

Question Bank Part-2
MS. SHWETA TIWARI

QUESTION BANK PART-2 ARTIFICIAL INTELLIGENCE FOR ENGINEERING (KMC-101)

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By SHWETA TIWARI FROM IT DEPARTMENT

Rajkiya Engineering College |
Ambedkar Nagar, UP, India



Faculty Name: Miss. Shweta Tiwari, Subject: Artificial Intelligence for Engineering (KMC101)
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Artificial Intelligence for Engineering

This (Question Bank Part-2 More to More Advanced Level (Beyond your Syllabus)) only attempts to discover some questions that can be generated in Artificial Intelligence For Engineering with the answer to all these questions. There can be some errors to these answers. If you find any errors then please do write to us.

Artificial Intelligence for Engineering

MCQs

1. Introduction to Artificial Intelligence

History – 1

1. In LISP, the function returns the list that results after the first element is removed (the rest of the list), is _____

- a) car
- b) last
- c) cons
- d) cdr

Answer: d

Explanation:

None.

2. Which of the following contains the output segments of Artificial Intelligence programming?

- a) Printed language and synthesized speech
- b) Manipulation of physical object
- c) Locomotion
- d) All of the mentioned

Answer: d

Explanation:

None.

3. LISP was created by?

- a) John McCarthy
- b) Marvin Minsky
- c) Alan Turing
- d) Allen Newell and Herbert Simon

Answer: a

Explanation:

None.

4. Expert Ease was developed under the direction of _____

- a) John McCarthy
- b) Donald Michie
- c) Lofti Zadeh
- d) Alan Turing

Answer: b

Explanation:

None.

5. An Artificial Intelligence system developed by Terry A. Winograd to permit an interactive dialogue about a domain he called blocks-world.

- a) SHRDLU
- b) SIMD
- c) BACON
- d) STUDENT

Answer: a

Explanation:

None.

6. MLMenu, a natural language interface for the TI Explorer, is similar to _____

- a) Ethernet
- b) NaturalLink
- c) PROLOG
- d) The Personal Consultant

Answer: b

Explanation:

None.

7. Strong Artificial Intelligence is _____

- a) the embodiment of human intellectual capabilities within a computer
- b) a set of computer programs that produce output that would be considered to reflect intelligence if it were generated by humans
- c) the study of mental faculties through the use of mental models implemented on a computer
- d) all of the mentioned

Answer: a

Explanation:

None.

8. The traditional way to exit and LISP system is to enter _____

- a) quit
- b) exit
- c) bye
- d) ok

Answer: b

Explanation:

None.

9. In which of the following situations might a blind search be acceptable?

- a) real-life situation
- b) complex game
- c) small search space
- d) all of the mentioned

Answer: c

Explanation:

None.

10. 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

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.

11. Which search method takes less memory?

- a) Depth-First Search
- b) Breadth-First search
- c) Optimal search

d) Linear Search

Answer: a

Explanation: Depth-First Search takes less memory since only the nodes on the current path are stored, but in Breadth First Search, all of the tree that has generated must be stored.

12. 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 the other is
- d) All of the mentioned

Answer: d

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

13. How do you represent “All dogs have tails”?

- a) $\forall x: \text{dog}(x) \rightarrow \text{tail}(x)$
- b) $\forall x: \text{dog}(x) \rightarrow \text{tail}(y)$
- c) $\forall x: \text{dog}(y) \rightarrow \text{tail}(x)$
- d) $\forall x: \text{dog}(x) \rightarrow \text{tail}(x)$

Answer: a

Explanation: We represent the statement in mathematical logic taking ‘x’ as Dog and which has tail.

We cannot represent two variable x, y for the same object Dog that has tail. The symbol “ \forall ” represent all.

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

- a) Representational Verification
- b) Representational Adequacy
- c) Inferential Adequacy
- d) Inferential Efficiency

Answer: a

Explanation: There is nothing to go for Representational verification; the verification comes under Representational adequacy.

History – 2

1. A series of Artificial Intelligence systems, developed by Pat Langley to explore the role of heuristics in scientific discovery is _____

- a) RAMD
- b) BACON
- c) MIT
- d) DU

Answer: b

Explanation:

None.

2. A.M. Turing developed a technique for determining whether a computer could or could not demonstrate the artificial Intelligence, Presently, this technique is called _____

- a) Turing Test
- b) Algorithm
- c) Boolean Algebra
- d) Logarithm

Answer: a

Explanation:

None.

3. A Personal Consultant knowledge base contains information in the form of _____

- a) parameters
- b) contexts
- c) production rules
- d) all of the mentioned

Answer: d

Explanation:

None.

4. Which approach to speech recognition avoids the problem caused by the variation in speech patterns among different speakers?

- a) Continuous speech recognition
- b) Isolated word recognition
- c) Connected word recognition
- d) Speaker-dependent recognition

Answer: d

Explanation:

None.

5. Which of the following, is a component of an expert system?

- a) inference engine
- b) knowledge base
- c) user interface
- d) all of the mentioned

Answer: d

Explanation:

None.

6. A computer vision technique that relies on image templates is _____

- a) edge detection
- b) binocular vision
- c) model-based vision
- d) robot vision

Answer: c

Explanation:

None.

7. DARPA, the agency that has funded a great deal of American Artificial Intelligence research, is part of the Department of _____

a) Defense

b) Energy

c) Education

d) Justice

Answer: a

Explanation:

None.

8. Which of these schools was not among the early leaders in Artificial Intelligence research?

a) Dartmouth University

b) Harvard University

c) Massachusetts Institute of Technology

d) Stanford University

Answer: b

Explanation:

None.

9. A certain Professor at the Stanford University coined the word 'artificial intelligence' in 1956 at a conference held at Dartmouth college. Can you name the Professor?

a) David Levy

b) John McCarthy

c) Joseph Weizenbaum

d) Hans Berliner

Answer: b

Explanation:

None.

10. In LISP, the function (copy-list <list>)

a) returns a new list that is equal to <list> by copying the top-level element of <list>

b) returns the length of <list>

c) returns t if <list> is empty

d) all of the mentioned

Answer: a

Explanation:

None.

11. Who is the “father” of artificial intelligence?

a) Fisher Ada

b) John McCarthy

c) Allen Newell

d) Alan Turning

Answer: b

Explanation:

None.

12. In 1985, the famous chess player David Levy beat a world champion chess program in four straight games by using orthodox moves that confused the program. What was the name of the chess program?

a) Kaissa

b) CRAY BLITZ

c) Golf

d) DIGDUG

Answer: b

Explanation:

None.

13. The explanation facility of an expert system may be used to _____

a) construct a diagnostic model

b) expedite the debugging process

c) explain the system's reasoning process

d) expedite the debugging process & explain the system's reasoning process

Answer: d

Explanation:

None.

14. A process that is repeated, evaluated, and refined is called _____

a) diagnostic

b) descriptive

c) interpretive

d) iterative

Answer: d

Explanation:

None.

15. Visual clues that are helpful in computer vision include _____

a) color and motion

b) depth and texture

c) height and weight

d) color and motion, depth and texture

Answer: d

Explanation:

None.

History – 3

1. The conference that launched the AI revolution in 1956 was held at?

- a) Dartmouth
- b) Harvard
- c) New York
- d) Stanford

Answer: a

Explanation:

None.

2. Texas Instruments Incorporated produces a low-cost LISP machine called _____

- a) The Computer-Based Consultant
- b) The Explorer
- c) Smalltalk
- d) The Personal Consultant

Answer: b

Explanation:

None.

3. When a top-level function is entered, the LISP processor do(es)?

- a) It reads the function entered
- b) It evaluates the function and the function's operands
- c) It prints the results returned by the function

d) All of the mentioned

Answer: d

Explanation:

None.

4. One method of programming a computer to exhibit human intelligence is called modeling or

a) simulation

b) cognitization

c) duplication

d) psychic amelioration

Answer: a

Explanation:

None.

5. Graphic interfaces were first used in a Xerox product called _____

a) InterLISP

b) Ethernet

c) Smalltalk

d) ZetaLISP

Answer: c

Explanation:

None.

6. The AI researcher who co-authored both the Handbook of Artificial Intelligence and The Fifth Generation is ____

- a) Bruce Lee
- b) Randy Davis
- c) Ed Feigenbaum
- d) Mark Fox

Answer: c

Explanation:

None.

7. Which of the following is being investigated as a means of automating the creation of a knowledge base?

- a) automatic knowledge acquisition
- b) simpler tools
- c) discovery of new concepts
- d) all of the mentioned

Answer: d

Explanation:

None.

8. The CAI (Computer-Assisted Instruction) technique based on programmed instruction is

- a) frame-based CAI
- b) generative CAI
- c) problem-solving CAI
- d) intelligent CAI

Answer: a

Explanation:

None.

9. A robot's "arm" is also known as its _____

- a) end effector
- b) actuator
- c) manipulator
- d) servomechanism

Answer: c

Explanation:

None.

10. KEE is a product of _____

- a) Teknowledge
- b) IntelliCorp
- c) Texas Instruments
- d) Tech knowledge

Answer: b

Explanation:

None.

11. In LISP, the function $X(x) \cdot (2x+1)$ would be rendered as _____

- a) $(\text{lambda } (x) (+(*2 x)1))$
- b) $(\text{lambda } (x) (+1 (* 2x))$
- c) $(+ \text{lambda } (x) 1 (*2x))$
- d) $(* \text{lambda}(x) (+2 \times 1))$

Answer: a

Explanation:

None.

12. A natural language generation program must decide _____

- a) what to say
- b) when to say something
- c) why it is being used
- d) both what to say & when to say something

Answer: a

Explanation:

None.

13. The hardware features of LISP machines generally include _____

- a) large memory and a high-speed processor
- b) letter-quality printers and 8-inch disk drives
- c) a mouse and a specialized keyboard
- d) large memory and a high-speed processor & a mouse and a specialized keyboard

Answer: d

Explanation:

None.

