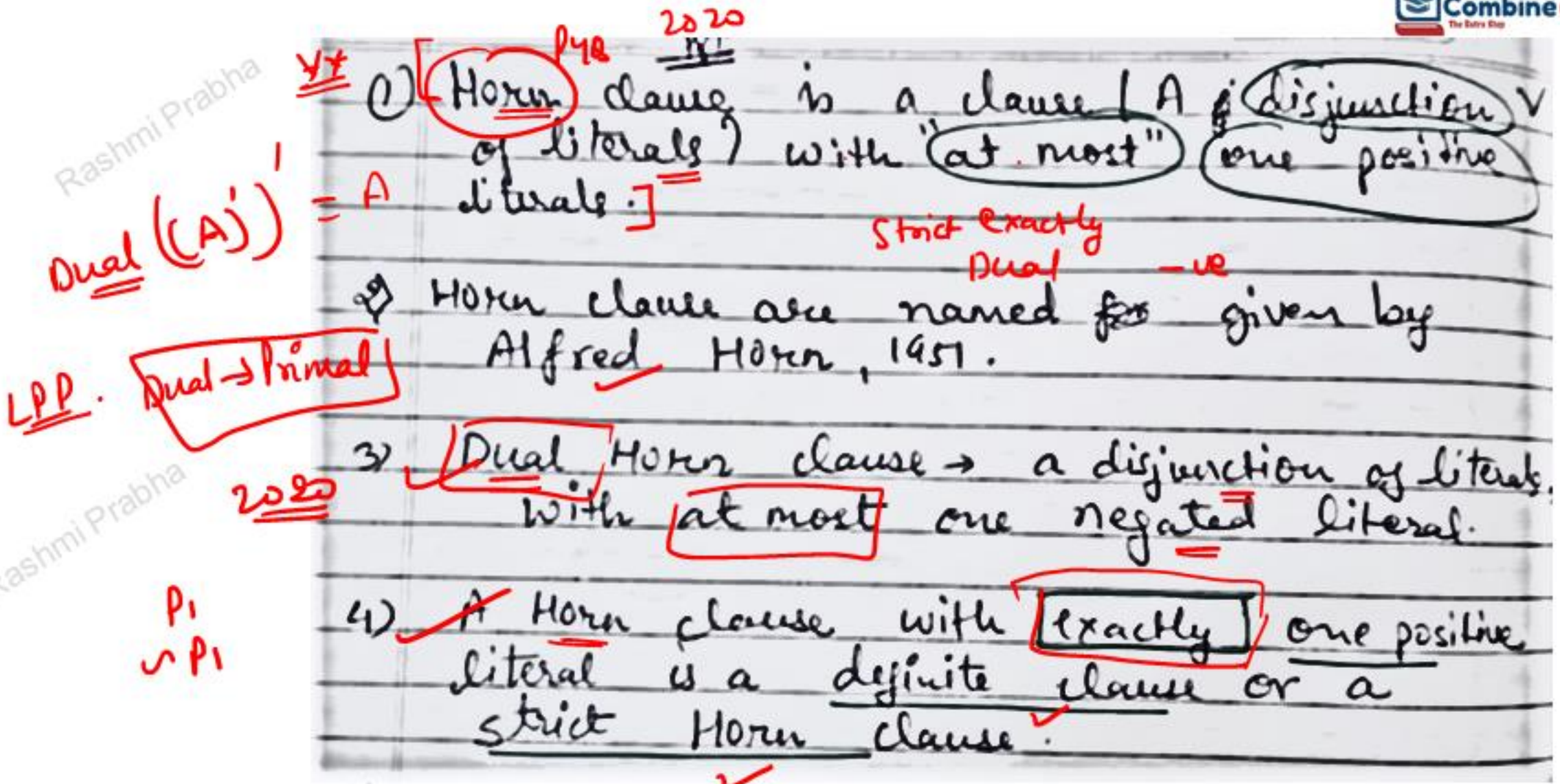
(1) Disjunction of literals

(2) Disjunction of variables

(3) Conjunction of literals

(4) Conjunction of variables.

1. 1
2. 2
3. 3
4. 4



Q7

Which of the following statements are true?

(A) Minimax search is breadth-first; it processes all the nodes at a level before moving to a node in next level.

(B) The effectiveness of the alpha-beta pruning is highly dependent on the order in which the states are examined.

(C) The alpha-beta search algorithm computes the same optimal moves as minimax algorithm.

(D) Optimal play in games of imperfact information does not require reasoning about the current and future belief states of each player.

Choose the correct answer from the options given below:

(1) (A) and (C) only

(2) (A) and (D) only

(3) (B) and (C) only

(4) (C) and (D) only

Q7

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(A) Minimax search is breadth-first; it processes all the nodes at a level before moving to a node in next level.

(B) The effectiveness of the alpha-beta pruning is highly dependent on the order in which the states are examined.

