A.I Topic: – Agents

This set of Artificial Intelligence MCQ focuses on "Agents".

1. Which instruments are used for perceiving and acting upon the environment?

a) Sensors and Actuators

b) Sensors

c) Perceiver

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:An agent is anything that can be viewed as perceiving and acting upon the environment through the sensors and actuators.

2. What is meant by agent's percept sequence?

a) Used to perceive the environment

b) Complete history of actuator

c) Complete history of perceived things

d) Both a & b

Answer is given below:

(Answer = c)
Explanation:An agent's percept sequence is the complete history of everything that the agent has ever perceived.

3. How many types of agents are there in artificial intelligence?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = d)
Explanation:The four types of agents are Simple reflex, Model based, Goal based and Utility based agents.

4. What is the rule of simple reflex agent?

a) Simple-action rule

b) Condition-action rule

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:Simple reflex agent is based on the present condition and so it is condition action rule.

5. What are the composition for agents in artificial intelligence?

a) Program

b) Architecture

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation:An agent program will implement function mapping percepts to actions.

6. In which agent does the problem generator is present?

a) Learning agent

b) Observing agent

c) Reflex agent

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:Problem generator will give the suggestion to improve the output for learning agent.

7. Which is used to improve the agents performance?

a) Perceiving

b) Learning

c) Observing

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:An agent can improve its performance by storing its pervious actions.

8. Which agent deals with happy and unhappy states?

a) Simple reflex agent

b) Model based agent

c) Learning agent

d) Utility based agent

Answer is given below:

(Answer = d)
Explanation:A utility function maps a state onto a real number which describes the associated degree of happiness.

9. Which action sequences are used to acheive the agent's goal?

a) Search

b) Plan

c) Reterive

d) Both a & b

Answer is given below:

(Answer = d)
Explanation: When the environment becomes more tricky means, the agent needs plan and search action sequence to achieve the goal.

10. Which element in agent are used for selecting external actions?

a) Perceive

b) Performance

c) Learning

d) Actuator

Answer is given below:

(Answer = b)
Explanation:None

A.I Topic: – Propositional Logic

This set of Artificial Intelligence MCQ focuses on "Propositional Logic".

1. Which is created by using single propositional symbol?

a) Complex sentences

b) Atomic sentences

c) Composition sentences

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:Atomic sentences are indivisible syntactic elements consisting of single propositional symbol.

2. Which is used to construct the complex sentences?

a) Symbols

b) Connectives

c) Logical connectives

d) All of the mentioned

Answer is given below:

(Answer = c)
Explanation:None

3. How many proposition symbols are there in artificial intelligence?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = b)
Explanation:The two proposition symbols are true and false.

4. How many logical connectives are there in artificial intelligence?

a) 2

b) 3

c) 4

d) 5

Answer is given below:

(Answer = d)
Explanation:The five logical symbols are negation, conjuction, disjunction,implication and biconditional.

5. Which is used to compute the truth of any sentence?

a) Semantics of propositional logic

b) Alpha-beta pruning

c) First-order logic

d) Both a & b

Answer is given below:

(Answer = a)
Explanation:Because the meaning of the sentences is really needed to compute the truth.

6. Which are needed to compute the logical inference algorithm?

a) Logical equivalence

b) Validity

c) Satisfiability

d) All of the mentioned

Answer is given below:

(Answer = d)
Explanation:Logical inference algorithm can be solved be using logical equivalence, Validity and satisfiability.

7. From which rule does the modus ponens are derived?

a) Inference rule

b) Module rule

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:Inference rule contains the standard pattern that leads to desired goal. The best form of inference rule is modus ponens.

8. Which is also called single inference rule?

a) Reference

b) Resolution

c) Reform

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:Because resolution yields a complete inference rule when coupled with any search algorithm.

9. Which form is called as conjunction of disjunction of literals?

a) Conjunctive normal form

b) Disjunctive normal form

c) Normal form

d) All of the mentioned

Answer is given below:

(Answer = a)
Explanation:None.

10. What can be viewed as single leteral of disjunction?

a) Multiple clause

b) Combine clause

c) Unit clause

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation:A single literal can be viewed as a disjunction or one literal also, called as unit clause.

A.I Topic: – Semantic Interpretation

This set of Artificial Intelligence MCQ focuses on "Semantic Interpretation".

1. What is the extraction of the meaning of utterance?

a) Syntactic

b) Semantic

c) Pragmatic

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:Semantic analysis is used to extract the meaning from the group of sentences.

2. What is the process of associating an FOL expression with a phrase?

a) Interpretation

b) Augument reality

c) Semantic interpretation

d) Augument interpretation

Answer is given below:

(Answer = c)
Explanation:Semantic interpretation is the process of associating an FOL expression with a phrase.

3. What is meant by compositional semantics?

a) Determining the meaning

b) Logical connectives

c) Semantics

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:Compositional semantics is the process of determining the meaning of P*Q from P,Q and *.

4. What is used to augument a grammer for arithmetic expression with semantics?

a) Notation

b) DCG notation

c) Constituent

d) All of the mentioned

Answer is given below:

(Answer = b)
Explanation:DCG notation is used to augument a grammer for arithmetic expression with semantics and it is used to build a parse tree.

5. What can't be done in the semantic interpretation?

a) Logical term

b) Complete logical sentence

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation:Some kind of sentence in the semantic interpretation can't be logical term nor a complete logical sentence.

6. How many verb tenses are there in english language?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = c)
Explanation:There are three types of tenses available in english language are past, present and future.

7. Which is used to mediate between syntax and semantics?

a) Form

b) Intermediate form

c) Grammer

d) All of the mentioned

Answer is given below:

(Answer = b)
Explanation:None.

8. What is meant by quasi-logical form?

a) Sits between syntactic and logical form

b) Logical connectives

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:It can be translated into a regular first-order logical sentence, So that it Sits between syntactic and logical form.

9. How many types of quantification are available in artificial intelligence?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = b)
Explanation:There are two types of quantification available. They are universal and existential.

10. What kind of interpretation is done by adding context-dependant information?

a) Semantic

b) Syntactic

c) Pragmatic

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation:None.

A.I Topic: – Communication

This set of Artificial Intelligence MCQ focuses on "Communication".

1. What is the intentional exchange of information brought about by production

and perception?

a) Hearing

b) Communication

c) Speech

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:Communication is the intentional exchange of information brought about by production and perception of signs drawn from a shared system.

2. What is the complex system of structured message?

a) Languages

b) Words

c) Signs

d) Speech

Answer is given below:

(Answer = a)
Explanation:Language is the complex system of structured message that enables us to communicate.

3. How many things are present in conventional communication signs?

a) 3

b) 4

c) 5

d) 6

Answer is given below:

(Answer = c)
Explanation:The five things present in the conventional communication system are query, inform, request, acknowledge and promise.

4. What is definied by set of strings?

a) Signs

b) Formal language

c) Communication

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:A formal language is definied by set of strings that is a concatenation of terminal symbols.

5. What is a finite set of rules that specifies a language?

a) Signs

b) Communication

c) Grammer

d) Phrase

Answer is given below:

(Answer = c)
Explanation:None.

6. What kind of perception is used in printing?

a) Optical character recognition

b) Speech recognition

c) Perception

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:When perception is used in printing means, It is called as optical character recognition.

7. Why the parsing is used?

a) Interpretation

b) Building a parse tree

c) Recognition

d) All of the mentioned

Answer is given below:

(Answer = b)
Explanation:Parsing is the process of building a parse tree for an input string.

8. How many objects are available in closed classes?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = d)
Explanation:The four objects are available in closed classes are pronoun, article, preposition and conjunction.

9. How many states are present in parsing?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = c)
Explanation:The three state available in parsing are initial state, successor function and goal test.

10. Pick out the correct option about the types of parsing.

a) Top-down and bottom-up parsing

b) Interpretation and communication

c) Roll-up and roll-down

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:The two types of parsing are top-down parsing and bottom-up parsing

A.I Topic: – Graph Planning

This set of Artificial Intelligence MCQ focuses on "Graph Planning".

1. Which data structure is used to give better heuristic estimates?

a) Forwards state-space

b) Backward state-space

c) Planning graph algorithm

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation:A special data structure called planning graph is used to give better heuristic estimates.

2. Which is used to extract solution directly from the planning graph?

a) Planning algorithm

b) Graphplan

c) Hill-climbing search

d) All of the mentioned

Answer is given below:

(Answer = b)
Explanation:We can extract the solution directly from the planning graph, using a specialized algorithm called Graphplan.

3. What are present in the planning graph?

a) Sequence of levels

b) Literals

c) Variables

d) Heuristic estimates

Answer is given below:

(Answer = a)
Explanation:A planning graph consists of sequence of levels correspond to time steps.

4. What is the starting level of planning graph?

a) Level 3

b) Level 2

c) Level 1

d) Level 0

Answer is given below:

(Answer = d)
Explanation:None

5. What are present in each level of planning graph?

a) Literals

b) Actions

c) Variables

d) Both a & b

Answer is given below:

(Answer = d)
Explanation:Each and every level in the planning graph contains a set of literals and a set of actions.

6. Which kind of problem are suitable for planning graph?

a) Propositional planning problem

b) Planning problem

c) Action problem

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:Planning graph work only for propositional planning problem with no variables.

7. What is meant by persistence actions?

a) Allow a literal to remain false

b) Allow a literal to remain true

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:Calculus allow a literal to remain true from one situation to the next if no action alters it. It is called as persistence action.

8. When will further expansion is unnecessary for planning graph?

a) Identical

b) Replicate

c) Not identical

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:Every subsequent levels will be identical, So further expansion is unnecessary.

9. How many conditions are available between two actions in mutex relation?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = c)
Explanation:The three conditions available on mute relationship are inconsistent effects, interference and competing needs.

10. What is called inconsistent support?

a) If two literals are not negation of other

b) If two literals are negation of other

c) Mutually exclusive

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:If two literals are at the same level if one is the negation of another is called inconsistent support.

A.I Topic: – Forward Chaining

This set of Artificial Intelligence MCQ focuses on "Agents".

1. Which condition is used to cease the growth of forward chaining?

a) Atomic sentences

b) Complex sentences

c) No further inference

d) All of the mentioned

Answer is given below:

(Answer = c)
Explanation:Forward chain can grow by adding new atomic sentences until no further inference is made.

2. Which closely resembles propositional definite clause?

a) Resolution

b) Inference

c) Conjuction

d) First-order definite clauses

Answer is given below:

(Answer = d)
Explanation:Because they are disjunction of literals of which exactly one is positive.