14. In which of the following areas may ICAI programs prove to be useful?

- a) educational institutions
- b) corporations
- c) department of Defense
- d) all of the mentioned

Answer: a

Explanation:

None.

15. A network with named nodes and labeled arcs that can be used to represent certain natural language grammars to facilitate parsing.

- a) Tree Network
- b) Star Network
- c) Transition Network
- d) Complete Network

Answer: c

Explanation:

None.

Linguistics

1. Which of the following is true related to 'Satisfiable' property?

- a) A statement is satisfiable if there is some interpretation for which it is false
- b) A statement is satisfiable if there is some interpretation for which it is true
- c) A statement is satisfiable if there is no interpretation for which it is true
- d) A statement is satisfiable if there is no interpretation for which it is false

Answer: b

Explanation: 'Satisfiable' property is a statement is satisfiable if there is some interpretation for

which it is true.

2. Two literals are complementary if _____

- a) They are equal
- b) They are identical and of equal sign
- c) They are identical but of opposite sign
- d) They are unequal but of equal sign

Answer: c

Explanation: Two literals are complementary if They are identical but of opposite sign.

3. Consider a good system for the representation of knowledge in a particular domain. What property should it possess?

- a) Representational Adequacy
- b) Inferential Adequacy

c) Inferential Efficiency

d) All of the mentioned

Answer: d

Explanation: Consider a good system for the representation of knowledge in a particular domain. The properties should be Representational Adequacy, Inferential Adequacy, Inferential Efficiency and Acquisitional Efficiency.

4. What is Transposition rule?

a) From $P \rightarrow Q$, infer $\sim Q \rightarrow P$

b) From $P \rightarrow Q$, infer $Q \rightarrow \sim P$

c) From $P \rightarrow Q$, infer $Q \rightarrow P$

d) From $P \rightarrow Q$, infer $\sim Q \rightarrow \sim P$

Answer: d

Explanation: Transposition rule- From $P \rightarrow Q$, infer $\sim Q \rightarrow \sim P$.

5. Third component of a planning system is to _____

a) Detect when a solution has been found

b) Detect when solution will be found

c) Detect whether solution exists or not

d) Detect whether multiple solutions exist

Answer: a

Explanation: Third component of a planning system is to detect when a solution has been found.

6. Which of the following is true in Statistical reasoning?

- a) The representation is extended to allow some kind of numeric measure of certainty to be associated with each statement
- b) The representation is extended to allow 'TRUE or FALSE' to be associated with each statement
- c) The representation is extended to allow some kind of numeric measure of certainty to be associated common to all statements
- d) The representation is extended to allow 'TRUE or FALSE' to be associated common to all statements

Answer: a

Explanation: Statistical reasoning is the representation is extended to allow some kind of numeric measure of certainty to be associated with each statement.

7. In default logic, which of the following inference rules of the form is allowed?

- a) $(A : B) / C$
- b) $A / (B : C)$
- c) A / B
- d) $A / B : C$

Answer: a

Explanation: In default logic, we allow inference rules of the form: $(A : B) / C$.

8. In Bayes theorem, what is meant by $P(H_i|E)$?

- a) The probability that hypotheses H_i is true given evidence E
- b) The probability that hypotheses H_i is false given evidence E
- c) The probability that hypotheses H_i is true given false evidence E
- d) The probability that hypotheses H_i is false given false evidence E

Answer: a

Explanation: In Bayes theorem, $P(H_i|E)$ is the probability that hypotheses H_i is true given evidence E .

9. What is another type of Default reasoning?

- a) Monotonic reasoning
- b) Analogical reasoning
- c) Bitonic reasoning
- d) Non-monotonic reasoning

Answer: d

Explanation: Default reasoning is another type of non-monotonic reasoning.

10. Generality is the measure of _____

- a) Ease with which the method can be adapted to different domains of application
- b) The average time required to construct the target knowledge structures from some specified initial structures
- c) A learning system to function with unreliable feedback and with a variety of training examples
- d) The overall power of the system

Answer: a

Explanation: Generality is the measure of the ease with which the method can be adapted to different domains of application.

Artificial Intelligence Agents

1. The performance of an agent can be improved by _____

- a) Learning
- b) Observing
- c) Perceiving
- d) None of the mentioned

Answer: a

Explanation: An agent can improve by saving the previous states on which it was earlier, hence in future it can learn to respond in the same situation better.

2. External actions of the agent is selected by _____

- a) Perceive
- b) Performance
- c) Learning
- d) Actuator

Answer: b

Explanation: It depends on how you want to improve and what the performance measures are.

3. The action of the Simple reflex agent completely depends upon _____

- a) Perception history
- b) Current perception
- c) Learning theory
- d) Utility functions

Answer: b

Explanation: These agents select actions based on the current perception, ignoring the rest of the perception history.

4. Which of the following could be the approaches to Artificial Intelligence?

a) Strong Artificial Intelligence

b) Weak Artificial Intelligence

c) Applied Artificial Intelligence

d) All of the mentioned

Answer: d

Explanation: Strong Artificial Intelligence aims to build machines that can truly reason and solve problems.

Weak Artificial Intelligence deals with the creation of some form of computer-based artificial intelligence that cannot truly reason and solve problems, but can act as if it were intelligent. Applied Artificial Intelligence aims to produce commercially viable “smart” systems.

In the Cognitive Artificial Intelligence approach, a computer is used to test theories about how the human mind works.

5. An Artificial Neural Network Is based on?

a) Strong Artificial Intelligence approach

b) Weak Artificial Intelligence approach

c) Cognitive Artificial Intelligence approach

d) Applied Artificial Intelligence approach

Answer: c

Explanation: In the Cognitive Artificial Intelligence approach, a computer is used to test theories about how the human mind works, for example, theories about how we recognize faces and other objects, or about how we solve abstract problems.

6. The Face Recognition system is based on?

- a) Strong Artificial Intelligence approach
- b) Weak Artificial Intelligence approach
- c) Cognitive Artificial Intelligence approach
- d) Applied Artificial Intelligence approach

Answer: d

Explanation: Applied Artificial Intelligence approach aims to produce commercially viable “smart” systems such as, for example, a security system that is able to recognize the faces of people who permitted to enter a particular building. Applied Artificial Intelligence has already enjoyed considerable success.

7. A completely automated chess engine (Learn from previous games) is based on?

- a) Strong Artificial Intelligence approach
- b) Weak Artificial Intelligence approach
- c) Cognitive Artificial Intelligence approach
- d) Applied Artificial Intelligence approach

Answer: a

Explanation: Strong Artificial Intelligence aims to build machines that can truly reason and solve problems. These machines must be self-aware and their overall intellectual ability needs to be indistinguishable from that of a human being. Strong Artificial Intelligence maintains that suitably programmed machines are capable of cognitive mental states.

8. A basic line following robot is based on _____

- a) Strong Artificial Intelligence approach

b) Weak Artificial Intelligence approach

c) Cognitive Artificial Intelligence approach

d) Applied Artificial Intelligence approach

Answer: b

Explanation: Weak Artificial Intelligence deals with the creation of some form of computer-based artificial intelligence that cannot truly reason and solve problems, but can act as if it were intelligent. Weak Artificial Intelligence holds that suitably programmed machines can simulate human cognition.

9. Which of the following task/tasks Artificial Intelligence could not do yet?

a) Understand natural language robustly

b) Web mining

c) Construction of plans in real time dynamic systems

d) All of the mentioned

Answer: d

Explanation: These are the areas in which need more focus for improvements.

10. What among the following is/are the example of the intelligent agent/agents?

a) Human

b) Robot

c) Autonomous Spacecraft

d) All of the mentioned

Answer: d

Explanation: Humans can be looked upon as agents. They have eyes, ears, skin, taste buds, etc. for sensors; and hands, fingers, legs, mouth for effectors. Robots are agents. Robots may

have camera, sonar, infrared, bumper, etc. for sensors. They can have grippers, wheels, lights, speakers, etc. for actuators. Autonomous Spacecraft takes decision on its own based on perceptions.

Facts – 1

1. When talking to a speech recognition program, the program divides each second of your speech into 100 separate _____

- a) Codes
- b) Phonemes
- c) Samples
- d) Words

Answer: c

Explanation:

None.

2. Which term is used for describing the judgmental or commonsense part of problem solving?

- a) Heuristic
- b) Critical
- c) Value based
- d) Analytical

Answer: a

Explanation:

None.

3. Which stage of the manufacturing process has been described as “the mapping of function onto form”?

- a) Design
- b) Distribution
- c) Project management

d) Field service

Answer: a

Explanation:

None.

4. Which kind of planning consists of successive representations of different levels of a plan?

a) hierarchical planning

b) non-hierarchical planning

c) project planning

d) all of the mentioned

Answer: a

Explanation:

None.

5. What was originally called the “imitation game” by its creator?

a) The Turing Test

b) LISP

c) The Logic Theorist

d) Cybernetics

Answer: a

Explanation:

None.

6. Decision support programs are designed to help managers make _____

a) budget projections

b) visual presentations

c) business decisions

d) vacation schedules

Answer: c

Explanation:

None.

7. PROLOG is an AI programming language, which solves problems with a form of symbolic logic known as predicate calculus. It was developed in 1972 at the University of Marseilles by a team of specialists. Can you name the person who headed this team?

a) Alain Colmerauer

b) Niklaus Wirth

c) Seymour Papert

d) John McCarthy

Answer: a

Explanation:

None.

8. Programming a robot by physically moving it through the trajectory you want it to follow be called

a) contact sensing control

b) continuous-path control

c) robot vision control

d) pick-and-place control

Answer: b

Explanation:

None.

9. To invoke the LISP system, you must enter _____

- a) AI
- b) LISP
- c) CL (Common Lisp)
- d) Both LISP and CL

Answer: b

Explanation:

None.