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(2) (A) and (D) only

(3) (B) and (C) only

(4) (C) and (D) only

new type

Which of the following statements are true?

2004
2010

(A) A sentence α entails another sentence β if β is true in few worlds where α is true.

(B) Forward chaining and backward chaining are very natural reasoning algorithms for knowledge bases in Horn form.

A → B
if A then B
α ⊢ β

(C) Sound inference algorithms derive all sentences that are entailed.

(D) Propositional logic does not scale to environments of unbounded size.

Choose the correct answer from the options given below:

(1) (A) and (B) only

(2) (B) and (C) only

(3) (C) and (D) only

(4) (B) and (D) only

Q8

Which of the following statements are true?

(A) A sentence α entails another sentence β if β is true in few worlds where α is true.

(B) Forward chaining and backward chaining are very natural reasoning algorithms for knowledge bases in Horn form.

(C) Sound inference algorithms derive all sentences that are entailed.

(D) Propositional logic does not scale to environments of unbounded size.

Choose the correct answer from the options given below:

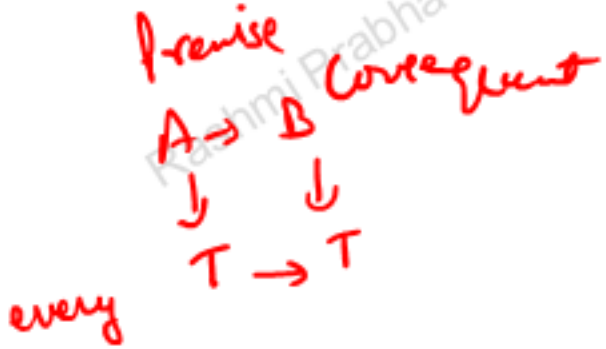
(1) (A) and (B) only

(2) (B) and (C) only

(3) (C) and (D) only

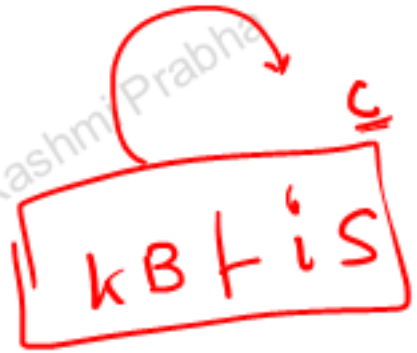
(4) (B) and (D) only

Entailment



- It is a type of logical relationship called an entailment. If sentence A entails sentence B, that means that if sentence A is true, then B follows.
- Mathematical notation: $A \vdash B$
- Another way, A entails B **if for every** model in which A is true, B is **always true** as well.
- If A entails B, then A is referred to as the premise and B is the consequent.
- B is necessarily a consequence of A if A entails B.

Inference



- An inference algorithm is a procedure for deriving a sentence from the KB.
- KB |-i S means that S is inferred from KB using algorithm i.
- The inference algorithm is **sound** if it derives only sentences that are entailed by KB.
- The inference algorithm is **complete** if it can derive any sentence that is entailed by KB.

- **Propositional logic does not scale** to environments of **unbounded size**, as it lacks expressive power to deal concisely with time, space, and universal patterns of relationships among objects.
- **Which of the following is a sound rule of inference?**
- If both sentences in the premise are true then conclusion is true. The modus ponens **inference rule** is **sound.**

Issues in Logic

- Predicate logic deals with "truth valued"; which causes a difficult representational "fit" for a large class of problems.
- Another issue is that theorem proving is both **"generative" and undecidable**, where
  - ✓ generative (also called forward reasoning) means starting with axioms and theorems (i.e. starting from first principles), and trying to generate a new proposition that matches the goal.
  - ✓ undecidable means if the goal is a non-theorem, there's no guarantee the procedure will halt.

Q9

new

MIC

Given below are two statements:

If two variables V_1 and V_2 are used for clustering, then consider the following statements for k means clustering with $k = 3$:-

Contradictory

Statement I : If V_1 and V_2 have correlation of 1 the cluster centroid will be in straight line.

Statement II : If V_1 and V_2 have correlation of 0 the cluster centroid will be in straight line.

In the light of the above statements, choose the correct answer from the options given below

(1) Both Statement I and Statement II are true

(2) Both Statement I and Statement II are false

(3) Statement I is correct but Statement II is false

(4) Statement I is incorrect but Statement II is true.

s 1. 1

2. 2

Q9

Given below are two statements:

If two variables V_1 and V_2 are used for clustering, then consider the following statements for k means clustering with $k = 3$:-

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1. 1

2. 2

LMN

BFS – Queue
DFS – STACK
Best First / Branch & Bound – Priority Queue

Hill Climbing – Heuristic Search Algorithm
- ✓ Solve Optimization Problem
- ✓ Heuristic – may not give optimal solution, but Good solution can be achieved in reasonable time.
- ✓ Heuristic – ALL Path trace
- ✓ Based on Greedy Approach
- ✓ 3 types

a) Simple - First
b) Steepest - ALL
c) Stochastic - Random

Branch & Bound (Tree/Graph) –
- ✓ keeps track of all partial path which can be candidate for further exploration.
- ✓ Optimization Problem
- ✓ Used when Greedy & Dynamic Programming Fails
- ✓ Slow method
- ✓ Exponential Complexity

Hill Climbing – Problems & Solutions
a) Local Maxima - Backtracking
b) Plateau – Random / Big Jump
c) Ridge – Bi-directional

JRF

Q) Reinforcement learning can be formalized in terms of ___? in which the agent initially only knows the set of possible ___state and the set of possible actions.