3. What is the condition of variables in first-order literals?

a) Existentially quantified

b) Universally quantified

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:First-order literals will accept variables only if they are universally quantified.

4. Which are more suitable normal form to be used with definite clause?

a) Positive literal

b) Negative literal

c) Generalized modus ponens

d) Neutral literal

Answer is given below:

(Answer = c)
Explanation:Definite clauses are a suitable normal form for use with generalized modus ponen.

5. Which will be the instance of the class datalog knowledge bases?

a) Variables

b) No function symbols

c) First-order definite clauses

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:If the knowledge base contains no function symbols means, it is an instance of the class datalog knowledge base.

6. Which knowledge base is called as fixed point?

a) First-order definite clause are similar to propositional forward chaining

b) First-order definite clause are mismatch to propositional forward chaining

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:Fixed point reached by forward chaining with first-order definiteclause are similar to those for propositional forward chaining.

7. How to eliminate the redundant rule matching attempts in the forward

chaining?

a) Decremental forward chaining

b) Incremental forward chaining

c) Data complexity

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:We can eliminate the redundant rule matching attempts in the forward chaining by using incremental forward chaining.

8. From where did the new fact inferred on new iteration is derived?

a) Old fact

b) Narrow fact

c) New fact

d) All of the mentioned

Answer is given below:

(Answer = c)
Explanation:None

9. Which will solve the conjuncts of the rule so that the total cost is

minimized?

a) Constraint variable

b) Conjunct ordering

c) Data complexity

d) All of the mentioned

Answer is given below:

(Answer = b)
Explanation:Conjunct ordering will find an ordering to solve the conjuncts of the rule premise so that the total cost is minimized.

10. How many possible sources of complexity are there in forward chaining?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = c)
Explanation:The three possible sources of complexity are inner loop, algorithm rechecks every rule on every iteration, algorithm might generate many facts irrelevant to the goal.

A.I Topic: – Object Recognition

This set of Artificial Intelligence MCQ focuses on "Object Recognition".

1. What enables people to recognize people, animals and inanimate objects reliably?

a) Speech

b) Vision

c) Hear

d) Perception

Answer is given below:

(Answer = b)
Explanation:Vision enables people to recognize people, animals and inanimate objects reliably. It is customary to use object recognition.

2. How many types of recognition are there in artificial intelligence?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = c)
Explanation:The three types of recognition are biometric identification, content-based image retrievel and handwriting recognition.

3. Which are recognized by vision?

a) Objects

b) Activities

c) Motion

d) Both a & b

Answer is given below:

(Answer = d)
Explanation:Vision is used to recognize not only objects, but also activities.

4. Which provides a framework for studying object recognition?

a) Learning

b) Unsupervised learning

c) Supervised learning

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation:Supervised learning or pattern classification provides a framework for studying object recognition.

5. Which object recognition process is an error-prone process?

a) Bottom-up segmentation

b) Top-down segmentation

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:In the process of creating subset of pixels, the bottom-up segmentation is an error-prone process.

6. Which is the only way to learn about the different kinds of human faces?

a) Perception

b) Speech

c) Learning

d) Hearing

Answer is given below:

(Answer = c)
Explanation:None.

7. What can be represented by using histograms or empirical frequency distributions?

a) Words

b) Color

c) Texture

d) Both b & c

Answer is given below:

(Answer = d)
Explanation:Color and texture can be represented by using histograms or empirical frequency distributions.

8. Which can be deformed into alignment using simple coordinate transformations?

a) Matching

b) Deformable matching

c) Feature

d) All of the mentioned

Answer is given below:

(Answer = b)
Explanation:The distance between images can be deformed into alignment using simple coordinate transformations. And it is called as Deformable matching.

9. Which describes the coarse arrangement of the rest of the shape with respect to the point?

a) Shape

b) Context

c) Shape context

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation:Because an objects shape can be manipulated with respect to the point.

10. How the distance between two shapes can be definied?

a) Weighted sum of the shape

b) Size of the shape

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:The distance between two shapes can be definied as a weighted sum of the shape context distance between corresponding points.

A.I Topic: – Agent Architecture

This set of Artificial Intelligence MCQ focuses on "Agent Architecture".

1. Which depends on the percepts and actions available to the agent?

a) Agent

b) Sensor

c) Design problem

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation:The design problem depends on the percepts and actions available to the agen, the goals that the agents's behavior should satisfy.

2. Which were built in such a way that humans had to supply the inputs and

interpret the outputs?

a) Agents

b) AI system

c) Sensor

d) Actuators

Answer is given below:

(Answer = b)
Explanation:AI systems were built in such a way that humans had to supply the inputs and interpret the outputs.

3. Which technology uses miniaturized accelerometers and gyroscopes?

a) Sensors

b) Actuators

c) MEMS

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation:Micro ElectroMechanical System uses miniaturized accelerometers and gyroscopes and is is used to produce actuators.

4. What is used for tracking uncertain events?

a) Filtering algorithm

b) Sensors

c) Actuators

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:Filtering algorithm is used for tracking uncertain events because in this the real perception is involved.

5. What is not represented by using propositional logic?

a) Objects

b) Relations

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation:Objects and relations are not represented by using propositional logic explicitly.

6. Which functions are used as preferences over state history?

a) Award

b) Reward

c) Explicit

d) Implicit

Answer is given below:

(Answer = b)
Explanation:Reward functions may be that preferences over states are really compared from preferences over state histories.

7. Which kind of agent architecture should an agent an use?

a) Relaxed

b) Logic

c) Relational

d) All of the mentioned

Answer is given below:

(Answer = d)
Explanation:Because an agent may experience any kind of situation, So that an agent should use all kinds of architecture.

8. Specify the agent architecture name that is used to capture all kinds of actions.

a) Complex

b) Relational

c) Hybrid

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation:A complete agent must be able to do anything by using hybrid architecture.

9. Which agent enables the deliberation about the computational entities and actions?

a) Hybrid

b) Reflective

c) Relational

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:Because it enables the agent to capture within itself.

10. What can operate over the joint state space?

a) Decision-making algorithm

b) Learning algorithm

c) Complex algorithm

d) Both a & b

Answer is given below:

(Answer = d)
Explanation:Decision-making and learning algorithm can operate over the joint state space and thereby serve to implement and used to improve the computational activities.

A.I Topic: – Perception

This set of Artificial Intelligence MCQ focuses on "Perception".

1. Which provides agents with information about the world they inhabit?

a) Sense

b) Perception

c) Reading

d) Hearing

Answer is given below:

(Answer = b)
Explanation:Perception provides agents with information about the world they inhabit.

2. What is used to initiate the perception in the environment?

a) Sensor

b) Read

c) Actuators

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:A sensor is anything that can record some aspect of the environment.

3. What is the study of light?

a) Biology

b) Lightology

c) Photometry

d) All of the mentioned

Answer is given below:

(Answer = c)
Explanation:None.

4. How to increase the brightness of the pixel?

a) Sound

b) Amount of light

c) Surface

d) Waves

Answer is given below:

(Answer = b)
Explanation:The brightness of a pixel in the image is proportional to the amount of light directed towards the camera.

5. How many kinds of reflection are available in image perception?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = b)
Explanation:There are two kinds of reflection. They are specular and diffuse reflection.

6. What is meant by predicting the value of a state variable from the past?

a) Specular reflection

b) Diffuse reflection

c) Gaussian filter

d) Smoothing

Answer is given below:

(Answer = d)
Explanation:Smoothing meant predicting the value of a state variable from the past and by given evidence and calculating the present and future.

7. How many types of image processing techniques are there in image perception?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = c)
Explanation:The three image processing techniques are smoothing, edge detection and image segmentation.

8. Which is meant by assuming any two neighboring that are both edge pixels

with consistent orientation?

a) Canny edge detection

b) Smoothing

c) Segmentation

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:Canny edge detection is assuming any two neighboring that are both edge pixels with consistent orientation and ust belong to the same edge.

9. What is the process of breaking an image into groups?

a) Edge detection

b) Smoothing

c) Segmentation

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation:Segmentation is the process of breaking an image into groups, based on the similarities of the pixels.

10. How many types of 3-D image processing techniques are there in image perception?

a) 3

b) 4

c) 5

d) 6

Answer is given below:

(Answer = c)
Explanation:The five types of 3-D image processing techniques are motion, binocular stereopsis, texture, shading and contour.

A.I Topic: – Inductive logic programming

This set of Artificial Intelligence MCQ focuses on "Inductive logic programming".

1. Which combines inductive methods with the power of first-order representations?

a) Inductive programming

b) Logic programming

c) Inductive logic programming

d) Lisp programming

Answer is given below:

(Answer = c)
Explanation:Inductive logic programming(ILP) combines inductive methods with the power of first-order
representations.

2. How many reasons are available for the popularity of ILP?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = c)
Explanation:The three reasons available for the popularity of ILP are general knowledge, Complete algorithm and hypotheses.

3. Which cannot be represented by a set of attributes?

a) Program

b) Three-dimensional configuration of a protein molecule

c) Agents

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:Because the configuration inherently refers to relationships between objects.

4. Which is an appropriate language for describing the relationships?

a) First-order logic

b) Propositional logic

c) ILP

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:None.

5. Which produces hypotheses that are easy to read for humans?

a) ILP

b) Artificial intelligence

c) Propositional logic

d) First-order logic

Answer is given below:

(Answer = a)
Explanation:Because ILP can participate in the scientific cycle of experimentation, So that it can produce flexible structure.

6. What need to be satisfied in inductive logic programming?

a) Constraint

b) Entailment constraint

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:The objective of an ILP is to come up with a set of sentences for the hypothesis such that the entailment constraint is satisfied.

7. How many literals are available in top-down inductive learning methods?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = c)
Explanation:The three literals are available in top-down inductive learning methods are predicates, equality and inequality and arithmetic literals.

8. Which inverts a complete resolution strategy?

a) Inverse resolution

b) Resolution

c) Triology

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:Because it is a complete algorithm for learning first-order theories.

9. Which method can't be used for expressing relational knowledge?

a) Literal system

b) Variable-based system

c) Attribute-based system

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation:ILP methods can learn relational knowledge that is not expressible in attribute-based system.

10. Which approach is used for refining a very general rule through ILP?

a) Top-down approach

b) Bottom-up appproach

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:None

A.I Topic: – Probability Notation

This set of Artificial Intelligence MCQ focuses on "Probability Notation".