10. In LISP, what is the function (list-length <list>)?

- a) returns a new list that is equal to <list> by copying the top-level element of <list>
- b) returns the length of <list>
- c) returns t if <list> is empty
- d) all of the mentioned

Answer: b

Explanation:

None.

11. ART (Automatic Reasoning Tool) is designed to be used on _____

- a) LISP machines
- b) Personal computers
- c) Microcomputers
- d) All of the mentioned

Answer: a

Explanation:

None.

12. Which particular generation of computers is associated with artificial intelligence?

- a) Second
- b) Fourth
- c) Fifth
- d) Third

Answer: c

Explanation:

None.

13. Shaping teaching techniques to fit the learning patterns of individual students is the goal of

- a) decision support
- b) automatic programming
- c) intelligent computer-assisted instruction
- d) expert systems

Answer: c

Explanation:

None.

14. Which of the following function returns t If the object is a symbol m LISP?

- a) (* <object>)
- b) (symbolp <object>)
- c) (nonnumeric <object>)

d) (constantp <object>)

Answer: b

Explanation:

None.

15. The symbols used in describing the syntax of a programming language are _____

a) 0

b) {}

c) “”

d) <>

Answer: d

Explanation:

None.

Facts – 2

1. Ambiguity may be caused by _____

- a) syntactic ambiguity
- b) multiple word meanings
- c) unclear antecedents
- d) all of the mentioned

Answer: d

Explanation:

None.

2. Which company offers the LISP machine considered “the most powerful symbolic processor available”?

- a) LMI
- b) Symbolics
- c) Xerox
- d) Texas Instruments

Answer: b

Explanation:

None.

3. What of the following is considered a pivotal event in the history of Artificial Intelligence?

- a) 1949, Donald O, The organization of Behavior
- b) 1950, Computing Machinery and Intelligence
- c) 1956, Dartmouth University Conference Organized by John McCarthy
- d) 1961, Computer and Computer Sense

Answer: c

Explanation:

None.

4. What are the two subfields of Natural language processing?

- a) symbolic and numeric
- b) time and motion
- c) algorithmic and heuristic
- d) understanding and generation

Answer: c

Explanation:

None.

5. High-resolution, bit-mapped displays are useful for displaying _____

- a) clearer characters
- b) graphics
- c) more characters
- d) all of the mentioned

Answer: c

Explanation:

None.

6. A bidirectional feedback loop links computer modeling with _____

- a) artificial science
- b) heuristic processing
- c) human intelligence
- d) cognitive science

Answer: c

Explanation:

None.

7. Which of the following have people traditionally done better than computers?

- a) recognizing relative importance
- b) finding similarities
- c) resolving ambiguity
- d) all of the mentioned

Answer: c

Explanation:

None.

8. In LISP, the function evaluates both and is _____

- a) set
- b)setq
- c) add
- d) eva

Answer: a

Explanation:

None.

9. Which type of actuator generates a good deal of power but tends to be messy?

- a) electric
- b) hydraulic
- c) pneumatic
- d) both hydraulic & pneumatic

Answer: b

Explanation:

None.

10. Research scientists all over the world are taking steps towards building computers with circuits patterned after the complex interconnections existing among the human brain's nerve cells. What name is given to such type of computers?

- a) Intelligent computers
- b) Supercomputers
- c) Neural network computers
- d) Smart computers

Answer: c

Explanation:

None.

11. The integrated circuit was invented by Jack Kilby of _____

- a) MIT
- b) Texas Instruments
- c) Xerox
- d) All of the mentioned

Answer: b

Explanation:

None.

12. People overcome natural language problems by _____

- a) grouping attributes into frames
- b) understanding ideas in context
- c) identifying with familiar situations
- d) both understanding ideas in context & identifying with familiar situations

Answer: d

Explanation:

None.

13. The Cedar, BBN Butterfly, Cosmic Cube and Hypercube machine can be characterized as

a) SISD

b) MIMD

c) SIMD

d) MISD

Answer: b

Explanation:

None.

14. A series of AI systems, developed by Pat Langley to explore the role of heuristics in scientific discovery is _____

a) RAMD

b) BACON

c) MIT

d) DU

Answer: b

Explanation:

None.

Facts – 3

1. Nils Nilsson headed a team at SRI that created a mobile robot named _____

- a) Robotics
- b) Dedalus
- c) Shakey
- d) Vax

Answer: c

Explanation:

None.

2. An Artificial Intelligence technique that allows computers to understand associations and relationships between objects and events is called _____

- a) heuristic processing
- b) cognitive science
- c) relative symbolism
- d) pattern matching

Answer: c

Explanation:

None.

3. The new organization established to implement the Fifth Generation Project is called

- a) ICOT (Institute for New Generation Computer Technology)
- b) MITI (Ministry of International Trade and Industry)
- c) MCC (Microelectronics and Computer Technology Corporation)
- d) SCP (Strategic Computing Program)

Answer: a

Explanation:

None

4. What is the field that investigates the mechanics of human intelligence?

- a) history
- b) cognitive science
- c) psychology
- d) sociology

Answer: b

Explanation:

None.

5. What is the name of the computer program that simulates the thought processes of human beings?

- a) Human logic
- b) Expert reason
- c) Expert system
- d) Personal information

Answer: c

Explanation:

None.

6. What is the name of the computer program that contains the distilled knowledge of an expert?

- a) Database management system
- b) Management information System
- c) Expert system
- d) Artificial intelligence

Answer: c

Explanation:

None.

7. Claude Shannon described the operation of electronic switching circuits with a system of mathematical logic called _____

- a) LISP
- b) XLISP
- c) Neural networking
- d) Boolean algebra

Answer: c

Explanation:

None.

8. A computer program that contains expertise in a particular domain is called?

- a) intelligent planner
- b) automatic processor
- c) expert system
- d) operational symbolizer

Answer: c

Explanation:

None.

9. What is the term used for describing the judgmental or commonsense part of problem solving?

- a) Heuristic
- b) Critical
- c) Value based
- d) Analytical

Answer: a

Explanation:

None.

10. What was originally called the “imitation game” by its creator?

- a) The Turing Test
- b) LISP
- c) The Logic Theorist
- d) Cybernetics

Answer: a

Explanation:

None.

11. Decision support programs are designed to help managers make _____

- a) budget projections
- b) visual presentations
- c) business decisions
- d) vacation schedules

Answer: c

Explanation:

None.

12. Programming a robot by physically moving it through the trajectory you want it to follow is called

- a) contact sensing control
- b) continuous-path control
- c) robot vision control
- d) pick-and-place control

Answer: b

Explanation:

None.

Facts – Human-machine interaction

1. What is the primary interactive method of communication used by humans?

- a) reading
- b) writing
- c) speaking
- d) all of the mentioned

Answer: c

Explanation:

None.

2. Elementary linguistic units that are smaller than words are?

- a) allophones
- b) phonemes
- c) syllables
- d) all of the mentioned

Answer: d

Explanation:

None.

3. In LISP, the atom that stands for “true” is _____

- a) t
- b) ml
- c) y
- d) time

Answer: a

Explanation:

None.

4. A mouse device may be _____

a) electro-chemical

b) mechanical

c) optical

d) both mechanical and optical

Answer: d

Explanation:

None.

5. An expert system differs from a database program in that only an expert system

–

a) contains declarative knowledge

b) contains procedural knowledge

c) features the retrieval of stored information

d) expects users to draw their own conclusions

Answer: b

Explanation:

None.

6. Arthur Samuel is linked inextricably with a program that played _____

a) checkers

b) chess

c) cricket

d) football

Answer: a

Explanation:

None.

7. Natural language understanding is used in _____

- a) natural language interfaces
- b) natural language front ends
- c) text understanding systems
- d) all of the mentioned

Answer: d

Explanation:

None.

8. Which of the following are examples of software development tools?

- a) debuggers
- b) editors
- c) assemblers, compilers and interpreters
- d) all of the mentioned

Answer: d

Explanation:

None.

9. Which is the first AI programming language?

- a) BASIC
- b) FORTRAN
- c) IPL(Inductive logic programming)
- d) LISP

Answer: d

Explanation:

None.

10. The Personal Consultant is based on?

a) EMYCIN

b) OPS5+

c) XCON

d) All of the mentioned

Answer: d

Explanation:

None.

Machine Learning

1. What is Machine learning?

- a) The autonomous acquisition of knowledge through the use of computer programs
- b) The autonomous acquisition of knowledge through the use of manual programs
- c) The selective acquisition of knowledge through the use of computer programs
- d) The selective acquisition of knowledge through the use of manual programs

Answer: a

Explanation: Machine learning is the autonomous acquisition of knowledge through the use of computer programs.

2. Which of the factors affect the performance of learner system does not include?

- a) Representation scheme used
- b) Training scenario
- c) Type of feedback
- d) Good data structures

Answer: d

Explanation: Factors that affect the performance of learner system does not include good data structures.

3. Different learning methods does not include?

- a) Memorization
- b) Analogy

c) Deduction

d) Introduction

Answer: d

Explanation: Different learning methods does not include the introduction.

4. In language understanding, the levels of knowledge that does not include?

a) Phonological

b) Syntactic

c) Empirical

d) Logical

Answer: c

Explanation: In language understanding, the levels of knowledge that does not include empirical knowledge.

5. A model of language consists of the categories which does not include?

a) Language units

b) Role structure of units

c) System constraints

d) Structural units

Answer: d

Explanation: A model of language consists of the categories which does not include structural units.

6. What is a top-down parser?

- a) Begins by hypothesizing a sentence (the symbol S) and successively predicting lower level constituents until individual preterminal symbols are written
- b) Begins by hypothesizing a sentence (the symbol S) and successively predicting upper level constituents until individual preterminal symbols are written
- c) Begins by hypothesizing lower level constituents and successively predicting a sentence (the symbol S)
- d) Begins by hypothesizing upper level constituents and successively predicting a sentence (the symbol S)

Answer: a

Explanation: A top-down parser begins by hypothesizing a sentence (the symbol S) and successively predicting lower level constituents until individual preterminal symbols are written.