1. Markov decision processes, objects
2. Hidden states, objects
3. Markov decision processes, states
4. objects, states

UGCNET-June-2019-II: 100

Q) 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.

1. Markov decision processes, objects
2. Hidden states, objects
3. Markov decision processes, states / actions
4. objects, states

Q

Consider the following models:

M_1: Mamdani model

M_2: Takagi – Sugeno–Kang model 2014, 2016

M_3: Kosko's additive model (SAM) DM

Which of the following option contains examples of additive rule model?

(1) Only M_1 and M_2

(2) Only M_2 and M_3

(3) Only M_1 and M_3

(4) M_1, M_2, and M_3

Consider the following models:

M_1: Mamdani model

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M_3: Kosko's additive model (SAM)

Which of the following option contains examples of additive rule model?

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easy Q) Consider the following (UGCNET-June-2019-II)

a) Evolution

b) Selection

c) Reproduction

d) Mutation

steps

Which of the following are found in genetic algorithms?

1. b, c and d only
2. b and d only
3. a, b, c and d
4. a, b and d only

Q) Consider the following (UGCNET-June-2019-II)

a) Evolution

b) Selection

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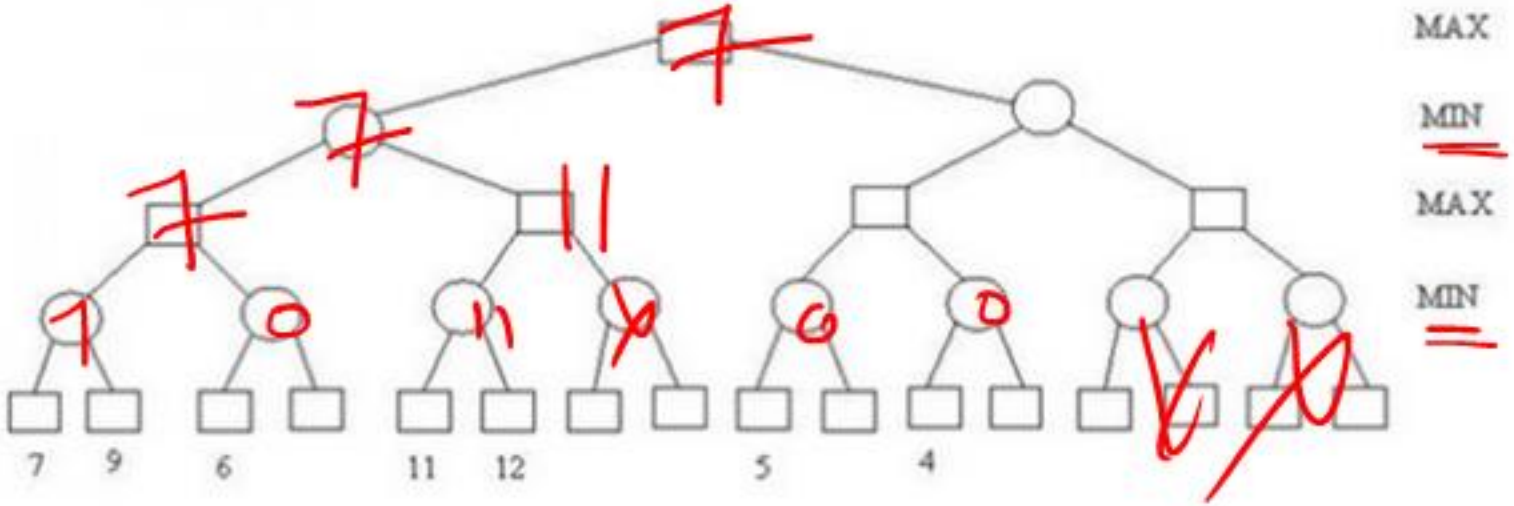
Q) Math List-I with List-II: (UGCNET-June-2019-II)

List-I	List-II
(a)Greedy best-first	1. Minimal cost (p)+ h(p)
(b)Lowest cost-first	2. Minimal h(p)
(c) A* algorithm	3. Minimal cost (p)