1. How many issues are available in describing degree of belief?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = b)
Explanation:The main issues for degree of belief are nature of the sentences and the dependance of degree of the belief.

2. What is used for probability theory sentences?

a) Conditional logic

b) Logic

c) Extension of propositional logic

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation:The version of probability theory we present uses an extension of propositional logic for its sentences.

3. Where does the dependance of experience is reflected in prior proability

sentences?

a) Syntactic distinction

b) Semantic distinction

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:The dependance on experience is reflected in the syntactic distinction between prior probability statements.

4. Where does the degree of belief are applied?

a) Propositions

b) Literals

c) Variables

d) Statements

Answer is given below:

(Answer = a)
Explanation:None

5. How many formal languages are used for stating propositions?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = b)
Explanation:The two formal languages used for stating propositions are propositional logic and first-order logic.

6. What is the basic element for a language?

a) Literal

b) Variable

c) Random variable

d) All of the mentioned

Answer is given below:

(Answer = c)
Explanation:The basic element for a langauage is the random variable, which can be thought as a part of world and its status is initially unknown.

7. How many types of random variables are available?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = c)
Explanation:The three types of random variables are boolean, discrete and continuous.

8. Which is the complete specification of the state of the world?

a) Atomic event

b) Complex event

c) Simple event

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:An atomic event is the complete specification of the state of the world about which the event is uncertain.

9. Which variable cannot be written in entire distribution as a table?

a) Discrete

b) Continuous

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:For continuous variables, it is not posible to write out the entire distribution as a table.

10. What is meant by probability density function?

a) Probability distributions

b) Continuous variable

c) Discrete variable

d) Probability distributions for Continuous variables

Answer is given below:

(Answer = d)
Explanation:None

A.I Topic: – State Space Search

This set of Artificial Intelligence MCQ focuses on "State Space Search".

1. Which is the most straight forward appproach for planning algorithm?

a) Best-first search

b) State-space search

c) Depth-first search

d) Hill-climbing search

Answer is given below:

(Answer = b)
Explanation:The straight forward approach for planning algorithm is state space search becuase it takes into account of everything for finding a solution.

2. What are taken into account of state-space search?

a) Postconditions

b) Preconditions

c) Effects

d) Both b & c

Answer is given below:

(Answer = d)
Explanation:The state-space search takes both precondition and effects into account for solving a problem.

3. How many ways are available to solve the state-space search?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = b)
Explanation:There are two ways available to solve the state-space search. They are forward from the intial state and backward from the goal.

4. What is the other name for forward state-space search?

a) Progression planning

b) Regression planning

c) Test planning

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:It is sometimes called as progression planning, because it moves in the forward direction.

5. How many states are available in state-space search?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = d)
Explanation:There are four states available in state-space search. They are initial state,actions, goal test and step cost.

6. What is the main advantage of backward state-space search?

a) Cost

b) Actions

c) Relevant actions

d) All of the mentioned

Answer is given below:

(Answer = c)
Explanation:The main advantage of backward search will allows us to consider only relevant actions.

7. What is the other name of backward state-space search?

a) Regression planning

b) Progression planning

c) State planning

d) Test planning

Answer is given below:

(Answer = a)
Explanation:Backward state-space search will find the solution from goal to the action, So it is called as Regression planning.

8. What is meant by consistent in state-space search?

a) Change in the desired literals

b) Not any change in the literals

c) No change in goal state

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:Consistent means that the completed actions will not undo any desired literals.

9. What will happen if a predecessor description is generated that is satisfied

by the initial state of the planning problem?

a) Success

b) Error

c) Compilation

d) Termination

Answer is given below:

(Answer = d)
Explanation:None.

10. Which approach is to pretend that a pure divide and conquer algorithm will

work?

a) Goal independance

b) Sub-goal independance

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:Sub-goal independance approach is to pretend that a pure divide and conquer algorithm will work for admissible heuristics.

A.I Topic: – Resolution

This set of LISP MCQ focuses on "Resolution".

1. Which is a refutation complete inference procedure for propositional logic?

a) Clauses

b) Variables

c) Propositional resolution

d) Proposition

Answer is given below:

(Answer = c)
Explanation:Propoistional resolution is a refutation complete inference procedure for propositional logic.

2. What kind of clauses are available in Conjuctive Normal Form?

a) Disjunction of literals

b) Disjunction of variables

c) Conjuction of literals

d) Conjunction of variables

Answer is given below:

(Answer = a)
Explanation:First-order resolution requires the clause to be in disjunction of literals in Conjunctive Normal Form.

3. What is the condition of literals in variables?

a) Existentially quantified

b) Universally quantified

c) Quantified

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:Literals that contain variables are assumed to be universally quantified.

4. Which can be converted to inferred equivalent CNF sentence?

a) Every sentence of propositional logic

b) Every sentence of inference

c) Every sentence of first-order logic

d) All of the mentioned

Answer is given below:

(Answer = c)
Explanation:Every sentence of first-order logic can be converted to inferred equivalent CNF sentence.

5. Which sentence will be unsatisfiable if the CNF sentence is unsatisfiable?

a) Search statement

b) Reading statement

c) Replaced statement

d) Original statement

Answer is given below:

(Answer = d)
Explanation:The CNF statement will be unsatisfiable just when the original sentence is unsatisfiable.

6. Which rule is equal to resolution rule of first-order clauses?

a) Propositional resolution rule

b) Inference rule

c) Resolution rule

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:The resolution rule for first-order clauses is simply a lifted version of the propositional resolution rule.

7. At which state does the propositional literals are complementary?

a) If one variable is less

b) If one is the negation of the other

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:Propositional literals are complementary if one is the negation of the other.

8. What is meant by factoring?

a) Removal of redundant variable

b) Removal of redundant literal

c) Addition of redundant literal

d) Addition of redundant variable

Answer is given below:

(Answer = b)
Explanation:None

9. What will happen if two literals are identical?

a) Remains the same

b) Added as three

c) Reduced to one

d) None of the mentioned

Answer is given below: (Answer = c)

Explanation:Propositional factoring reduces two literals to one if they are identical.

10. When the resolution is called as refutation-complete?

a) Sentence is satisfiable

b) Sentence is unsatisfiable

c) Sentence remains the same

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:Resolution is refutation-complete, if a set of sentence is unsatisfiable, then resolution will always be able to derive a contradiction.

A.I Topic: – Backward Chaining

This set of LISP MCQ focuses on "Backward Chaining".

1. Which algorithm will work backward from the goal to solve a problem?

a) Forward chaining

b) Backward chaining

c) Hill-climb algorithm

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:Backward chaining algorithm will work backward from the goal and it will chain the known facts that support the proof.

2. Which is mainly used for automated reasoning?

a) Backward chaining

b) Forward chaining

c) Logic programming

d) Parallel programming

Answer is given below:

(Answer = c)
Explanation:Logic programming is mainly used to check the working process of the system.

3. What will backward chaining algorithm will return?

a) Additional statements

b) Substitutes matching the query

c) Logical statement

d) All of the mentioned

Answer is given below:

(Answer = b)
Explanation:It will contains the list of goals containing a single element and returns the set of all substitutions satisfying the query.

4. How can be the goal is thought of in backward chaining algorithm?

a) Queue

b) List

c) Vector

d) Stack

Answer is given below:

(Answer = d)
Explanation:The goals can be thought of as stack and if all of them us satisfied means, then current branch of proof succeeds.

5. What are used in backward chaining algorithm?

a) Conjucts

b) Substitution

c) Composition of substitution

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation:None

6. Which algorithm are in more similar to backward chainiing algorithm?

a) Depth-first search algorithm

b) Breadth-first search algorithm

c) Hill-climbing search algorithm

d) All of the mentioned

Answer is given below:

(Answer = a)
Explanation:It is depth-first search algorithm because its space requirements are linear in the size of the proof.

7. Which problem can frequently occur in backward chaining algorithm?

a) Repeated states

b) Incompleteness

c) Complexity

d) Both a & b

Answer is given below:

(Answer = d)
Explanation:If there is any loop in the chain means, It will lead to incompleteness and repeated states.

8. How the logic programming can be constructed?

a) Variables

b) Expressing knowledge in a formal language

c) Graph

d) All of the mentioned

Answer is given below:

(Answer = b)
Explanation:Logic programming can be constructed by expressing knowledge in a formal expression and the problem can be solved by running inference process.

9. What form of negation does the prolog allows?

a) Negation as failure

b) Proposition

c) Substitution

d) Negation as success

Answer is given below:

(Answer = a)
Explanation:None

10. Which is omitted in prolog unification algorithm?

a) Variable check

b) Occur check

c) Proposition check

d) Both b & c

Answer is given below:

(Answer = b)
Explanation:Occur check is omitted in prolog unification algorithm because of unsound inferences.

A.I Topic: – Partial Order Planning

This set of Artificial Intelligence MCQ focuses on "Partial Order Planning".

1. Which of the following search belongs to totally ordered plan search?

a) Forward state-space search

b) Hill-climbing search

c) Depth-first search

d) Breadth-first search

Answer is given below:

(Answer = a)
Explanation:Forward and backward state-space search are particular forms of totally ordered plan search.

2. Which cannot be taken as advantage for totally ordered plan search?

a) Composition

b) State search

c) Problem decomposition

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation:As the search explore explore only linear sequences of actions, So they cannot take the advantage of problem decomposition.

3. What is the advantage of totally ordered plan in constructing the plan?

a) Reliability

b) Flexibility

c) Easy to use

d) All of the mentioned

Answer is given below:

(Answer = b)
Explanation:Totally ordered plan has the advantage of flexibility in the order in which it constructs the plan.

4. Which strategy is used for delaying a choice during search?

a) First commitment

b) Least commitment

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:The general strategy of delaying a choice during search is called a least commitment strategy.

5. Which algorithm place two actions into a plan without specifying which should come first?

a) Full-order planner

b) Total-order planner

c) Semi-order planner

d) Partial-order planner

Answer is given below:

(Answer = d)
Explanation:Any planning algorithm that can place two actions into a plan without specifying which should come first is called partial-order planner.

5. How many possible plans are available in partial-order solution?

a) 3

b) 4

c) 5

d) 6

Answer is given below:

(Answer = d)
Explanation:The partial-order solution corresponds to six possible total-order plans.

6. What is the other name of each and every total-order plans?

a) Polarization

b) Linearization

c) Solarization

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:Each and every total order plan is also called as linearization of the partial-order plan.