7. Among the following which is not a horn clause?

- a) p
- b) $\emptyset p \vee q$
- c) $p \rightarrow q$
- d) $p \rightarrow \emptyset q$

Answer: d

Explanation: $p \rightarrow \emptyset q$ is not a horn clause.

8. The action 'STACK(A, B)' of a robot arm specify to _____

- a) Place block B on Block A
- b) Place blocks A, B on the table in that order
- c) Place blocks B, A on the table in that order
- d) Place block A on block B

Answer: d

Explanation: The action 'STACK(A,B)' of a robot arm specify to Place block A on block B.

2. Intelligent Agents

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: 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) None of the mentioned

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: 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) Simple & Condition-action rule
- d) None of the mentioned

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 Program & Architecture
- d) None of the mentioned

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: 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: b

Explanation: An agent can improve its performance by storing its previous 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: 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 achieve the agent's goal?

- a) Search
- b) Plan
- c) Retrieve
- d) Both Search & Plan

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 the agent are used for selecting external actions?

- a) Perceive
- b) Performance
- c) Learning
- d) Actuator

Answer: b

Explanation:
None.

Intelligent Agents and Environment

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

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

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. Artificial Intelligence has its expansion in the following application.

- a) Planning and Scheduling
- b) Game Playing

c) Diagnosis

d) All of the mentioned

Answer: d

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

4. What is an 'agent'?

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: 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.

5. 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: 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.

6. Rational agent is the one who always does the right thing.

a) True

b) False

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.

7. Performance Measures are fixed for all agents.

a) True

b) False

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.

8. 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) All of the mentioned

Answer: 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.

9. 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.

a) True

b) False

Answer: a

Explanation: Refer the definition of rational and omniscient agents.

10. The Task Environment of an agent consists of _____

a) Sensors

b) Actuators

c) Performance Measures

d) All of the mentioned

Answer: 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.

11. 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: d

Explanation: An environment is something which agent stays in.

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

- a) Fully Observable
- b) partially Observable
- c) All of the mentioned
- d) None of the mentioned

Answer: a

Explanation: In crossword puzzle an agent knows the complete state of the environment through its sensors.

13. The game of Poker is a single agent.

- a) True
- b) False

Answer: b

Explanation: The game of poker involves multiple player, hence its works in Multi-agent environment.

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

- a) Episodic
- b) Semi-Static
- c) Single agent
- d) Partially Observable

Answer: d

Explanation: System knows the current status of the analysis through its inputs.

15. An agent is composed of _____

- a) Architecture
- b) Agent Function
- c) Perception Sequence
- d) Architecture and Program

Answer: d

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

Online Search Agent

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

- a) Offline search
- b) Online search
- c) Breadth-first search
- d) Depth-first search

Answer: b

Explanation: In online search, it will first take an action and then observes the environment.

2. What is called an 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) None of the mentioned

Answer: a

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

3. Which are necessary for an agent to solve an online search problem?

- a) Actions
- b) Step-cost function
- c) Goal-test
- d) All of the mentioned

Answer: d

Explanation: An online search problem can be solved by an agent executing actions, So these functions are necessary.

4. When do we call the states are safely explorable?
- 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: c

Explanation:
None.

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: b

Explanation: Online-DFS-Agent will work only state spaces where the actions are reversible.

6. 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: c

Explanation: Hill-climbing search algorithm will have only current state in memory, So it is an online search algorithm.

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

a) RBFS

b) SMA*

c) Hill-climbing search algorithm

d) Both RBFS & SMA*

Answer: d

Explanation: RBFS and SMA* will solve any kind of problem that A* can't by using limited amount of

memory.

8. What is meant 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: a

Explanation:

None.

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

a) Composition

b) Mutation

c) Cross-over

d) Both Mutation & Cross-over

Answer: d

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

10. 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: a

Explanation: Updating heuristic estimates from experience provides an effective method to escape from local minima.

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: c

Explanation: The design problem depends on the percepts and actions available to the agent, the

goals that the agent'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: 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: c

Explanation: Micro ElectroMechanical System uses miniaturized accelerometers and gyroscopes and 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: 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 Objects & Relations

d) None of the mentioned

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: 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: 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: 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: 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 Decision-making & Learning algorithm

Answer: d

Explanation: Decision-making and learning algorithms can operate over the joint state space and thereby serve to implement and used to improve the computational activities.

Environments

1. What is the action of task environment in artificial intelligence?

- a) Problem
- b) Solution
- c) Agent
- d) Observation

Answer: a

Explanation: Task environments will pose a problem and rational agent will find the solution for the posed problem.

2. What is the expansion of PEAS in task environment?

- a) Peer, Environment, Actuators, Sense
- b) Perceiving, Environment, Actuators, Sensors
- c) Performance, Environment, Actuators, Sensors
- d) None of the mentioned

Answer: c

Explanation: Task environment will contain PEAS which is used to perform the action independently.

3. What kind of observing environments are present in artificial intelligence?

- a) Partial
- b) Fully
- c) Learning

d) Both Partial & Fully

Answer: d

Explanation: Partial and fully observable environments are present in artificial intelligence.

4. What kind of environment is strategic in artificial intelligence?

a) Deterministic

b) Rational

c) Partial

d) Stochastic

Answer: a

Explanation: If the environment is deterministic except for the action of other agent is called deterministic.

5. What kind of environment is crossword puzzle?

a) Static

b) Dynamic

c) Semi Dynamic

d) None of the mentioned

Answer: a

Explanation: As the problem in crossword puzzle are posed at beginning itself, So it is static.

6. What kind of behavior does the stochastic environment posses?

a) Local

b) Deterministic

c) Rational

d) Primary

Answer: a

Explanation: Stochastic behavior are rational because it avoids the pitfall of predictability.

7. Which is used to select the particular environment to run the agent?

a) Environment creator

b) Environment Generator

c) Both Environment creator & Generator

d) None of the mentioned

Answer: b

Explanation:

None.

8. Which environment is called as semi dynamic?

a) Environment does not change with the passage of time

b) Agent performance changes

c) Environment will be changed

d) Environment does not change with the passage of time, but Agent performance changes

Answer: d

Explanation: If the environment does not change with the passage of time, but the agent performance changes by time.

9. Where does the performance measure is included?

a) Rational agent

b) Task environment

c) Actuators

d) Sensor

Answer: b

Explanation: In PEAS, Where P stands for performance measure which is always included in task environment.

10. Which is used to provide the feedback to the learning element?

a) Critic

b) Actuators

c) Sensor

d) None of the mentioned

Answer: a

Explanation: The learning element gets the feedback from the critic which is presented in the environment on how the agent is doing.

3. Problem Solving

Problem Solving

1. What is the main task of a problem-solving agent?

- 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) All of the mentioned
- d) None of the mentioned

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

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 4 gallons. 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 4 gallon jug and y represents the 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.

- a) True
- b) False

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: 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 one of these state.

- a) Initial state
- b) Last state
- c) Intermediate state
- d) All of the mentioned

Answer: a

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: 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.

- a) True
- b) False

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: 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: 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: b

Explanation: Refer the TSP problem.

11. Web Crawler is a/an _____

- a) Intelligent goal-based agent
- b) Problem-solving agent
- c) Simple reflex agent

d) Model based agent

Answer: a

Explanation: Web Crawling is type of search for a relevant document from given seed documents. Focused crawlers exists, helps to improvise the search efficiency.

12. What is the major component/components for measuring the performance of problem solving?

a) Completeness

b) Optimality

c) Time and Space complexity

d) All of the mentioned

Answer: d

Explanation: For best performance consideration of all component is necessary.

13. A production rule consists of _____

a) A set of Rule

b) A sequence of steps

c) Set of Rule & sequence of steps

d) Arbitrary representation to problem

Answer: c

Explanation: When you are trying to solve a problem, you should design how to get a step-by-step solution with constraints condition to your problem, e.g Chess board problem.

14. Which search method takes less memory?

a) Depth-First Search

b) Breadth-First search

c) Linear Search

d) Optimal search

Answer: a

Explanation: Depth-First Search takes less memory since only the nodes on the current path are stored, but in Breadth First Search, all of the tree that has generated must be stored.

15. Which is the best way to go for Game playing problem?

a) Linear approach

b) Heuristic approach (Some knowledge is stored)

c) Random approach

d) An Optimal approach

Answer: b

Explanation: We use a Heuristic approach, as it will find out brute force computation, looking at hundreds of thousands of positions. e.g Chess competition between Human and AI based Computer.

Uninformed Search Strategy

1. Which search strategy is also called as blind search?

- a) Uninformed search
- b) Informed search
- c) Simple reflex search
- d) All of the mentioned

Answer: a

Explanation: In blind search, We can search the states without having any additional information. So uninformed search method is blind search.

2. How many types are available in uninformed search method?

- a) 3
- b) 4
- c) 5
- d) 6

Answer: c

Explanation: The five types of uninformed search method are Breadth-first, Uniform-cost, Depth- first, Depth-limited and Bidirectional search.

3. Which search is implemented with an empty first-in-first-out queue?

- a) Depth-first search
- b) Breadth-first search
- c) Bidirectional search

d) None of the mentioned

Answer: b

Explanation: Because of FIFO queue, it will assure that the nodes that are visited first will be expanded first.

4. When is breadth-first search is optimal?

a) When there is less number of nodes

b) When all step costs are equal

c) When all step costs are unequal

d) None of the mentioned

Answer: b

Explanation: Because it always expands the shallowest unexpanded node.

5. How many successors are generated in backtracking search?

a) 1

b) 2

c) 3

d) 4

Answer: a

Explanation: Each partially expanded node remembers which successor to generate next because of these conditions, it uses less memory.

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

a) $O(b)$

b) $O(bl)$

c) $O(m)$

d) $O(bm)$

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.