FAB

free

Min-max DFS

α-β - order

numerical

UGCNET-June-2019-II: 91

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

Consider the following terminology and match List 1 and List 2 and choose the correct answer from the code given below b= branch factor d= depth of shallowest solution M= Maximum depth of the search tree I= depth limit

(UGCNET DEC 2018)

a BFS

b DFS

c Depth Limited Search

d Iterative Deepening Search

i O(bd)

ii O(b^d)

iii O(bm)

iv O(bl)

1. (a)-(iii), (b)-(ii), (c)-(iv), (d)-(i)
2. (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)
3. (a)-(i), (b)-(ii), (c)-(iv), (d)-(iii)
4. (a)-(i), (b)-(iii), (c)-(iv), (d)-(ii)

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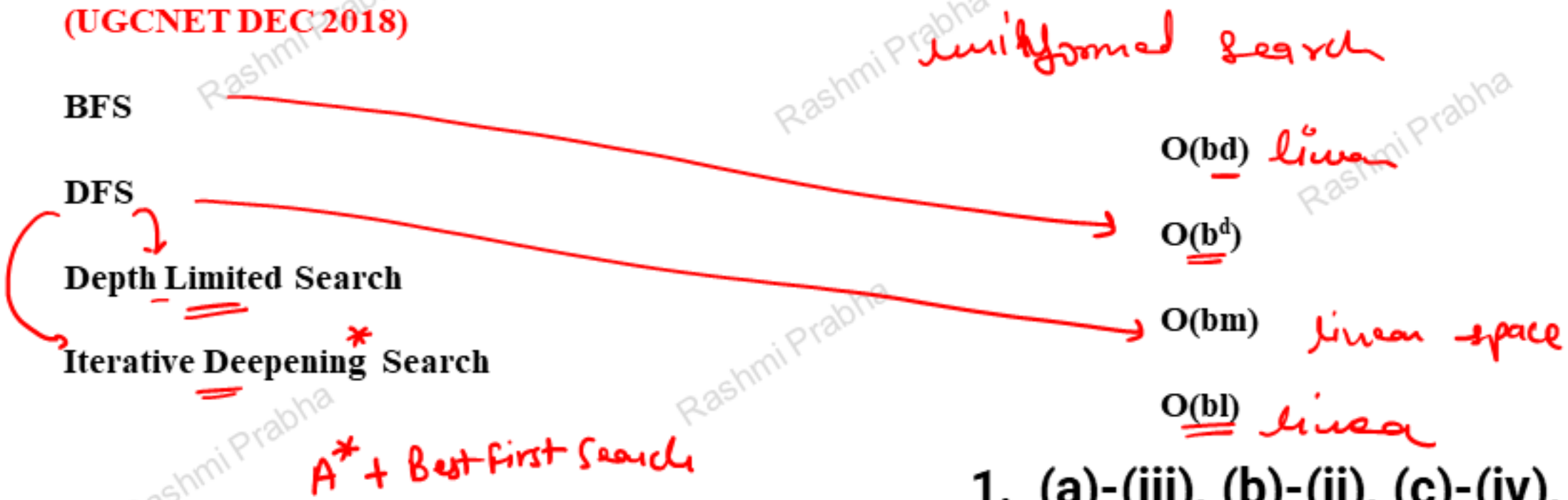
(UGCNET DEC 2018)



1. (a)-(iii), (b)-(ii), (c)-(iv), (d)-(i)
2. (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)
3. (a)-(i), (b)-(ii), (c)-(iv), (d)-(iii)
4. (a)-(i), (b)-(iii), (c)-(iv), (d)-(ii)

UGCNET DEC 2014

An A* algorithm is a heuristic search technique which…?

1. is like a depth-first search where **most promising** child is selected for expansion. ✗
2. **generates all successor** nodes and computes an estimate of distance (cost) from start node to a goal node through each of the successors. It then chooses the successor with shortest cost.
3. **saves all path lengths (costs)** from start node to all generated nodes and chooses shortest path for further expansion. B & B
4. none of the above

UGCNET DEC 2014

An A* algorithm is a heuristic search technique which…?

1. is like a depth-first search where **most promising** child is selected for expansion. (**Hill Climbing)**
2. **generates all successor** nodes and computes an estimate of distance (cost) from start node to a goal node through each of the successors. It then chooses the successor with shortest cost.
3. **saves all path lengths (costs)** from start node to all generated nodes and chooses shortest path for further expansion. (**Branch and Bound)**
4. none of the above

Ans = 2

In heuristic search algorithms in Artificial Intelligence (AI), if a collection of admissible heuristics h1…hm is available for a problem and none of them dominates any of the others, which should we choose?