7. What are present in the empty plan?

a) Start

b) Finish

c) Modest

d) Both a & b

Answer is given below:

(Answer = d)
Explanation:The 'empty' plan contains just the start and finish actions.

8. What are not present in start actions?

a) Preconditions

b) Effect

c) Finish

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:Start has no precondition and has as its effects all the literals in the initial state of the planning problem.

9. What are not present in finish actions?

a) Preconditions

b) Effect

c) Finish

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation:Finish has no effects and has as its preconditions the goal literals of the planning algorithm.

10. Which can be adapted for planning algorithm?

a) Most-constraint variable

b) Most-constraint literal

c) Constraint

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation:The most-constraint variable heuristic from CSPs can be adapted for planning algorithm and seems to work well.

A.I Topic: – Intelligent Agents and Environment – 1

This set of Artificial Intelligence MCQs focuses on "Intelligent Agents and Environment – 1".

1. What is Artificial intelligence?

a) Putting your intelligence into Computer

b) Programming with your own intelligence

c) Making a Machine intelligent

d) Playing a Game

e) Putting more memory into Computer

Answer is given below:

(Answer = c)
Explanation: Because AI is to make things work automatically through machine without using human effort. Machine will give the result with just giving input from human. That means the system or machine will act as per the requirement.

2. Which is not the commonly used programming language for AI?

a) PROLOG

b) Java

c) LISP

d) Perl

e) Java script

Answer is given below:

(Answer = d)
Explanation: Because Perl is used as a script language, and not of much use for AI practice. All others are used to generate an artificial program.

3. Which instruments are required for perceiving and acting upon the environment?

a) Sensors and Actuators

b) Sensors

c) Perceiver

d) None of the above

Answer is given below:

(Answer = a)
Explanation: An agent is anything that can be viewed as perceiving and acting upon the environment through the sensors and actuators.

4. Artificial Intelligence has its expansion in the following application. (Mark all that apply)

a) Planning and Scheduling

b) Game Playing

c) Diagnosis

d) Robotics

e) All of the above

Answer is given below:

Answer: e
Explanation: All sectors require intelligence and automation for its working.

5. An 'agent' is anything that,

a) Perceives its environment through sensors and acting upon that environment through

actuators

b) Takes input from the surroundings and uses its intelligence and performs the desired

operations

c) A embedded program controlling line following robot

d) All of the mentioned

Answer is given below:

(Answer = d)
Explanation: An agent is anything that can be viewed as perceiving and acting upon the environment through the sensors and actuators. Mean it takes input from its environment through sensors, performs operation and gives output through actuators.

6. What is perception sequence of an agent?

a) A periodic inputs sets

b) a complete history of everything the agent has ever perceived

c) Both a) and b)

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation: An agent's percept sequence is the complete history of everything the agent has ever perceived.

7. Agents behavior can be best described by

a) Perception sequence

b) Agent function

c) Sensors and Actuators

d) Environment in which agent is performing

Answer is given below:

(Answer = b)
Explanation: An agent's behavior is described by the agent function that maps any given percept sequence to an action, which can be implemented by agent program. The agent function is an
abstract mathematical description; the agent program is a concrete implementation, running on the agent architecture.

8. Rational agent is the one who always does the right thing. State true or false

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: Rational agent is the one who always does the right thing Right in a sense that it makes the agent the most successful.

9. Performance Measures are fixed for all agents. State true or false

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: As a general rule, it is better to design performance measures according to what one actually wants in the environment, rather than according to how one thinks the agent should behave.

10. What is rational at any given time depends on

a) The performance measure that defines the criterion of success

b) The agent's prior knowledge of the environment

c) The actions that the agent can perform

d) The agent's percept sequence to date

Answer is given below:

(Answer = a), b, c, d
Explanation: For each possible percept sequence, a rational agent should select an action that is expected to maximize its performance measure, given the evidence provided by the percept sequence and whatever built-in knowledge the agent has.

A.I Topic: – Intelligent Agents and Environment – 2

This set of Artificial Intelligence MCQs focuses on "Intelligent Agents and Environment – 2".

1. An omniscient agent knows the actual outcome of its actions and can act accordingly; but omniscience is impossible in reality. Rational Agent always does the right thing; but Rationality is possible in reality. State true or false

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: Refer the definition of rational and omniscient agents.

2. The Task Environment of an agent consists of

a) Sensors

b) Actuators

c) Performance Measures

d) Environment

Answer is given below:

(Answer = a), b, c, d
Explanation: The task environment of an agent is described by four parts performance measures, sensors, actuators and environment, generally known as the PEAS descriptions.

3. What could possibly be the environment of a Satellite Image Analysis System?

a) Computers in space and earth

b) Image categorization techniques

c) Statistical data on image pixel intensity value and histograms

d) All of the mentioned

Answer is given below:

(Answer = d)
Explanation: An environment is something which agent stays in.

4. How many types of agents are there in artificial intelligence?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = d)
Explanation: The four types of agents are Simple reflex, Model based, Goal based and Utility based agents.

5. Categorize Crossword puzzle in Fully Observable / Partially Observable.

a) Fully Observable

b) partially Observable

Answer is given below:

(Answer = a)
Explanation: In cross word puzzle an agent knows the complete state of the environment through its sensors.

6. The game of Poker is a single agent.

a) True

b) False

Answer is given below:

(Answer = b)
Explanation: The game of poker involves multiple player, hence its works in Multi-agent environment.

7. Satellite Image Analysis System is (Choose the one that is not applicable).

a) Episodic

b) Semi-Static

c) Single agent

d) Partially Observable

Answer is given below:

(Answer = d)
Explanation: System knows the current status of the analysis thought its inputs.

8. What is the rule of simple reflex agent?

a) Simple-action rule

b) Condition-action rule

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation: Simple reflex agent is based on the present condition and so it is condition action rule.

9. An agent is composed of,

a) Architecture

b) Agent Function

c) Perception Sequence

d) Architecture and Program

Answer is given below:

(Answer = d)
Explanation: An agent is anything that can be viewed as perceiving and acting upon the environment through the sensors and actuators.

10. In which of the following agent does the problem generator is present?

a) Learning agent

b) Observing agent

c) Reflex agent

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation: Problem generator will give the suggestion to improve the output for learning agent.

A.I Topic: – Game Theory – 2

This set of Artificial Intelligence MCQs focuses on "Game Theory – 2".

1. Which search is equal to minimax search but eliminates the branches that can't influence the final decision?

a) Depth-first search

b) Breadth-first search

c) Alpha-beta pruning

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation: The alpha-beta search computes the same optimal moves as minimax, but eliminates the branches that can't influence the final decision.

2. Which search is similar to minimax search?

a) Hill-climbing search

b) Depth-first search

c) Breadth-first search

d) All of the mentioned

Answer is given below:

(Answer = b)
Explanation: The minimax search is depth-first search, So at one time we just have to consider the nodes along a single path in the tree.

3. How the effectiveness of the alpha-beta pruning gets increased?

a) Depends on the nodes

b) Depends on the order in which they are executed

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation: None.

4. Which is identical to the closed list in Graph search?

a) Hill climbing search algorithm

b) Depth-first search

c) Transposition table

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation: None.

5. Which function is used to calculate the feasibility of whole game tree?

a) Evaluation function

b) Transposition

c) Alpha-beta pruning

d) All of the mentioned

Answer is given below:

(Answer = a)
Explanation: Because we need to cut the search off at some point and apply an evaluation function that gives an estimate of the utility of the state.

6. What is called as transposition table?

a) Hash table of next seen positions

b) Hash table of previously seen positions

c) Next value in the search

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation: Transposition is the occurrence of repeated states frequently in the search.

7. Where does the values of alpha-beta search get updated?

a) Along the path of search

b) Initial state itself

c) At the end

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation: Alpha-beta search updates the value of alpha and beta as it gets along and prunes the remaining branches at node.

8. Which value is assigned to alpha and beta in the alpha-beta pruning?

a) Alpha = max

b) Beta = min

c) Beta = max

d) Both a & b

Answer is given below:

(Answer = d)
Explanation: Alpha and beta are the values of the best choice we have found so far at any choice point along the path for MAX and MIN.

9. To which depth does the alpha-beta pruning can be applied?

a) 10 states

b) 8 States

c) 6 States

d) Any depth

Answer is given below:

(Answer = d)
Explanation: Alpha–beta pruning can be applied to trees of any depth and it is possible to prune entire sub-tree rather than leaves.

10. Which values are independent in minimax search algorithm?

a) Pruned leaves x and y

b) Every state is dependent

c) Root is independent

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation: The minimax decision are independent of the values of the pruned values x and y because of the root values.

A.I Topic: – Uninformed Search and Exploration – 1

This set of Artificial Intelligence MCQs focuses on "Uninformed Search and Exploration – 1".

1. Blind searching is general term for

a) Informed Search

b) Uninformed Search

c) Both a and b

d) Only a

Answer is given below:

(Answer = b)
Explanation: In case of uninformed search no additional information except the problem definition is given.

2. Strategies that know whether one non-goal state is "more promising" than another are called

a) Informed Search

b) Unformed Search

c) Heuristic Search

d) Blind Search

Answer is given below:

(Answer = a), c
Explanation: Strategies that know whether one non-goal state is "more promising" than another are called informed search or heuristic search strategies.

3. Which of the following is/are Uninformed Search technique/techniques

a) Breath First Search (BFS)

b) Depth First Search (DFS)

c) Bi-directional Search

d) Best First Search

Answer is given below:

(Answer = a), b, c
Explanation: Several uninformed search techniques includes BFS, DFS, Uniform-cost, Depth-limited, bi-directional search etc.

4. Which data structure conveniently used to implement BFS?

a) Stacks

b) Queues

c) Priority Queues

d) Circular Queues

Answer is given below:

(Answer = b), d
Explanation: Queue is the most convenient data structure, but memory used to store nodes can be reduced by using circular queues.

5. Which data structure conveniently used to implement DFS?

a) Stacks

b) Queues

c) Priority Queues

d) All of the above

Answer is given below:

(Answer = a)
Explanation: DFS requires node to be expanded the one most recent visited, hence stack is convenient to implement.