7. How many parts does a problem consists of?

a) 1

b) 2

c) 3

d) 4

Answer: d

Explanation: The four parts of the problem are initial state, set of actions, goal test and path cost.

8. Which algorithm is used to solve any kind of problem?

a) Breadth-first algorithm

b) Tree algorithm

c) Bidirectional search algorithm

d) None of the mentioned

Answer: b

Explanation: Tree algorithm is used because specific variants of the algorithm embed different strategies.

9. 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: a

Explanation:

None.

10. Which search implements stack operation for searching the states?

- a) Depth-limited search
- b) Depth-first search
- c) Breadth-first search
- d) None of the mentioned

Answer: b

Explanation: It implements stack operation because it always expands the deepest node in the current tree.

Uninformed Search and Exploration

1. What is the general term of Blind searching?

- a) Informed Search
- b) Uninformed Search
- c) Informed & Unformed Search
- d) Heuristic Search

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 & Unformed Search
- b) Unformed Search
- c) Heuristic & Unformed Search
- d) Informed & Heuristic Search

Answer: d

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) Breadth First Search (BFS)
- b) Depth First Search (DFS)
- c) Bidirectional Search
- d) All of the mentioned

Answer: d

Explanation: Several uninformed search techniques includes BFS, DFS, Uniform-cost, Depth-limited, Bidirectional search etc.

4. Which data structure conveniently used to implement BFS?

- a) Stacks
- b) Queues
- c) Priority Queues
- d) All of the mentioned

Answer: b

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 mentioned

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) $O(b^2)$ and $O(d^2)$
- c) $O(d^2)$ and $O(b^2)$
- d) $O(d^2)$ and $O(d^2)$

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 b^2 at the second level. Each of these generates b more nodes, yielding b^3 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.

- a) True
- b) False

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: 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: 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: a

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

11. 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) None of the mentioned

Answer: b

Explanation: It always expands the shallowest unexpanded node.

12. LIFO is _____ where as FIFO is _____

- a) Stack, Queue
- b) Queue, Stack
- c) Priority Queue, Stack
- d) Stack. Priority Queue

Answer: a

Explanation: LIFO is last in first out – Stack. FIFO is first in first out – Queue.

13. 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 mentioned

Answer: d

Explanation:

None.

14. 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: a

Explanation: Other techniques are costly.

15. DFS is_____efficient and BFS is_____efficient.

- a) Space, Time
- b) Time, Space
- c) Time, Time
- d) Space, Space

Answer: a

Explanation:

None.

16. The main idea of Bidirectional 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: 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 .

Informed Search Strategy

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

- a) Simple search
- b) Heuristic search
- c) Online search
- d) None of the mentioned

Answer: b

Explanation: A key point of informed search strategy is heuristic function, So it is called as heuristic function.

2. How many types of informed search method are in artificial intelligence?

- a) 1
- b) 2
- c) 3
- d) 4

Answer: d

Explanation: The four types of informed search method are best-first search, Greedy best-first search, A* search and memory bounded heuristic search.

3. Which search uses the problem specific knowledge beyond the definition of the problem?

- a) Informed search
- b) Depth-first search
- c) Breadth-first search

d) Uninformed search

Answer: a

Explanation: Informed search can solve the problem beyond the function definition, So does it can find the solution more efficiently.

4. Which function will select the lowest expansion node at first for evaluation?

a) Greedy best-first search

b) Best-first search

c) Depth-first search

d) None of the mentioned

Answer: b

Explanation: The lowest expansion node is selected because the evaluation measures distance to the goal.

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

a) $f(n) \neq h(n)$

b) $f(n) < h(n)$

c) $f(n) = h(n)$

d) $f(n) > h(n)$

Answer: c

Explanation:

None.

6. 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: b

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

7. 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: c

Explanation: This search strategy will help to problem solving efficiency by using learning.

8. Which search is complete and optimal when $h(n)$ is consistent?

a) Best-first search

b) Depth-first search

c) Both Best-first & Depth-first search

d) A* search

Answer: d

Explanation:

None.

9. 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: b

Explanation: Good heuristic can be constructed by relaxing the problem, So the performance of heuristic search can be improved.

10. Which search method will expand the node that is closest to the goal?

- a) Best-first search
- b) Greedy best-first search
- c) A* search
- d) None of the mentioned

Answer: b

Explanation: Because of using greedy best-first search, It will quickly lead to the solution of the problem.

Informed Search and Exploration

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) All of the mentioned

Answer: d

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: 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) Best First Search
- c) Heuristic Search

d) All of the mentioned

Answer: 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: b

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) Evaluation function returning lowest & highest evaluation

d) None of them is applicable

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: 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.

a) True

b) False

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: c

Explanation: Heuristic is an estimated cost.

9. Greedy search strategy chooses the node for expansion in _____

a) Shallowest

b) Deepest

- c) The one closest to the goal node
- d) Minimum heuristic cost

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. What is the evaluation function in greedy approach?

- 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: a

Explanation: Greedy best-first search 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: $f(n) = h(n)$.

11. What is the space complexity of Greedy search?

- a) $O(b)$
- b) $O(bl)$
- c) $O(m)$
- d) $O(bm)$

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.

12. What is the evaluation function in A* approach?

- 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: c

Explanation: The most widely-known form of best-first search is called A* search. It evaluates nodes by combining $g(n)$, the 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.

13. 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: 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.

Local Search Problems and Optimization Problems

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) Informed & Uninformed Search Techniques

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) Less memory & Finds a solution in large infinite space

Answer: d

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.

a) True

b) False

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: b

Explanation: Refer the definition of Hill-Climbing approach.

5. When will Hill-Climbing algorithm terminate?

a) Stopping criterion met

b) Global Min/Max is achieved

c) No neighbor has higher value

d) All of the mentioned

Answer: c

Explanation: When no neighbor is having higher value, algorithm terminates fetching local min/max.

6. What are the main cons of hill-climbing search?

- a) Terminates at local optimum & Does not find optimum solution
- b) Terminates at global optimum & Does not find optimum solution
- c) Does not find optimum solution & Fail to find a solution
- d) Fail to find a solution

Answer: a

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 uphill move.

- a) True
- b) False

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: c

Explanation:

None.

9. Hill-Climbing approach stuck for which of the following reasons?

- a) Local maxima
- b) Ridges
- c) Plateaux
- d) All of the mentioned

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: b

Explanation: Refer to the definition of Local Beam Search algorithm.

11. 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: 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.

12. What are the two main features of Genetic Algorithm?

- a) Fitness function & Crossover techniques
- b) Crossover techniques & Random mutation
- c) Individuals among the population & Random mutation
- d) Random mutation & Fitness function

Answer: a

Explanation: Fitness function helps choosing individuals from the population and Crossover techniques defines the offspring generated.

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

- a) Offline agent
- b) Online agent
- c) Both Offline & Online agent
- d) Goal Based & Online agent

Answer: d

Explanation: Refer to the definitions of both the type of agent.

Constraints Satisfaction Problems

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) All of the mentioned

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) All of the mentioned

Answer: 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) All of the mentioned

Answer: d

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: 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: a

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.

a) True

b) False

Answer: a

Explanation: Intelligent backtracking

7. Consider a problem of preparing a schedule for a class of student. What type of problem is this?

a) Search Problem

b) Backtrack Problem

c) CSP

d) Planning Problem

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) All of the mentioned

Answer: 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: 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 mentioned

Answer: b

Explanation: Refer to the definition of Dynamic CSPs algorithm.

11. Flexible CSPs relax on _____

- a) Constraints
- b) Current State
- c) Initial State
- d) Goal State

Answer: a

Explanation: Definition of flexible CSPs.

12. Language/Languages used for programming Constraint Programming includes

- a) Prolog
- b) C#
- c) C
- d) Fortran

Answer: a

Explanation:
None.

13. Backtracking is based on _____

- a) Last in first out
- b) First in first out
- c) Recursion
- d) Both Last in first out & Recursion

Answer: d

Explanation: Recursion uses LIFO.

14. Constraint Propagation technique actually modifies the CSP problem.

- a) True
- b) False

Answer: a

Explanation: Constraints are propagated towards goal node, modifying the actual problem.

15. 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: c

Explanation:

None.

16. 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: b

Explanation: Provides backtrack facility.

4. Adversarial Search

Game Theory

1. General games involves _____

- a) Single-agent
- b) Multi-agent
- c) Neither Single-agent nor Multi-agent
- d) Only Single-agent and Multi-agent

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 Competitive nor Cooperative Environment
- d) Only Competitive and Cooperative Environment

Answer: a

Explanation: Since in cooperative environment agents' goals are in 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: 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: 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: 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) All of the mentioned

Answer: 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, lose, 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: 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: 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 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: a

Explanation: Refer definition of minimax algorithm.

10. What is the complexity of minimax algorithm?

a) Same as of DFS

b) Space – bm and time – bm

c) Time – bm and space – bm

d) Same as BFS

Answer: a

Explanation: Same as DFS.

State Space Search

1. Which is the most straightforward approach for planning algorithm?

- a) Best-first search
 - b) State-space search
 - c) Depth-first search
 - d) Hill-climbing search
- [View Answer](#)

Answer: b

Explanation: The straightforward approach for planning algorithm is state space search because 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 Preconditions & Effects
- [View Answer](#)

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

[View Answer](#)

Answer: b

Explanation: There are two ways available to solve the state-space search. They are forward from the initial 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 View

Answer

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

[View Answer](#)

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 View

Answer

Answer: c

Explanation: The main advantage of backward search will allow us to consider only relevant actions.

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

a) Regression planning

b) Progression planning

c) State planning

d) Test
planning View

Answer

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 View

Answer

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

View Answer

Answer: d

Explanation:

None.

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

a) Goal independence

b) Subgoal independence

c) Both Goal & Subgoal independence

d) None of the mentioned View

Answer

Answer: b

Explanation: Subgoal independence approach is to pretend that a pure divide and conquer algorithm will work for admissible heuristics.