(UGCNET-July-2018-II: 73)

1. h(n)=max{h1(n),…,hm(n)}
2. h(n)=min{h1(n),…,hm(n)}
3. h(n)=avg{h1(n),…,hm(n)}
4. h(n)=sum{h1(n),…,hm(n)}

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Match the following:

List-I	List-II
a. Classification	i. Principal Component Analysis
b. Clustering	ii. Branch and Bound
c. Feature Extraction	iii. K-nearest neighbour
d. Feature Selection	iv. K-means

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

Supervise
RC
Regression
classification

Unsupervised learning
AC
Association
clustering

Match the following:

List-I	List-II
a. Classification	i. Principal Component Analysis
b. Clustering	ii. Branch and Bound
c. Feature Extraction	iii. K-nearest neighbour
d. Feature Selection	iv. K-means

definition

DM + MLC

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

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

(UGCNET-July-2018-II)

a) A* expands all nodes with f(n)<C*

b) A* expands no nodes with f(n) ≥ C*

c) Pruning is integral to A*

f(n) evaluation function

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

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

(UGCNET-July-2018-II)

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b) A* expands no nodes with f(n) ≥ C*

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Q) Which is not a property of representation of knowledge?

a) Representational Adequacy

b) Inferential Adequacy

c) Inferential Efficiency

d) Representational Verification

e) Acquisition Efficiency

Q) Which is not a property of representation of knowledge?

a) Representational Adequacy

b) Inferential Adequacy

c) Inferential Efficiency

d) Representational Verification

e) Acquisition Efficiency

Q) Steepest Ascent Hill Climbing Search algorithm…

1. **Among all neighbours selects the first one that optimizes the current cost to be the next node.** simple
2. **This evaluates all neighbouring nodes at a time and selects the one closest to the solution state.**
3. **This selects a neighbouring node at random, evaluates it and decides whether to move to it or examine another** stochastic
4. **None of the Above**

2020

MCQ

Q) Steepest Ascent Hill Climbing Search algorithm

1. **Among all neighbours selects the first one that optimizes the current cost to be the next node.** simple
2. **This evaluates all neighbouring nodes at a time and selects the one closest to the solution state.** 2020 steepest
3. **This selects a neighbouring node at random, evaluates it and decides whether to move to it or examine another** stochastic
4. **None of the Above**

UGCNET-June-2019-II: 93

The STRIPS representation

1. a feature-centric representation
2. an action-centric representation
3. a combination of feature-centric and action-centric representations
4. a hierarchical feature-centric representation

STRIPS (STanford Research Institute Problem Solver)
- a restrictive way to express states, actions and goals, but leads to more efficiency

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The STRIPS representation

1. a feature-centric representation
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STRIPS (STanford Research Institute Problem Solver)
 a restrictive way to express states, actions and goals, but leads to more efficiency

JUNE-2015

2020

	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 constraint
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

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

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

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

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

JUNE-2015

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

Unit

Q.7 According to Dempster-Shafer theory for uncertainty management,

(1) $Bel(A) + Bel(\neg A) \leq 1$

(2) $Bel(A) + Bel(\neg A) \geq 1$

(3) $Bel(A) + Bel(\neg A) = 1$

(4) $Bel(A) + Bel(\neg A) = 0$

Where Bel(A) denotes Belief of event A.

Options 1. 1
2. 2
3. 3
4. 4

Q.7

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Q.16 Let the population of chromosomes in genetic algorithm is represented in terms of binary number. The strength of fitness of a chromosome in decimal form, x, is given by

$$S f(x) = \frac{f(x)}{\Sigma f(x)} \text{ where } f(x) = x^2$$

The population is given by P where:

$P = \{(01101), (11000), (01000), (10011)\}$

The strength of fitness of chromosome (11000) is _____.

(1) 24 (2) 576

(3) 14.4 (4) 49.2

Options 1. 1
2. 2
3. 3
4. 4

Question Type : MCQ
Question ID : 61547510555
Option 1 ID : 61547541157

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Question Type : MCQ
Question ID : 61547510555
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A fuzzy conjunction operators, $t(x, y)$, and a fuzzy disjunction operator, $s(x, y)$, form a pair if they satisfy:

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

If $t(x, y) = \frac{xy}{(x + y - xy)}$ then $s(x, y)$ is given by

(1) $\frac{x + y}{1 - xy}$

(2) $\frac{x + y - 2xy}{1 - xy}$

(3) $\frac{x + y - xy}{1 - xy}$

(4) $\frac{x + y - xy}{1 + xy}$

Options 1. 1
2. 2
3. 3
4. 4

Status : **Answered**
Chosen Option : **2**

A fuzzy conjunction operators, $t(x, y)$, and a fuzzy disjunction operator, $s(x, y)$, form a pair if they satisfy:

June 2019

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

Dec 2019

If $t(x, y) = \dfrac{xy}{(x + y - xy)}$ then $s(x, y)$ is given by

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(3) $\dfrac{x + y - xy}{1 - xy}$

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Options 1. 1
2. 2
3. 3
4. 4

Status : **Answered**
Chosen Option : **2**

assume

x, y

0.2 0.3

1-0.2 — 0.7

0.8

L.H.S = R.H.S

- UGCNET-June-2019-II: 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:

1. $t(x,y)=1-s(x,y)$
2. $t(x,y)=s(1-x,1-y)$
3. $t(x,y)=1-s(1-x,1-y)$
4. $t(x,y)=s(1+x,1+y)$

Status : Mark
Chosen Option : 3

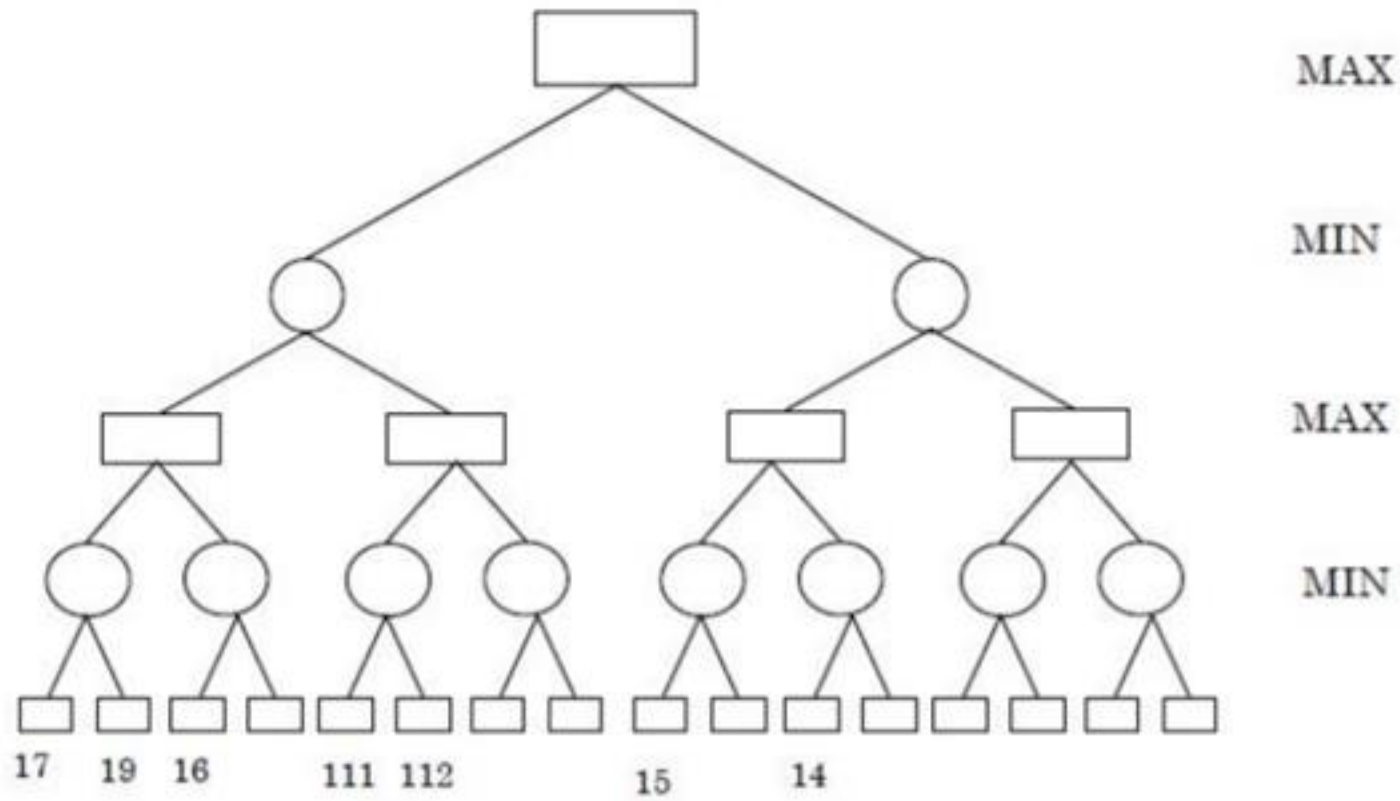
The order of schema ?10?101? and ???0??1 are ———— and ———— respectivel

(1) 5,3
(2) 5,2
(3) 7,5
(4) 8,7

ns 1. 1
2. 2
3. 3
4. 4

Question Type : MCQ
Question ID : 6154
Option 1 ID : 6154
Option 2 ID : 6154
Option 3 ID : 6154
Option 4 ID : 6154
Status : Mark
Chosen Option : 3

Consider the game tree given below



Here ○ and □ represent MIN and MAX nodes respectively. The value of the root node of the game tree is:

(1) 14

(2) 17

(3) 111

(4) 112

5 Consider the following statements:

S_1 : $\forall x\, P(x) \vee \forall x\, Q(x)$ and $\forall x (P(x) \vee Q(x))$ are not logically equivalent.

S_2 : $\exists x\, P(x) \wedge \exists x\, Q(x)$ and $\exists x (P(x) \wedge Q(x))$ are not logically equivalent

Which of the following statements is/are correct?