6. The time and space complexity of BFS is (For time and space complexity problems consider

b as branching factor and d as depth of the search tree.)

a) O(bd+1) and O(bd+1)

b) O(b2) and O(d2)

c) O(d2) and O(b2)

d) O(d2) and O(d2)

Answer is given below:

(Answer = a)
Explanation: We consider a hypothetical state space where every state has b successors. The root of the search tree generates b nodes at the first level, each of which generates b more nodes, for a total of b2 at the second level. Each of these generates b more nodes, yielding b3

nodes at the third level, and so on. Now suppose that the solution is at depth d. In the worst case, we would expand all but the last node at level d (since the goal itself is not expanded), generating bd+1- b nodes at level d+1

7. Breadth-first search is not optimal when all step costs are equal, because it always expands the shallowest unexpanded node. State whether true or false.

a) True

b) False

Answer is given below:

(Answer = b)
Explanation: Breadth-first search is optimal when all step costs are equal, because it always expands the shallowest unexpanded node. If the solution exists in shallowest node no irrelevant nodes are expanded.

8. uniform-cost search expands the node n with the_____.

a) Lowest path cost

b) Heuristic cost

c) Highest path cost

d) Average path cost

Answer is given below:

(Answer = a)
Explanation: uniform-cost search expands the node n with the lowest path cost. Note that if all step costs are equal, this is identical to breadth-first search.

9. Depth-first search always expands the _____ node in the current fringe of the search tree.

a) Shallowest

b) Child node

c) Deepest

d) Minimum cost

Answer is given below:

(Answer = b), c
Explanation: Depth-first search always expands the deepest/leaf node in the current fringe of the search tree.

10. Breadth-first search always expands the _____ node in the current fringe of the search tree.

a) Shallowest

b) Child node

c) Deepest

d) Minimum cost

Answer is given below:

(Answer = a)
Explanation: Breadth-first search always expands the shallowest node in the current fringe of the search tree. Traversal is performed level wise.

A.I Topic: – Informed Search and Exploration – 1

This set of Artificial Intelligence MCQs focuses on "informed Search and Exploration – 1".

1. A heuristic is a way of trying

a) To discover something or an idea embedded in a program

b) To search and measure how far a node in a search tree seems to be from a goal

c) To compare two nodes in a search tree to see if one is better than another

d) Only a) and b)

e) Only a), b) and c)

Answer is given below:

Answer: e
Explanation: In a heuristic approach, we discover certain idea and use heuristic functions to search for a goal and predicates to compare nodes.

2. A* algorithm is based on

a) Breadth-First-Search

b) Depth-First –Search

c) Best-First-Search

d) Hill climbing

Answer is given below:

(Answer = c)
Explanation: Best-first-search is giving the idea of optimization and quick choose of path, and all these characteristic lies in A* algorithm.

3. The search strategy the uses a problem specific knowledge is known as

a) Informed Search

b) Uniform-Cost Search

c) Heuristic Search

d) Best First Search

Answer is given below:

(Answer = a), c, d
Explanation: The problem specific knowledge is also known as Heuristics and Best-First search uses some heuristic to choose the best node for expansion.

4. Uninformed search strategies are better than informed search strategies.

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: Informed search strategies uses some problem specific knowledge, hence more efficient to finding goals.

5. Best-First search is a type of informed search, which uses _____ to choose the best next node for expansion.

a) Evaluation function returning lowest evaluation

b) Evaluation function returning highest evaluation

c) Both a & b can be used

d) None of them is applicable

Answer is given below:

(Answer = a)
Explanation: Best-first search is an instance of the general TREE-SEARCH or GRAPH-SEARCH algorithm in which a node is selected for expansion based on an evaluation function, f (n) . Traditionally, the node with the lowest evaluation is selected for expansion, because the evaluation measures distance to the goal.

6. Best-First search can be implemented using the following data structure.

a) Queue

b) Stack

c) Priority Queue

d) Circular Queue

Answer is given below:

(Answer = c)
Explanation: Best-first search can be implemented within our general search framework via a priority queue, a data structure that will maintain the fringe in ascending order of f-values.

7. The name "best-first search" is a venerable but inaccurate one. After all, if we could really expand the best node first, it would not be a search at all; it would be a straight march to the goal. All we can do is choose the node that appears to be best according to the evaluation function. State whether true or false.

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: If the evaluation function is exactly accurate, then this will indeed be the best node; in reality, the evaluation function will sometimes be off, and can lead the search astray.

8. Heuristic function h(n) is,

a) Lowest path cost

b) Cheapest path from root to goal node

c) Estimated cost of cheapest path from root to goal node

d) Average path cost

Answer is given below:

(Answer = c)
Explanation: Heuristic is an estimated cost.

9. Greedy search strategy chooses the node for expansion

a) Shallowest

b) Deepest

c) The one closest to the goal node

d) Minimum heuristic cost

Answer is given below:

(Answer = c)
Explanation: Sometimes minimum heuristics can be used, sometimes maximum heuristics function can be used. It depends upon the application on which the algorithm is applied.

10. In greedy approach evaluation function is

a) Heuristic function

b) Path cost from start node to current node

c) Path cost from start node to current node + Heuristic cost

d) Average of Path cost from start node to current node and Heuristic cost

Answer is given below:

(Answer = a)
Explanation: Greedy best-first search3 tries to expand the node that is closest to the goal, on the grounds that this is likely to lead to a solution quickly. Thus, it evaluates nodes by using just the heuristic function: f (n) = h(n).

A.I Topic: – Uninformed Search and Exploration – 2

This set of Artificial Intelligence MCQs focuses on "Uninformed Search and Exploration – 2".

1. Optimality of BFS is

a) When there is less number of nodes

b) When all step costs are equal

c) When all step costs are unequal

d) Both a & c

Answer is given below:

(Answer = b)
Explanation: It always expands the shallowest unexpanded node.

2. How many successors are generated in backtracking search?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = a)
Explanation: Each partially expanded node remembers which successor to generate next because of these condition, it uses less memory.

3. What is the space complexity of Depth-first search?

a) O(b)

b) O(bl)

c) O(m)

d) O(bm)

Answer is given below:

(Answer = d)
Explanation: O(bm) is the space complexity where b is the branching factor and m is the maximum depth of the search tree.

4. Which search algorithm imposes a fixed depth limit on nodes?

a) Depth-limited search

b) Depth-first search

c) Iterative deepening search

d) Bidirectional search

Answer is given below:

(Answer = a)
Explanation: At each level of tree DFS is performed. Main drawback of this algorithm is shallow nodes are expanded again and again.

5. LIFO is _____ where as FIFO is _____?

a) Stack, Queue

b) Queue, Stack

c) Priority Queue, Stack

d) Stack. Priority Queue

Answer is given below:

(Answer = a)
Explanation: LIFO is last in first out – Stack. FIFO is first in first out – Queue.

6. When the environment of an agent is partially observable in search space following problem/problems could occur.

a) Sensorless problems: If the agent has no sensors at all, then (as far as it knows) it could be in one of several possible initial states, and each action might therefore lead to one of several possible successor states.

b) Contingency problems: If the environment is partially observable or if actions are uncertain, then the agent's percepts provide new information after each action. Each possible percept defines a contingency that must be planned for. A problem is called adversarial if the uncertainty is caused by the actions of another agent.

c) Exploration problems: When the states and actions of the environment are unknown, the agent must act to discover them. Exploration problems can be viewed as an extreme case of contingency problems

d) All of the above

Answer is given below:

(Answer = d)
Explanation: Self Explanatory

7. For general graph, how one can get rid of repeated states?

a) By maintaining a list of visited vertices

b) By maintaining a list of traversed edges

c) By maintaining a list of non-visited vertices

d) By maintaining a list of non-traversed edges

Answer is given below:

(Answer = a)
Explanation: Other techniques are costly.

8. DFS is _____ efficient and BFS is _____ efficient.

a) Space, Time

b) Time, Space

c) Time, Time

d) Space, Space

Answer is given below:

(Answer = a)
Explanation: http://mhesham.wordpress.com/tag/bfs-vs-dfs/

9. The main idea of bi-directional search is to reduce the time complexity by searching two way simultaneously from start node and another from goal node.

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: The idea behind bidirectional search is to run two simultaneous searches-one forward from
the initial state and the other backward from the goal, stopping when the two searches meet in the middle. The motivation is that bd/2 + bd/2 is much less than bd,

10. An algorithm is complete if

a) It terminates with a solution when one exists

b) It starts with a solution

c) It does not terminate with a solution

d) It has a loop

e) It has a decision parameter.

Answer is given below:

(Answer = a)
Explanation: An Algorithm is complete, if It terminates with a solution when one exists.

A.I Topic: – Local Search Problems and Optimization Problems – 2

This set of Artificial Intelligence MCQs focuses on "Local Search Problems and Optimization Problems – 2.

1. A genetic algorithm (or GA) is a variant of stochastic beam search in which successor states

are generated by combining two parent states, rather than by modifying a single state.

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: stochastic beam search, analogous to stochastic hill climbing, helps to alleviate this problem. Instead of choosing the best k from the pool of candidate successors, stochastic beam search chooses k successors at random, with the probability of choosing a given successor being an increasing function of its value.

2. Mark two main features of Genetic Algorithm

a) Fitness function

b) Cross-over techniques

c) Individuals among the population

d) Random mutation

Answer is given below:

(Answer = a), b
Explanation: Fitness function helps choosing individuals from the population and Cross-over techniques defines the off-spring generated.

3. Which search agent operates by interleaving computation and action?

a) Offline search

b) Online search

c) Breadth-first search

d) Depth-first search

Answer is given below:

(Answer = b)
Explanation: In online search, it will first take an action and then observes the environment.

4. What is called as exploration problem?

a) State and actions are unknown to the agent

b) State and actions are known to the agent

c) Only actions are known to agent

d) Both b & c

Answer is given below:

(Answer = a)
Explanation: Online search is a necessary idea for an exploration problem where the states and actions are unknown to the agent.

5. In which state spaces does the online-dfs-agent will work?

a) Irreversible state spaces

b) Reversible state spaces

c) searchable state spaces

d) All of the mentioned

Answer is given below:

(Answer = b)
Explanation: Online-DFS-Agent will work only state spaces where the actions are reversible.

6. Which search algorithm will use limited amount of memory?

a) RBFS

b) SMA*

c) Hill-climbing search algorithm

d) Both a & b

Answer is given below:

(Answer = d)
Explanation: RBFE and SMA* will solve any kind of problem that A* can't by using limited amount of memory.

7. How the new states are generated in genetic algorithm?

a) Composition

b) Mutation

c) Cross-over

d) Both b & c

Answer is given below:

(Answer = d)
Explanation: New states are generated by mutation and by crossover, which combines a pair of states from the population.