Alpha Beta Pruning

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 View
Answer

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 values are independant in minimax search algorithm?

- a) Pruned leaves x and y
- b) Every states are dependant
- c) Root is independant

d) None of the
mentioned View
Answer

Answer: a

Explanation: The minimax decision are independant of the values of the pruned values x and y because of the root values.

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

- a) 10 states
- b) 8 States
- c) 6 States
- d) Any depth View

Answer

Answer: d

Explanation: Alpha–beta pruning can be applied to trees of any depth and it is possible to prune entire subtree rather than leaves.

4. Which search is similar to minimax search?

- a) Hill-climbing search
- b) Depth-first search
- c) Breadth-first search
- d) All of the mentioned View

Answer

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.

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

- a) Alpha = max
- b) Beta = min
- c) Beta = max

d) Both Alpha = max & Beta = min View Answer

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.

6. 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 View Answer

Answer: a

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

7. 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) All of the mentioned

d) None of the mentioned View Answer

Answer: a

Explanation:
None.

8. 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 View

Answer

Answer: b

Explanation: Transposition is the occurrence of repeated states frequently in the search.

9. 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 View

Answer

Answer: c

Explanation:

None.

10. 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 View

Answer

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.

5. Logical Agents

First-Order Logic

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

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

2. Translate the following statement into FOL.

“For every a, if a is a philosopher, then a is a scholar”

a) $\forall a \text{ philosopher}(a) \text{ scholar}(a)$

b) $\exists a \text{ philosopher}(a) \text{ scholar}(a)$

c) All of the mentioned

d) None of the mentioned

View

Answer

Answer: a

Explanation:

None.

3. 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 View Answer

Answer: a

Explanation: Refer the definition of Deductive based systems.

4. The statement comprising the limitations of FOL is/are _____

a) Expressiveness

b) Formalizing Natural Languages

c) Many-sorted Logic

d) All of the
mentioned View

Answer

Answer: d

Explanation: 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.

5. A common convention is:

- is evaluated first
- and are evaluated next
- Quantifiers are evaluated next
- is evaluated last.

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

6. A Term is either an individual constant (a 0-ary function), or a variable, or an n-ary function applied to n terms: $F(t_1 t_2 \dots t_n)$.

a) True

b) False

View

Answer

Answer: a

Explanation: Definition of term in FOL.

7. First Order Logic is also known as _____

a) First Order Predicate Calculus

b) Quantification Theory

c) Lower Order Calculus

d) All of the mentioned View

Answer

Answer: d

Explanation:

None.

8. 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 View

Answer

Answer: c

Explanation:

None.

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 View
- Answer

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 View
- Answer

Answer: c

Explanation:
None.

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

- a) 1
- b) 2

c) 3

d) 4

[View Answer](#)

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

[View Answer](#)

Answer: d

Explanation: The five logical symbols are negation, conjunction, 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 Semantics of propositional logic & Alpha-beta pruning [View Answer](#)

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 View
Answer

Answer: d

Explanation: Logical inference algorithm can be solved by using logical equivalence, Validity and satisfiability.

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

- a) Inference rule
- b) Module rule
- c) Both Inference & Module rule

d) None of the mentioned View
Answer

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 View

Answer

Answer: b

Explanation: Because resolution yields a complete inference rule when coupled with any search algorithm.

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

a) Conjunctive normal form

b) Disjunctive normal form

c) Normal form

d) All of the mentioned View

Answer

Answer: a

Explanation:

None.

10. What can be viewed as a single lateral of disjunction?

a) Multiple clause

b) Combine clause

c) Unit clause

d) None of the mentioned View

Answer

Answer: c

Explanation: A single literal can be viewed as a disjunction or one literal also, called a unit clause.

Resolution

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

- a) Clauses
- b) Variables
- c) Propositional resolution
- d) Proposition

[View Answer](#)

Answer: c

Explanation: Propositional resolution is a refutation complete inference procedure for propositional logic.

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

- a) Disjunction of literals
 - b) Disjunction of variables
 - c) Conjunction of literals
 - d) Conjunction of variables
- [View Answer](#)

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 View

Answer

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 View

Answer

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 View

Answer

Answer: d

Explanation: The CNF statement will be unsatisfiable just when the original sentence is unsatisfiable.

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

- a) Propositional resolution rule
- b) Inference rule
- c) Resolution rule
- d) None of the mentioned

Answer

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) All of the mentioned
- d) None of the mentioned

Answer

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 View Answer

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 View

Answer

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 View

Answer

Answer: b

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

Forward Chaining

This set of Artificial Intelligence Multiple Choice Questions & Answers (MCQs) focuses on “Forward Chaining”.

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 View

Answer

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) Conjunction

d) First-order definite
clauses View Answer

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 Existentially & Universally quantified

d) None of the
mentioned View

Answer

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 View

Answer

Answer: c

Explanation: Definite clauses are a suitable normal form for use with generalized modus ponens.

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 View

Answer

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) All of the mentioned
- d) None of the mentioned View

Answer

Answer: a

Explanation: Fixed point reached by forward chaining with first-order definite clause 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 View

Answer

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 View

Answer

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 View

Answer

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

View Answer

Answer: c

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

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 View

Answer

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 View

Answer

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 View

Answer

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

View

Answer

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 is used in backward chaining algorithm?

a) Conjuncts

b) Substitution

c) Composition of substitution

d) None of the
mentioned View

Answer

Answer: c

Explanation:

None.

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

a) Depth-first search algorithm

b) Breadth-first search algorithm

c) Hill-climbing search algorithm

d) All of the
mentioned View

Answer

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 Repeated states &
Incompleteness View Answer

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 View
Answer

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 View Answer

Answer: a

Explanation:
None.

10. Which is omitted in prolog unification algorithm?

a) Variable check

b) Occur check

c) Proposition check

d) Both Occur & Proposition
check View Answer

Answer: b

Explanation: Occur check is omitted in prolog unification algorithm because of unsound inferences.

6. Knowledge and Reasoning

Knowledge and Reasoning

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

- a) Completely Observable
- b) Partially Observable
- c) Neither Completely nor Partially Observable
- d) Only Completely and Partially Observable View Answer

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) All of the mentioned View Answer

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

View

Answer

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
View Answer

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 View Answer

Answer: c

Explanation: Refer the definition of Wumpus World Problem.

6. ' $\alpha \models \beta$ ' (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 View

Answer

Answer: a

Explanation: Refer the definition of law of entailment.

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

a) Representational Verification

b) Representational Adequacy

c) Inferential Adequacy

d) Inferential
Efficiency View
Answer

Answer: a

Explanation:
None.

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

a) and

b) iff

c) or

d) not

View Answer

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) It can derive any sentence that is an entailed version & It is truth preserving

Answer: d

Explanation:

None.

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

- a) True
- b) False

View

Answer

Answer: a

Explanation:

None.

Inference in First-Order Logic

1. The rule of Universal Instantiation (UI for short) says that we can infer any sentence obtained by substituting a ground term (a term without variables) for the variable.

a) True

b) False

[View](#)

[Answer](#)

Answer: a

Explanation: Rule of universal instantiation.

2. The corresponding Existential Instantiation rule: for the existential quantifier is slightly more complicated. For any sentence a , variable v , and constant symbol k that does not appear elsewhere in the knowledge base.

a) True

b) False

[View](#)

[Answer](#)

Answer: a

Explanation: Rule of existential instantiation.

3. What among the following could the universal instantiation of
_____ For all x $\text{King}(x) \wedge \text{Greedy}(x) \Rightarrow \text{Evil}(x)$

a) $\text{King}(\text{John}) \wedge \text{Greedy}(\text{John}) \Rightarrow \text{Evil}(\text{John})$

b) $\text{King}(y) \wedge \text{Greedy}(y) \Rightarrow \text{Evil}(y)$

c) $\text{King}(\text{Richard}) \wedge \text{Greedy}(\text{Richard}) \Rightarrow \text{Evil}(\text{Richard})$

d) All of the
mentioned [View](#)

[Answer](#)

Answer: d

Explanation: Refer the definition if universal instantiation.

4. Lifted inference rules require finding substitutions that make different logical expressions looks identical.

a) Existential Instantiation

b) Universal Instantiation

c) Unification

d) Modus

Ponen View

Answer

Answer: c

Explanation:

None.

5. Which of the following is not the style of inference?

a) Forward Chaining

b) Backward Chaining

c) Resolution Refutation

d) Modus

Ponen View

Answer

Answer: d

Explanation: Modus ponens is a rule for an inference.

6. In order to utilize generalized Modus Ponens, all sentences in the KB must be in the form of Horn sentences.

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

7. For resolution to apply, all sentences must be in conjunctive normal form, a conjunction of disjunctions of literals.

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

8. What are the two basic types of inferences?

a) Reduction to propositional logic, Manipulate rules directly

b) Reduction to propositional logic, Apply modus ponens

c) Apply modus ponens, Manipulate rules directly

d) Convert every rule to Horn Clause, Reduction to propositional logic View Answer

Answer: a

Explanation:

None.

9. Which among the following could the Existential instantiation of $\exists x \text{Crown}(x) \wedge \text{OnHead}(x, \text{Johnny})$?

a) $\text{Crown}(\text{John}) \wedge \text{OnHead}(\text{John}, \text{Jonny})$

b) $\text{Crown}(y) \wedge \text{OnHead}(y, y, x)$

c) $\text{Crown}(x) \wedge \text{OnHead}(x, \text{Jonny})$

d) None of the mentioned View

Answer

Answer: a

Explanation:

None.

10. Translate the following statement into FOL.

“For every a, if a is a PhD student, then a has a master degree”

a) $\forall a \text{ PhD}(a) \rightarrow \text{Master}(a)$

b) $\exists a \text{ PhD}(a) \rightarrow \text{Master}(a)$

c) A is true, B is true

d) A is false, B is
false View Answer

Answer: a

Explanation:

None.