(1) Only S_1

(2) Only S_2

(3) Both S_1 and S_2

(4) Neither S_1 nor S_2

ns 1. 1
2. 2
3. 3
4. 4

Q.69

Let W_{ij} represents weight between node i at layer k and node j at layer $(k-1)$ of a given multilayer perceptron. The weight updation using gradient descent method is given by

(1) $W_{ij}(t+1) = W_{ij}(t) + \alpha \frac{\partial E}{\partial W_{ij}}, 0 \le \alpha \le 1$

(2) $W_{ij}(t+1) = W_{ij}(t) - \alpha \frac{\partial E}{\partial W_{ij}}, 0 \le \alpha \le 1$

(3) $W_{ij}(t+1) = \alpha \frac{\partial E}{\partial W_{ij}}, 0 \le \alpha \le 1$

(4) $W_{ij}(t+1) = -\alpha \frac{\partial E}{\partial W_{ij}}, 0 \le \alpha \le 1$

Where α and E represents learning rate and Error in the output respectively.

Options 1. 1

2. 2

3. 3

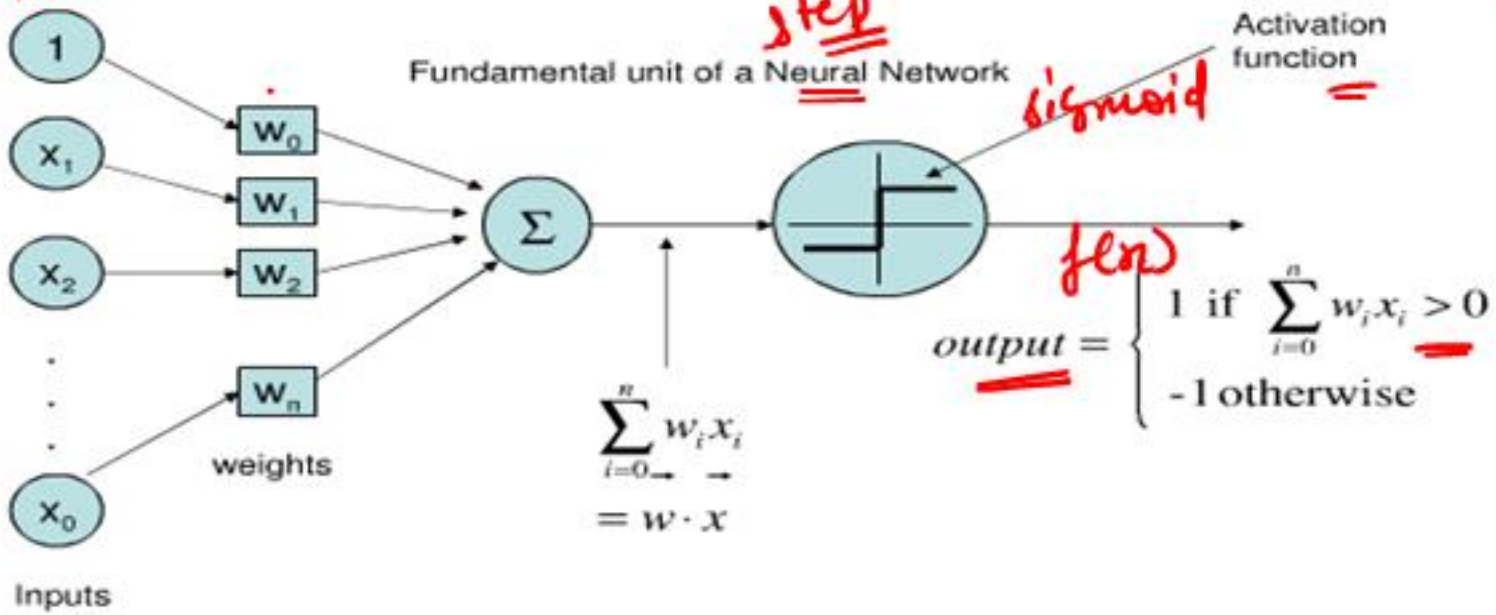
4. 4

Question Type : MCQ

Question ID : 6154751055

- **Gradient Descent is an optimization algorithm used for minimizing the cost function in various machine learning algorithms. It is basically used for updating the parameters of the learning model.**
- **One of the learning method of Linear Regression.**
- **Gradient descent is a first order iterative optimization algorithm for finding a local minimum of a differentiable function.**
- **Gradient Ascent finds local maximum .**
- **Type of Supervised Learning.**

- A multilayer perceptron (MLP) is a class of feedforward artificial neural network (ANN). (ISRO)
- Also known as "vanilla" neural networks, especially when they have a single hidden layer.
- MLP utilizes a supervised learning technique called backpropagation for training.