8. Which method is effective for escaping from local minima?

a) Updating heuristic estimate

b) Reducing heuristic estimate

c) Eliminating heuristic estimate

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation: Updating heuristic estimates from experience provides an effective method to escape from local minima.

9. Which of the following algorithm is online search algorithm?

a) Breadth-first search algorithm

b) Depth-first search algorithm

c) Hill-climbing search algorithm

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation: Hill-climbing search algorithm will have only current state in memory, So it is a online search algorithm.

10. Searching using query on Internet is, use of _____ type of agent

a) Offline agent

b) Online agent

c) Both a & b

d) Goal Based

Answer is given below:

(Answer = b), d
Explanation: Refer to the definitions of both the type of agent.

A.I Topic: – Local Search Problems and Optimization Problems – 1

This set of Artificial Intelligence MCQs focuses on "Local Search Problems and Optimization Problems – 1" .

1. In many problems the path to goal is irrelevant, this class of problems can be solved using,

a) Informed Search Techniques

b) Uninformed Search Techniques

c) Local Search Techniques

d) Only a and b

Answer is given below:

(Answer = c)
Explanation: If the path to the goal does not matter, we might consider a different class of algorithms, ones that do not worry about paths at all. Local search algorithms operate using a single current state (rather than multiple paths) and generally move only to neighbors of that state.

2. Though local search algorithms are not systematic, key advantages would include

a) Less memory

b) More time

c) Finds a solution in large infinite space

d) No optimum solution

Answer is given below:

(Answer = a), c
Explanation: Two advantages: (1) they use very little memory-usually a constant amount; and (2) they can often find reasonable solutions in large or infinite (continuous) state spaces for which systematic algorithms are unsuitable.

3. A complete, local search algorithm always finds goal if one exists, an optimal algorithm

always finds a global minimum/maximum. State whether True or False.

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: An algorithm is complete if it finds a solution if exists and optimal if finds optimal goal (minimum or maximum)

4. _____ Is an algorithm, a loop that continually moves in the direction of increasing

value – that is uphill

a) Up-Hill Search

b) Hill-Climbing

c) Hill algorithm

d) Reverse-Down-Hill search

Answer is given below:

(Answer = b)
Explanation: Refer the definition of Hill-Climbing approach.

5. Hill-Climbing algorithm terminates when,

a) Stopping criterion met

b) Global Min/Max is achieved

c) No neighbor has higher value

d) Local Min/Max is achieved

Answer is given below:

(Answer = c), d
Explanation: When no neighbor is having higher value, algorithm terminates fetching local min/max.

6. One of the main cons of hill-climbing search is,

a) Terminates at local optimum

b) Terminates at global optimum

c) Does not find optimum solution

d) Fail to find a solution

Answer is given below:

(Answer = a), c
Explanation: Algorithm terminates at local optimum values, hence fails to find optimum solution.

7. Stochastic hill climbing chooses at random from among the uphill moves; the probability of selection can vary with the steepness of the uphil1 move.

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: Refer to the definition of variants of hill-climbing search.

8. Hill climbing sometimes called _____ because it grabs a good neighbor state without thinking ahead about where to go next.

a) Needy local search

b) Heuristic local search

c) Greedy local search

d) Optimal local search

Answer is given below:

(Answer = c)
Explanation: None.

9. Hill-Climbing approach stuck for the following reasons

a) Local maxima

b) Ridges

c) Plateaux

d) All of above

Answer is given below:

(Answer = d)
Explanation: Local maxima: a local maximum is a peak that is higher than each of its neighboring states, but lower than the global maximum. Ridges: Ridges result in a sequence of local maxima that is very difficult for greedy algorithms to navigate. Plateaux: a plateau is an area of the state space landscape where the evaluation function is flat.

10. _____ 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

Answer is given below:

(Answer = b)
Explanation: Refer to the definition of Local Beam Search algorithm.

A.I Topic: – Constraints Satisfaction Problems – 2

This set of Artificial Intelligence MCQs focuses on "Constraints Satisfaction Problems – 2".

1. Flexible CSPs relax on,

a) Constraints

b) Current State

c) Initial State

d) Goal State

Answer is given below:

(Answer = a)
Explanation: Definition of flexible CSPs.

2. Language/Languages used for programming Constraint Programming includes

a) Prolog

b) C++

c) C

d) Fortrun

Answer is given below:

(Answer = a), b
Explanation: None.

3. Which search agent operates by interleaving computation and action?

a) Offline search

b) Online search

c) Breadth-first search

d) Depth-first search

Answer is given below:

(Answer = b)
Explanation: In online search, it will first take an action and then observes the environment.

4. Backtracking is based on,

a) Last in first out

b) First in first out

c) Recursion

d) Both a & c

Answer is given below:

(Answer = d)
Explanation: Recursion uses LIFO.

5. Constraint Propagation technique actually modifies the CSP problem.

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: Constraints are propagated towards goal node, modifying actual problem.

6. Which search algorithm will use limited amount of memory?

a) RBFS

b) SMA*

c) Hill-climbing search algorithm

d) Both a & b

Answer is given below:

(Answer = d)
Explanation: RBFE and SMA* will solve any kind of problem that A* can't by using limited amount of memory.

7. How many the new states are generated in backtracking algorithm?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

Answer: 1
Explanation: None.

8. When do we call the states are safely explored?

a) A goal state is unreachable from any state

b) A goal state is denied access

c) A goal state is reachable from every state

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation: None.

9. Which of the following algorithm is generally used CSP search algorithm?

a) Breadth-first search algorithm

b) Depth-first search algorithm

c) Hill-climbing search algorithm

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation: Provides backtrack facility.

10. What do we mean by simulated annealing in artificial intelligence?

a) Returns an optimal solution when there is a proper cooling schedule

b) Returns an optimal solution when there is no proper cooling schedule

c) It will not return an optimal solution when there is a proper cooling schedule

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation: Refer to the definitions of annealing search.

A.I Topic: – Constraints Satisfaction Problems – 1

This set of Artificial Intelligence MCQs focuses on "Constraints Satisfaction Problems – 1".

1. _____ are mathematical problems defined as a set of objects whose state must satisfy a number of constraints or limitations.

a) Constraints Satisfaction Problems

b) Uninformed Search Problems

c) Local Search Problems

d) Only a) and b)

Answer is given below:

(Answer = a)
Explanation: Refer definition of CSPs.

2. Which of the Following problems can be modeled as CSP?

a) 8-Puzzle problem

b) 8-Queen problem

c) Map coloring problem

d) Sudoku

Answer is given below:

(Answer = a), b, c, d
Explanation: All of above problems involves constraints to be satisfied.

3. What among the following constitutes to the incremental formulation of CSP?

a) Path cost

b) Goal cost

c) Successor function

d) Objective function

e) Initial state

Answer is given below:

(Answer = a), b, c, e
Explanation:
Initial state: The empty assignment ( ), in which all variables are unassigned.
Successor function: A value can be assigned to any unassigned variable, provided it does not conflict with previously assigned variables.
Goal test: The current assignment is complete.
Path cost: A constant cost (e.g., 1) for every step.

4. The term _____ is used for a depth-first search that chooses values for one variable at a time and returns when a variable has no legal values left to assign.

a) Forward search

b) Backtrack search

c) Hill algorithm

d) Reverse-Down-Hill search

Answer is given below:

(Answer = b)
Explanation: Refer definition of backtracking algorithm.

5. To overcome the need to backtrack in constraint satisfaction problem can be eliminated by

a) Forward Searching

b) Constraint Propagation

c) Backtrack after a forward search

d) Omitting the constraints and focusing only on goals

Answer is given below:

(Answer = a), b
Explanation: Forward Searching is technique in which a forward check till k steps is made to analyze that the goal can be achieved satiating all constraints. With constraint propagation, constraints on a variable can be propagated to next level/hierarchy and satisfied at that level, eliminating need to backtrack.

6. The BACKTRACKING-SEARCH algorithm in Figure 5.3 has a very simple policy for what to do when a branch of the search fails: back up to the preceding variable and try a different value for it. This is called chronological-backtracking. It is also possible to go all the way to set of variable that caused failure. State whether True or False.

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: Intelligent backtracking

7. Consider a problem of preparing a schedule for a class of student. This problem is a type of

a) Search Problem

b) Backtrack Problem

c) CSP

d) Planning Problem

Answer is given below:

(Answer = c)
Explanation: Schedule developer needs to consider all constraints on teacher as well as students.

8. Constraint satisfaction problems on finite domains are typically solved using a form of

_____.

a) Search Algorithms

b) Heuristic Search Algorithms

c) Greedy Search Algorithms

d) DFS/BFS Search Algorithms

Answer is given below:

(Answer = a), b, c, d
Explanation: Any Search techniques can be used

9. Solving a constraint satisfaction problem on a finite domain is an/a _____ problem
with respect to the domain size.

a) P complete

b) NP complete

c) NP hard

d) Domain dependent

Answer is given below:

(Answer = b)
Explanation: None.

10. _____ is/are useful when the original formulation of a problem is altered in some
way, typically because the set of constraints to consider evolves because of the environment.

a) Static CSPs

b) Dynamic CSPs

c) Flexible CSPs

d) None of the above

Answer is given below:

(Answer = b)
Explanation: Refer to the definition of Dynamic CSPs algorithm.

A.I Topic: – First-Order Logic – 2

This set of Artificial Intelligence MCQs focuses on "First Order Logic – 2.

1. There exist only two types of quantifiers, Universal Quantification and Existential
Quantification.

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: None.

2. Treatment chosen by doctor for a patient for a disease is based on

a) Only current symptoms

b) Current symptoms plus some knowledge from the textbooks

c) Current symptoms plus some knowledge from the textbooks plus experience

d) Only a and b

Answer is given below:

(Answer = c)
Explanation: None.

3. A knowledge-based agent can combine general knowledge with current percepts to infer

hidden aspects of the current state prior to selecting actions.

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: Refer definition of Knowledge based agents.

4. Translate the following statement into FOL.

"For every a, if a is a philosopher, then a is a scholar"

 scholar(a)◊a) ∀ a philosopher(a)

 scholar(a)◊b) ∃ a philosopher(a)

c) A) is true, B) is true

d) A) is false, B) is false

Answer is given below:

(Answer = a)
Explanation: None.

5. A _____ is used to demonstrate, on a purely syntactic basis, that one formula is a logical

consequence of another formula.

a) Deductive Systems

b) Inductive Systems

c) Reasoning with Knowledge Based Systems

d) Search Based Systems

Answer is given below:

(Answer = a)
Explanation: Refer the definition of Deductive based systems.