Rule Based System – 1

1. Instead of representing knowledge in a relatively declarative, static way (as a bunch of things that are true), rule-based system represent knowledge in terms of _____ that tell you what you should do or what you could conclude in different situations.

- a) Raw Text
- b) A bunch of rules
- c) Summarized Text

d) Collection of various
Texts View Answer

Answer: b

Explanation:

None.

2. A rule-based system consists of a bunch of IF-THEN rules.

- a) True
 - b) False
- View
Answer

Answer: a

Explanation:

None.

3. In a backward chaining system you start with the initial facts, and keep using the rules to draw new conclusions (or take certain actions) given those facts.

- a) True
 - b) False
- View
Answer

Answer: b

Explanation: Refer the definition of backward chaining.

4. In a backward chaining system, you start with some hypothesis (or goal) you are trying to prove, and keep looking for rules that would allow you to conclude that hypothesis, perhaps setting new sub-goals to prove as you go.

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

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

a) Goal-driven, goal-driven

b) Goal-driven, data-driven

c) Data-driven, goal-driven

d) Data-driven, data-driven View Answer

Answer: c

Explanation:

None.

6. A Horn clause is a clause with _____ positive literal.

a) At least one

b) At most one

c) None

d) All

[View Answer](#)

Answer: b

Explanation: Refer to the definition of Horn Clauses.

7. _____ trees can be used to infer in Horn clause systems.

a) Min/Max Tree

b) And/Or Trees

c) Minimum Spanning Trees

d) Binary Search

[Trees View Answer](#)

Answer: b

Explanation: Take the analogy using min/max trees in game theory.

8. An expert system is a computer program that contains some of the subject-specific knowledge of one or more human experts.

a) True

b) False

[View](#)

[Answer](#)

Answer: a

Explanation:

None.

9. A knowledge engineer has the job of extracting knowledge from an expert and building the expert system knowledge base.

a) True

b) False

[View](#)

[Answer](#)

Answer: a

Explanation:

None.

Rule Based System – 2

1. Autonomous Question/Answering systems are _____

- a) Expert Systems
- b) Rule Based Expert Systems
- c) Decision Tree Based Systems
- d) All of the mentioned View

Answer

Answer: d

Explanation:

None.

2. Which of the following are the applications of Expert systems?

- a) Disease Diagnosis
- b) Planning and Scheduling
- c) Decision making
- d) All of the mentioned View

Answer

Answer: d

Explanation:

None.

3. _____ is/are the well known Expert System/s for medical diagnosis systems.

- a) MYSIN
- b) CADUCEUS
- c) DENDRAL

d) SMH.PAL

View

Answer

Answer: a

Explanation:

None.

4. What are the main components of the expert systems?

a) Inference Engine

b) Knowledge Base

c) Inference Engine & Knowledge Base

d) None of the
mentioned View

Answer

Answer: c

Explanation: Look at the general architecture of rule based expert systems.

5. There are primarily two modes for an inference engine: forward chaining and backward chaining.

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

6. PXDES is medical expert system, for diagnosis of lung disease.

a) True

b) False

[View](#)

[Answer](#)

Answer: a

Explanation:

None.

7. CaDet is used for early cancer detection.

a) True

b) False

[View](#)

[Answer](#)

Answer: a

Explanation:

None.

8. MYSIN attempts to recommend appropriate therapies for patients with bacterial infections.

a) True

b) False

[View](#)

[Answer](#)

Answer: a

Explanation:

None.

9. GERMWATCHER is used to control infections caused by bacteria.

a) True

b) False

[View](#)

[Answer](#)

Answer: a

Explanation:

None.

10. ARGEX is an agricultural expert system that gives correct advice to farmers.

a) True

b) False

[View](#)

[Answer](#)

Answer: a

Explanation:

None.

Semantic Net – 1

1. What among the following constitutes the representation of the knowledge in different forms?

- a) Relational method where each fact is set out systematically in columns
- b) Inheritable knowledge where relational knowledge is made up of objects
- c) Inferential knowledge
- d) All of the mentioned View

Answer

Answer: d

Explanation:

None.

2. What are Semantic Networks?

- a) A way of representing knowledge
- b) Data Structure
- c) Data Type
- d) None of the mentioned View

Answer

Answer: a

Explanation:

None.

3. Graph used to represent semantic network is _____

- a) Undirected graph
- b) Directed graph

c) Directed Acyclic graph (DAG)

d) Directed complete
graph View Answer

Answer: b

Explanation: Semantic Network is a directed graph consisting of vertices, which represent concepts and edges, which represent semantic relations between the concepts.

4. Which of the following are the Semantic Relations used in Semantic Networks?

a) Meronymy

b) Holonymy

c) Hyponymy

d) All of the
mentioned View
Answer

Answer: d

Explanation:
None.

5. What is Meronymy relation?

a) A is part of B

b) B has A as a part of itself

c) A is a kind of B

d) A is superordinate of
B View Answer

Answer: a

Explanation: A meronym denotes a constituent part of or a member of something. That is,

“X” is a meronym of “Y” if Xs are parts of Y(s),
or “X” is a meronym of “Y” if Xs are members of
Y(s).

6. What is Hypernym relation?

- a) A is part of B
- b) B has A as a part of itself
- c) A is a kind of B
- d) A is superordinate of

B View Answer

Answer: d

Explanation: In linguistics, a hyponym is a word or phrase whose semantic field is included within that of another word, its hypernym (sometimes spelled hypernym outside of the natural language processing community). In simpler terms, a hyponym shares a type-of relationship with its hypernym.

7. What is Holonymy relation?

- a) A is part of B
- b) B has A as a part of itself
- c) A is a kind of B
- d) A is superordinate of

B View Answer

Answer: b

Explanation: Holonymy (in Greek holon = whole and onoma = name) is a semantic relation. Holonymy defines the relationship between a term denoting the whole and a term denoting a part of, or a member of, the whole. That is,

‘X’ is a holonym of ‘Y’ if Ys are parts of Xs, or

‘X’ is a holonym of ‘Y’ if Ys are members of Xs.

8. The basic inference mechanism in semantic network is to follow the links between the nodes.

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

9. There exists two way to infer using semantic networks.

1) Intersection Search

2) Inheritance Search

a) True

b) False

Answer: a

Explanation:

None.

Semantic Net – 2

1. Which of the following is an extension of the semantic network?

a) Expert Systems

b) Rule Based Expert Systems

c) Decision Tree Based networks

d) Partitioned
Networks View

Answer

Answer: d

Explanation:

None.

2. Basic idea of an partitioned nets is to break network into spaces which consist of groups of nodes and arcs and regard each space as a node.

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

3. Semantic Network represents _____

a) Syntactic relation between concepts

b) Semantic relations between concepts

c) All of the mentioned

d) None of the
mentioned View

Answer

Answer: b

Explanation:

None.

4. A semantic network is used when one has knowledge that is best understood as a set of concepts that are related to one another.

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

5. What are the limitations of the semantic networks?

a) Intractability

b) Lack in expressing some of the properties

c) Incomplete

d) Has memory constraints

Answer: b

Explanation:

None.

6. What among the following is/are the best example of semantic networks?

a) Wordnet

b) Human Food Chain

c) MYSIN

d) Autonomous car

driver View Answer

Answer: a

Explanation: Wordnet is a lexical database of English.

7. Semantic Network is also known as Frame networks.

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

8. What is Synonymy relation?

a) A is part of B

b) A denotes same as B

c) A is a kind of B

d) A is superordinate of

B View Answer

Answer: b

Explanation:

None.

9. What is Antonymy relation?

a) A is part of B

b) B has A as a part of itself

c) A denotes opposite of B

d) A is superordinate of

B View Answer

Answer: c

Explanation:

None.

10. Most semantic networks are not cognitive based.

a) True

b) False

[View](#)

[Answer](#)

Answer: b

Explanation:

None

Frames

This set of Artificial Intelligence Multiple Choice Questions & Answers (MCQs) focuses on “Frames”.

1. What is the frame?

a) A way of representing knowledge

b) Data Structure

c) Data Type

d) None of the mentioned View

Answer

Answer: a

Explanation:

None.

2. Frames in artificial intelligence is derived from semantic nets.

a) True

b) False View

Answer

Answer: a

Explanation:

A frame is an artificial intelligence data structure used to divide knowledge into substructures by representing “stereotyped situations.”.

3. Which of the following elements constitutes the frame structure?

a) Facts or Data

b) Procedures and default values

c) Frame names

d) Frame reference in hierarchy View Answer

Answer: a

Explanation:

None.

4. Like semantic networks, frames can be queried using spreading activation.

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

5. What is Hyponymy relation?

a) A is part of B

b) B has A as a part of itself

c) A is subordinate of B

d) A is superordinate of

B View Answer

Answer: c

Explanation: In linguistics, a hyponym is a word or phrase whose semantic field is included within that of another word, its hypernym (sometimes spelled hypernym outside of the natural language

processing community). In simpler terms, a hyponym shares a type-of relationship with its hypernym.

6. The basic inference mechanism in semantic network in which knowledge is represented as Frames is to follow the links between the nodes.

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

7. There exists two way to infer using semantic networks in which knowledge is represented as Frames.

1) Intersection Search

2) Inheritance Search

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

Unification and Lifting

1. What is the process of capturing the inference process as a single inference rule?

a) Ponens

b) Clauses

c) Generalized Modus Ponens

d) Variables

View

Answer

Answer: c

Explanation: All kinds of inference process can be captured as a single inference rule that can be called as Generalized modus ponens.

2. Which process makes different logical expression looks identical?

a) Lifting

b) Unification

c) Inference process

d) None of the

mentioned View

Answer

Answer: b

Explanation: Lifted inference rules require finding substitutions that make different logical expression looks identical. This process is called unification.