UGCNET-June2014-III: 31

0

Consider $f(N) = g(N) + h(N)$ Where function g is a measure of the cost of getting from the start node to the current node. N and h is an estimate of the additional cost of getting from the current node N to the goal node. Then $f(N) = h(N)$ is used in which one of the following algorithms?

A. A^* algorithm

B. AO^* algorithm

C. Greedy best first search algorithm

D. Iterative A^* algorithm

UGCNET-June2014-III: 31

0

Consider $f(N) = g(N) + h(N)$ Where function g is a measure of the cost of getting from the start node to the current node. N and h is an estimate of the additional cost of getting from the current node N to the goal node. Then $f(N) = h(N)$ is used in which one of the following algorithms?

A. A^*algorithm

B. AO^* algorithm

C. Greedy best first search algorithm

D. Iterative A^* algorithm

UGCNET-June-2019-II: 99

2

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

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

UGCNET-June2012-III: 21

1

1.3k views

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. $h' = 1$

UGCNET-June2012-III: 21

1

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,

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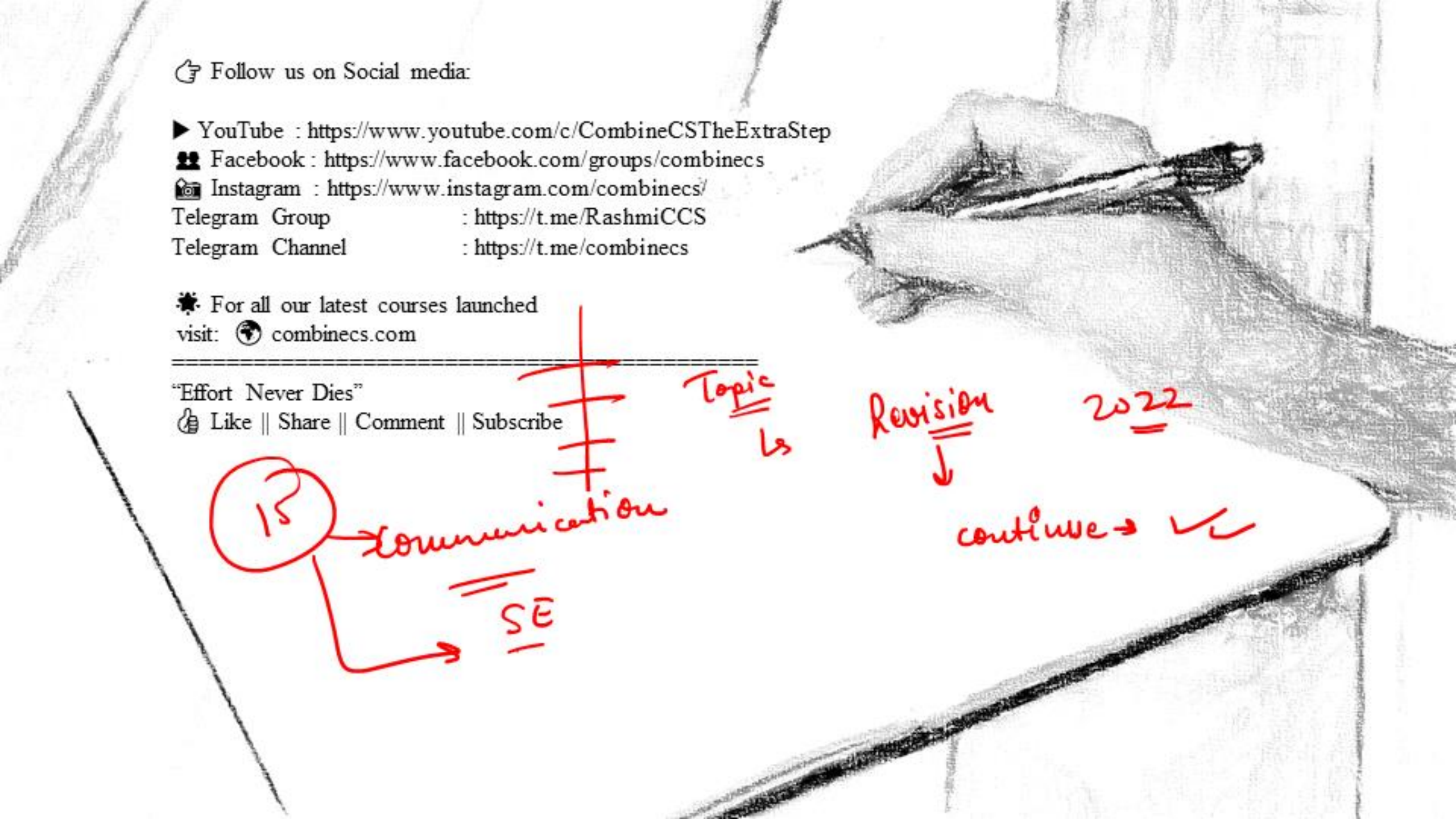
A




Thank you
like
share.
Post your doubts in comment section.
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