6. 'α |= β '(to mean that the sentence α entails the sentence β) if and only if, in every model in

which α is _____, β is also _____.

a) True, true

b) True, false

c) False, true

d) False, false

Answer is given below:

(Answer = a)
Explanation: Refer the definition of law of entailment.

7. The statement comprising the limitations of FOL is/are

a) Expressiveness

b) Formalizing Natural Languages

c) Many-sorted Logic

d) None of the mentioned

Answer is given below:

(Answer = a), b, c
Explanation:
Expressiveness: The Löwenheim–Skolem theorem shows that if a first-order theory has any infinite model, then it has infinite models of every cardinality. In particular, no first-order theory with an infinite model can be categorical. Thus there is no first-order theory whose only model has the set of natural numbers as its domain, or whose only model has the set of real numbers as its domain. Many extensions of first-order logic, including infinitely logics and higher-order logics, are more expressive in the sense that they do permit categorical axiomatizations of the natural numbers or real numbers. This expressiveness comes at a meta-logical cost, however: by Lindström's theorem, the compactness theorem and the downward Löwenheim–Skolem theorem cannot hold in any logic stronger than first-order.
Formalizing Natural Languages : First-order logic is able to formalize many simple quantifier constructions in natural language, such as "every person who lives in Perth lives in Australia". But there are many more complicated features of natural language that cannot be expressed in (single-sorted) first-order logic.
Many-sorted Logic: Ordinary first-order interpretations have a single domain of discourse over which all quantifiers range. Many-sorted first-order logic allows variables to have different sorts, which have different domains.

8. A common convention is:

• is evaluated first

• and are evaluated next

• Quantifiers are evaluated next

• is evaluated last.

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: None.

9. How many proposition symbols are there in artificial intelligence?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = b)
Explanation: The two proposition symbols are true and false.

10. How many logical connectives are there in artificial intelligence?

a) 2

b) 3

c) 4

d) 5

Answer is given below:

(Answer = d)
Explanation: The five logical symbols are negation, conjunction, disjunction, implication and bi-conditional.

A.I Topic: – Game Theory – 1

This set of Artificial Intelligence MCQs focuses on "Game Theory – 1".

1. General games involves,

a) Single-agent

b) Multi-agent

c) Neither a nor b

d) Only a and b

Answer is given below:

(Answer = d)
Explanation: Depending upon games it could be single agent (Sudoku) or multi-agent (Chess)

2. Adversarial search problems uses,

a) Competitive Environment

b) Cooperative Environment

c) Neither a nor b

d) Only a and b

Answer is given below:

(Answer = a)
Explanation: Since in cooperative environment agents' goals are I conflicts. They compete for goal.

3. Mathematical game theory, a branch of economics, views any multi-agent environment as a game provided that the impact of each agent on the others is "significant," regardless of whether the agents are cooperative or competitive.

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: None.

4. Zero sum games are the one in which there are two agents whose actions must alternate and in which the utility values at the end of the game are always the same.

a) True

b) False

Answer is given below:

(Answer = b)
Explanation: Utility values are always same and opposite.

5. Zero sum game has to be a _____ game.

a) Single player

b) Two player

c) Multiplayer

d) Three player

Answer is given below:

(Answer = c)
Explanation: Zero sum games could be multiplayer games as long as the condition for zero sum game is satisfied.

6. A game can be formally defined as a kind of search problem with the following components:

a) Initial State

b) Successor Function

c) Terminal Test

d) Utility Function

Answer is given below:

(Answer = a), b, c, d
Explanation: The initial state includes the board position and identifies the player to move. A successor function returns a list of (move, state) pairs, each indicating a legal move and the resulting state. A terminal test determines when the game is over. States where the game has ended are called terminal states. A utility function (also called an objective function or payoff

function), which gives a numeric value for the terminal states. In chess, the outcome is a win, loss, or draw, with values +1, -1, or 0.

7. The initial state and the legal moves for each side define the _____ for the game.

a) Search Tree

b) Game Tree

c) State Space Search

d) Forest

Answer is given below:

(Answer = b)
Explanation: An example of game tree for Tic-Tac-Toe game.

8. General algorithm applied on game tree for making decision of win/lose is _____

a) DFS/BFS Search Algorithms

b) Heuristic Search Algorithms

c) Greedy Search Algorithms

d) MIN/MAX Algorithms

Answer is given below:

(Answer = d)
Explanation: Given a game tree, the optimal strategy can be determined by examining the min/max value of each node, which we write as MINIMAX- VALUE(n). The min/max value of a node is the utility (for MAX) of being in the corresponding state, assuming that both players play optimally from there to the end of the game. Obviously, the min/max value of a terminal state is just its utility. Furthermore, given a choice, MAX will prefer to move to a state of maximum value, whereas MIN prefers a state of minimum value.

9. The minimax algorithm (Figure 6.3) computes the minimax decision from the current state. It uses a simple recursive computation of the minimax values of each successor state, directly implementing the defining equations. The recursion proceeds all the way down to the leaves of the tree, and then the minimax values are backed up through the tree as the recursion unwinds.

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: Refer definition of minimax algorithm.

10. The complexity of minimax algorithm is

a) Same as of DFS

b) Space – bm and time – bm

c) Time – bm and space – bm

d) Same as BFS

Answer is given below:

(Answer = a), b
Explanation: Same as DFS.

A.I Topic: – Logical Agents – 1

This set of Artificial Intelligence MCQs focuses on "Logical Agents – 1".

1. Which is used to compute the truth of any sentence?

a) Semantics of propositional logic

b) Alpha-beta pruning

c) First-order logic

d) Both a & b

Answer is given below:

(Answer = a)
Explanation: Because the meaning of the sentences is really needed to compute the truth.

2. Which are needed to compute the logical inference algorithm?

a) Logical equivalence

b) Validity

c) Satisfiability

d) All of the mentioned

Answer is given below:

(Answer = d)
Explanation: Logical inference algorithm can be solved be using logical equivalence, Validity and satisfiability.

3. From which rule does the modus ponens are derived?

a) Inference rule

b) Module rule

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation: Inference rule contains the standard pattern that leads to desired goal. The best form of inference rule is modus ponens.

4. Which is also called single inference rule?

a) Reference

b) Resolution

c) Reform

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation: Because resolution yields a complete inference rule when coupled with any search algorithm.

5. Which form is called as conjunction of disjunction of literals?

a) Conjunctive normal form

b) Disjunctive normal form

c) Normal form

d) All of the mentioned

Answer is given below:

(Answer = a)
Explanation: None.

6. What can be viewed as a single literal of disjunction?

a) Multiple clause

b) Combine clause

c) Unit clause

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation: A single literal can be viewed as a disjunction or one literal also, called as unit clause.

7. Which is not a property of representation of knowledge?

a) Representational Verification

b) Representational Adequacy

c) Inferential Adequacy

d) Inferential Efficiency

Answer is given below:

(Answer = a)
Explanation: None.

8. Which is not Familiar Connectives in First Order Logic?

a) and

b) iff

c) or

d) not

Answer is given below:

(Answer = d)
Explanation: "not" is coming under propositional logic and is therefore not a connective.

9. Inference algorithm is complete only if,

a) It can derive any sentence

b) It can derive any sentence that is an entailed version

c) It is truth preserving

d) Both b & c

Answer is given below:

(Answer = d)
Explanation: None.

10. An inference algorithm that derives only entailed sentences is called sound or truth-preserving.

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: None.

A.I Topic: – Logical Agents – 2

This set of Artificial Intelligence MCQs focuses on "Logical Agents – 2".

1. Knowledge and reasoning also play a crucial role in dealing with _____ environment.

a) Completely Observable

b) Partially Observable

c) Neither a nor b

d) Only a and b

Answer is given below:

(Answer = b)
Explanation: Knowledge and reasoning could aid to reveal other factors that could complete environment.

2. Treatment chosen by doctor for a patient for a disease is based on

a) Only current symptoms

b) Current symptoms plus some knowledge from the textbooks

c) Current symptoms plus some knowledge from the textbooks plus experience

d) Only a) and b)

Answer is given below:

(Answer = c)
Explanation: None.

3. A knowledge-based agent can combine general knowledge with current percepts to infer hidden aspects of the current state prior to selecting actions.

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: Refer definition of Knowledge based agents.

4. A) Knowledge base (KB) is consists of set of statements.

B) Inference is deriving a new sentence from the KB.

Choose the correct option.

a) A is true, B is true

b) A is false, B is false

c) A is true, B is false

d) A is false, B is true

Answer is given below:

(Answer = a)
Explanation: None.

5. Wumpus World is a classic problem, best example of,

a) Single player Game

b) Two player Game

c) Reasoning with Knowledge

d) Knowledge based Game

Answer is given below:

(Answer = c)
Explanation: Refer the definition of Wumpus World Problem.

6. 'α |= β '(to mean that the sentence α entails the sentence β) if and only if, in every model in which α is _____, β is also _____.

a) True, true

b) True, false

c) False, true

d) False, false

Answer is given below:

(Answer = a)
Explanation: Refer the definition of law of entailment.

7. Which is created by using single propositional symbol?

a) Complex sentences

b) Atomic sentences

c) Composition sentences

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation: Atomic sentences are indivisible syntactic elements consisting of single propositional symbol.

8. Which is used to construct the complex sentences?

a) Symbols

b) Connectives

c) Logical connectives

d) All of the mentioned

Answer is given below:

(Answer = c)
Explanation: None.

9. How many proposition symbols are there in artificial intelligence?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = b)
Explanation: The two proposition symbols are true and false.

10. How many logical connectives are there in artificial intelligence?

a) 2

b) 3

c) 4

d) 5

Answer is given below:

(Answer = d)
Explanation: The five logical symbols are negation, conjunction, disjunction, implication and bi-conditional.

A.I Topic: – Knowledge and Reasoning – 1

This set of Artificial Intelligence MCQs focuses on "Knowledge and Reasoning – 1".

1. Knowledge and reasoning also play a crucial role in dealing with _____

environment.

a) Completely Observable

b) Partially Observable

c) Neither a nor b

d) Only a and b

Answer is given below:

(Answer = b)
Explanation: Knowledge and reasoning could aid to reveal other factors that could complete environment.

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a) Only current symptoms

b) Current symptoms plus some knowledge from the textbooks

c) Current symptoms plus some knowledge from the textbooks plus experience

d) Only a and b

Answer is given below:

(Answer = c)
Explanation: None.

3. A knowledge-based agent can combine general knowledge with current percepts to infer

hidden aspects of the current state prior to selecting actions. State whether True or False.

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: Refer definition of Knowledge based agents.

4. A) Knowledge base (KB) is consists of set of statements.

B) Inference is deriving a new sentence from the KB.

Choose the correct option.

a) A is true, B is true

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d) A is false, B is true

Answer is given below:

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Answer is given below:

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A.I Topic: – Knowledge and Reasoning – 2

This set of Artificial Intelligence MCQs focuses on "Knowledge and Reasoning – 2".

1. Which is used to compute the truth of any sentence?

a) Semantics of propositional logic

b) Alpha-beta pruning

c) First-order logic

d) Both a & b

Answer is given below:

(Answer = a)
Explanation: Because the meaning of the sentences is really needed to compute the truth.

2. Which are needed to compute the logical inference algorithm?

a) Logical equivalence

b) Validity

c) Satisfiability

d) All of the mentioned

Answer is given below:

(Answer = d)
Explanation: Logical inference algorithm can be solved be using logical equivalence, Validity and satisfiability.

3. From which rule does the modus ponens are derived?

a) Inference rule

b) Module rule

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation: Inference rule contains the standard pattern that leads to desired goal. The best form of inference rule is modus ponens.

4. Which is also called single inference rule?

a) Reference

b) Resolution

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Answer is given below:

(Answer = b)
Explanation: Because resolution yields a complete inference rule when coupled with any search algorithm.

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Explanation: "not" is coming under propositional logic and is therefore not a connective.

9. Inference algorithm is complete only if,

a) It can derive any sentence

b) It can derive any sentence that is an entailed version

c) It is truth preserving

d) Both b & c

Answer is given below:

(Answer = d)
Explanation: None.

10. An inference algorithm that derives only entailed sentences is called sound or truth-preserving.

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: None.

A.I Topic: – Informed Search and Exploration – 2

This set of Artificial Intelligence MCQs focuses on "informed Search and Exploration – 2".

1. Optimality of BFS is

a) When there is less number of nodes

b) When all step costs are equal

c) When all step costs are unequal

d) Both a & c

Answer is given below:

(Answer = b)
Explanation: It always expands the shallowest unexpanded node.

2. How many successors are generated in backtracking search?

a) 1

b) 2

c) 3

d) 4

Answer is given below:

(Answer = a)
Explanation: Each partially expanded node remembers which successor to generate next because of these condition, it uses less memory.

3. What is the space complexity of Greedy search?

a) O(b)

b) O(bl)

c) O(m)

d) O(bm)

Answer is given below:

(Answer = d)
Explanation: O(bm) is the space complexity where b is the branching factor and m is the maximum depth of the search tree. Since this algorithm resembles the DFS.

4. In A* approach evaluation function is

a) Heuristic function

b) Path cost from start node to current node

c) Path cost from start node to current node + Heuristic cost

d) Average of Path cost from start node to current node and Heuristic cost

Answer is given below:

(Answer = c)
Explanation: The most widely-known form of best-first search is called A* search. It evaluates nodes by combining g(n),t he cost to reach the node, and h(n.), the cost to get from the node to the goal: f(n) = g(n) + h(n). Since g(n) gives the path cost from the start node to node n, and h(n) is the estimated cost of the cheapest path from n to the goal.

5. A* is optimal if h(n) is an admissible heuristic-that is, provided that h(n) never underestimates the cost to reach the goal.

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: A* is optimal if h(n) is an admissible heuristic-that is, provided that h(n) never overestimates the cost to reach the goal. Refer both the example from the book for better understanding of the algorithms.

6. What is the other name of informed search strategy?

a) Simple search

b) Heuristic search

c) Online search

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation: A key point of informed search strategy is heuristic function, So it is called as heuristic function.

7. What is the heuristic function of greedy best-first search?

a) f(n) != h(n)

b) f(n) < h(n) c) f(n) = h(n) d) f(n) > h(n)

Answer is given below:

(Answer = c)
Explanation: Refer question number 10.

8. Which search uses only the linear space for searching?

a) Best-first search

b) Recursive best-first search

c) Depth-first search

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation: Recursive best-first search will mimic the operation of standard best-first search, but using only the linear space.

9. Which method is used to search better by learning?

a) Best-first search

b) Depth-first search

c) Metalevel state space

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation: This search strategy will helps to problem solving efficiency by using learning.

10. Which is used to improve the performance of heuristic search?

a) Quality of nodes

b) Quality of heuristic function

c) Simple form of nodes

d) None of the mentioned

Answer is given below:

(Answer = b)
Explanation: Good heuristic can be constructed by relaxing the problem, So the performance of heuristic search can be improved.

A.I Topic: – First-Order Logic – 1

This set of Artificial Intelligence MCQs focuses on "First Order Logic – 1".

1. A Term is either an individual constant (a 0-ary function), or a variable, or an n-ary function

applied to n terms: F(t1 t2 ..tn).

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: Definition of term in FOL.

2. Which are needed to compute the logical inference algorithm?

a) Logical equivalence

b) Validity

c) Satisfiability

d) All of the mentioned

Answer is given below:

(Answer = d)
Explanation: Logical inference algorithm can be solved be using logical equivalence, Validity and satisfiability.

3. From which rule does the modus ponens are derived?

a) Inference rule

b) Module rule

c) Both a & b

d) None of the mentioned

Answer is given below:

(Answer = a)
Explanation: Inference rule contains the standard pattern that leads to desired goal. The best form of inference rule is modus ponens.

4. Which is also called single inference rule?

a) Reference

b) Resolution

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Answer is given below:

(Answer = b)
Explanation: Because resolution yields a complete inference rule when coupled with any search algorithm.

5. Which form is called as conjunction of disjunction of literals?

a) Conjunctive normal form

b) Disjunctive normal form

c) Normal form

d) All of the mentioned

Answer is given below:

(Answer = a)
Explanation: None.

6. First Order Logic is also known as,

a) First Order Predicate Calculus

b) Quantification Theory

c) Lower Order Calculus

d) All of the mentioned above

Answer is given below:

(Answer = d)
Explanation: None.

7. The adjective "first-order" distinguishes first-order logic from _____ in which there are predicates having predicates or functions as arguments, or in which one or both of predicate quantifiers or function quantifiers are permitted.

a) Representational Verification

b) Representational Adequacy

c) Higher Order Logic

d) Inferential Efficiency

Answer is given below:

(Answer = c)
Explanation: None.

8. Which is not Familiar Connectives in First Order Logic?

a) and

b) iff

c) or

d) not

Answer is given below:

(Answer = d)
Explanation: "not" is coming under propositional logic and is therefore not a connective.

9. Inference algorithm is complete only if,

a) It can derive any sentence

b) It can derive any sentence that is an entailed version

c) It is truth preserving

d) Both b & c

Answer is given below:

(Answer = d)
Explanation: None.

10. An inference algorithm that derives only entailed sentences is called sound or truth-preserving.

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: None.

A.I Topic: – Problem Solving – 1

This set of Artificial Intelligence MCQ focuses on "Problem Solving Approach – 1".

1. The main task of a problem-solving agent is

a) Solve the given problem and reach to goal

b) To find out which sequence of action will get it to the goal state

c) Both a) and b)

d) Neither a) nor b)

Answer is given below:

(Answer = c)
Explanation: The problem-solving agents are one of the goal-based agents.

2. What is state space?

a) The whole problem

b) Your Definition to a problem

c) Problem you design

d) Representing your problem with variable and parameter

e) A space where you know the solution

Answer is given below:

(Answer = d)
Explanation: Because state space is mostly concerned with a problem, when you try to solve a problem, we have to design a mathematical structure to the problem, which can only be through variables and parameters. eg. You have given a 4-gallon jug and another 3-gallon jug. Neither has measuring marker on it. You have to fill the jugs with water. How can you get exactly 2 gallons of water in to 4gallons.Here the state space can defined as set of ordered pairs integers(x,y),such that x=0,1,2,3 or 4 and y=0,1,2 or 3;X represents the number of gallons in 4galoon jug and y represents quantity of water in the 3-gallon jug.

3.The problem-solving agent with several immediate options of unknown value can decide what to do by just examining different possible sequences of actions that lead to states of known value, and then choosing the best sequence. This process of looking for such a sequence is called Search. State True or False

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: Refer to the definition of problem-solving agent.

4. A search algorithm takes _____ as an input and returns _____ as an output.

a) Input, output

b) Problem, solution

c) Solution, problem

d) Parameters, sequence of actions

Answer is given below:

(Answer = b)
Explanation: A search algorithm takes input as a problem and returns a solution to the problem as an output.

5. A problem in a search space Is defined by,

a) Initial state

b) Goal test

c) Intermediate states

d) All of the above

Answer is given below:

(Answer = a), b
Explanation: A problem has four components initial state, goal test, set of actions, path cost.

6. The Set of actions for a problem in a state space is formulated by a _____.

a) Intermediate states

b) Initial state

c) Successor function, which takes current action and returns next immediate state

d) None of the mentioned

Answer is given below:

(Answer = c)
Explanation: The most common formulation for actions uses a successor function. Given a particular state x, SUCCESSOR-FN(x) returns a set of (action, successor) ordered pairs, where each action is one of the legal actions in state x and each successor is a state that can be reached from x by applying the action.

7. A solution to a problem is a path from the initial state to a goal state. Solution quality is measured by the path cost function, and an optimal solution has the highest path cost among all solutions. State whether true or false.

a) True

b) False

Answer is given below:

(Answer = a)
Explanation: A solution to a problem is a path from the initial state to a goal state. Solution quality is measured by the path cost function, and an optimal solution has the lowest path cost among all solutions.

8. The process of removing detail from a given state representation is called_____.

a) Extraction

b) Abstraction

c) Information Retrieval

d) Mining of data

Answer is given below:

(Answer = b)
Explanation: The process of removing detail from a representation is called abstraction.

9. A problem solving approach works well for

a) 8-Puzzle problem

b) 8-queen problem

c) Finding a optimal path from a given source to a destination

d) Mars Hover (Robot Navigation)

Answer is given below:

(Answer = d)
Explanation: Problem-solving approach works well for toy problems and real-world problems.

10. The _____ is a touring problem in which each city must be visited exactly once. The aim is to find the shortest tour.

a) Finding shortest path between a source and a destination

b) Travelling Salesman problem

c) Map coloring problem

d) Depth first search traversal on a given map represented as a graph

Answer is given below:

(Answer = b)
Explanation: Refer the TSP problem.