3. Which algorithm takes two sentences and returns a unifier?

a) Inference

b) Hill-climbing search

c) Depth-first search

d) Unify
algorithm View
Answer

Answer: d

Explanation: The unify algorithm takes two sentences and returns a unifier if there is one in the sentence.

4. Which is a lifted version of modus ponens?

a) Generalized modus ponens

b) Inference

c) Clauses

d) None of the
mentioned View
Answer

Answer: a

Explanation: Generalized modus ponens is a lifted version of modus ponens because it raises modus ponens from propositional to first-order logic.

5. Which is unique up to renaming of variables?

a) Unifier

b) Most general unifier

c) Unifier & Most general unifier

d) None of the
mentioned View
Answer

Answer: b

Explanation: For every unifiable pair of expressions, there is a single most general unifier that is unique up to renaming of variables.

6. Which makes the complexity of the entire algorithm quadratic in the size?

- a) Clause
- b) Inference
- c) Resolution

d) Occur
check View
Answer

Answer: d

Explanation: Occur check makes the complexity of the entire algorithm quadratic in the size of the expressions being unified.

7. How many functions are available in the unification and lifting process?

- a) 1
- b) 2
- c) 3
- d) 4

View Answer

Answer: d

Explanation: The four functions are available in the unification and lifting process are tell, ask, store and fetch.

8. Where did all the facts are stored to implement store and fetch function?

- a) Database
- b) Knowledge base

- c) Datamart
 - d) All of the mentioned View
- Answer

Answer: b

Explanation: The simplest way to implement store and fetch functions is to keep all the facts in the knowledge base in one long list.

9. What is meant by predicate indexing?

- a) All the one kind of facts in one bucket and another kind in other bucket
- b) Acts like index for facts
- c) All of the mentioned
- d) None of the mentioned View

Answer

Answer: a

Explanation:
None.

10. How the buckets are stored in predicate indexing?

- a) Lists
- b) Stack
- c) Hashes
- d) None of the mentioned View

Answer

Answer: c

Explanation: The buckets can be stored in a hash table for efficient access.

7. Planning and Acting in the Real World

Partial Order Planning

1. The process by which the brain incrementally orders actions needed to complete a specific task is referred as __

a) Planning problem

b) Partial order planning

c) Total order planning

d) Both Planning problem & Partial order planning View Answer

Answer: b

Explanation: Definition of partial order planning.

2. To complete any task, the brain needs to plan out the sequence by which to execute the behavior. One way the brain does this is with a partial-order plan.

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

3. In partial order plan.

A. Relationships between the actions of the behavior are set prior to the actions

B. Relationships between the actions of the behavior are not set until absolutely necessary Choose the correct option.

a) A is true

b) B is true

c) Either A or B can be true depending upon situation

d) Neither A nor B is
true View Answer

Answer: a

Explanation: Relationship between behavior and actions is established dynamically.

4. Partial-order planning exhibits the Principle of Least Commitment, which contributes to the efficiency of this planning system as a whole.

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

5. Following is/are the components of the partial order planning.

a) Bindings

b) Goal

c) Causal Links

d) All of the
mentioned View

Answer

Answer: d

Explanation: Bindings: The bindings of the algorithm are the connections between specific variables in the action. Bindings, as ordering, only occur when it is absolutely necessary.

Causal Links: Causal links in the algorithm are those that categorically order actions. They are not the specific order (1,2,3) of the actions, rather the general order as in Action 2 must come somewhere after Action 1, but before Action 2.

Plan Space: The plan space of the algorithm is constrained between its start and finish. The algorithm starts, producing the initial state and finishes when all parts of the goal is been achieved.

6. Partial-order planning is the opposite of total-order planning.

a) True

b) False

View

Answer

Answer: a

Explanation: Partial-order planning is the opposite of total-order planning, in which actions are sequenced all at once and for the entirety of the task at hand.

7. Sussman Anomaly can be easily and efficiently solved by partial order planning.

a) True

b) False

View

Answer

Answer: a

Explanation: http://en.wikipedia.org/wiki/Sussman_Anomaly.

8. Sussman Anomaly illustrates a weakness of interleaved planning algorithm.

a) True

b) False

View

Answer

Answer: b

Explanation: Sussman Anomaly illustrates a weakness of non interleaved planning algorithm.

9. One the main drawback of this type of planning system is that it requires a lot of computational powers at each node.

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

10. What are you predicating by the logic: $\forall x: \exists y: \text{loyalto}(x, y)$.

a) Everyone is loyal to someone

b) Everyone is loyal to all

c) Everyone is not loyal to someone

d) Everyone is

loyal View

Answer

Answer: a

Explanation: $\forall x$ denotes Everyone or all, and $\exists y$ someone and loyal to is the proposition logic making

map x to y.

11. A plan that describe how to take actions in levels of increasing refinement and specificity is

a) Problem solving

b) Planning

c) Non-hierarchical plan

d) Hierarchical

plan View Answer

Answer: d

Explanation: A plan that describes how to take actions in levels of increasing refinement and specificity is Hierarchical (e.g., “Do something” becomes the more specific “Go to work,” “Do work,” “Go home.”) Most plans are hierarchical in nature.

12. A constructive approach in which no commitment is made unless it is necessary to do so, is

- a) Least commitment approach
- b) Most commitment approach
- c) Nonlinear planning
- d) Opportunistic planning View Answer

Answer: a

Explanation: Because we are not sure about the outcome.

13. Uncertainty arises in the Wumpus world because the agent’s sensors give only

-
- a) Full & Global information
 - b) Partial & Global Information
 - c) Partial & local Information
 - d) Full & local information View Answer

Answer: c

Explanation: The Wumpus world is a grid of squares surrounded by walls, where each square can contain agents and objects. The agent (you) always starts in the lower left corner, a square that will be labeled [1, 1]. The agent's task is to find the gold, return to [1, 1] and climb out of the cave.

Therefore, uncertainty is there as the agent gives partial and local information only. Global variable are not goal specific problem solving.

Partial Order Planning – 1

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
- View Answer

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
- View Answer

Answer: c

Explanation: As the search explore only linear sequences of actions, So they cannot take 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 View

Answer

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 First & Least commitment

d) None of the
mentioned View

Answer

Answer: b

Explanation: The general strategy of delaying a choice during search is called the least commitment strategy.

5. Which algorithm places 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 View Answer

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.

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

- a) 3
- b) 4
- c) 5
- d) 6

View Answer

Answer: d

Explanation: The partial-order solution corresponds to six possible total-order plans.

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

- a) Polarization
- b) Linearization
- c) Solarization
- d) None of the mentioned

View Answer

Answer: b

Explanation: Each and every total order plan is also called as linearization of the partial-order plan.

8. What are present in the empty plan?

- a) Start
- b) Finish

- c) Modest
- d) Both Start & Finish View Answer

Answer: d

Explanation: The 'empty' plan contains just the start and finish actions.

9. What are not present in start actions?

- a) Preconditions
- b) Effect
- c) Finish

- d) None of the mentioned View Answer

Answer: a

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

10. What are not present in finish actions?

- a) Preconditions
- b) Effect
- c) Finish

- d) None of the mentioned View Answer

Answer: b

Explanation: Finish has no effects and has as its preconditions the goal literals of the planning algorithm.

11. Which can be adapted for planning algorithms?

- a) Most-constrained variable
- b) Most-constrained literal
- c) Constrained
- d) None of the mentioned View

Answer

Answer: a

Explanation: The most-constrained variable heuristic from CSPs can be adapted for planning algorithm and seems to work well.

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 View

Answer

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 View

Answer

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 View
Answer

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
View
Answer

Answer: d

Explanation:
None.

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

a) Literals

b) Actions

c) Variables

d) Both Literals &
Actions View Answer

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 View
Answer

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) Allow a literal to remain false & true

d) None of the mentioned View
Answer

Answer: b

Explanation: Calculus allows 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 View

Answer

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

View Answer

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 View

Answer

Answer: b

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

Planning and Acting in the Real World

1. The process by which the brain orders actions needed to complete a specific task is referred as

- a) Planning problem
 - b) Partial order planning
 - c) Total order planning
 - d) Both Planning problem & Partial order planning
- View Answer

Answer: d

Explanation:

None.

2. The famous spare tire problem or Scheduling classes for bunch of students or Air cargo transport are the best example of _____

- a) Planning problem
 - b) Partial Order planning problem
 - c) Total order planning
 - d) None of the mentioned
- View Answer

Answer

Answer: a

Explanation:

None.

3. To eliminate the inaccuracy problem in planning problem or partial order planning problem we can use_data structure/s.

a) Stacks

b) Queue

c) BST (Binary Search Tree)

d) Planning

Graphs View

Answer

Answer: d

Explanation: A planning graph can be used to give better heuristic estimates.

4. Planning graphs consists of _____

a) a sequence of levels

b) a sequence of levels which corresponds to time steps in the plan

c) a sequence of actions which corresponds to the state of the system

d) none of the

mentioned View

Answer

Answer: b

Explanation: Planning graphs is a sequence of levels, which corresponds to time steps in the plan where level 0 is the initial state at start.

5. Planning graphs works only for prepositional planning problems.

a) True

b) False

View

Answer

Answer: a

Explanation: Planning graphs work only for propositional planning problems-ones with no variables. Both STRIPS and ADL representations can be propositionalized. For problems with large numbers and objects, this could result in a very substantial blowup in the number of action schemata.

6. _____ algorithms is used to extract the plan directly from the planning graph, rather than using graph to provide heuristic.

a) BFS/DFS

b) A*

c) Graph-Plan

d) Greedy

View

Answer

Answer: c

Explanation:

None.

7. Planning problem can be described as a propositional logic.

a) True

b) False

View

Answer

Answer: a

Explanation: Yes, The approach we take is based on testing the satisfiability of a logical sentence rather than on proving a theorem. We will be finding models of propositional sentences that look like this:

Initial state \wedge all possible action descriptions \wedge goal.

8. What is the other name of each plan resulted in partial order planning?

a) Polarization

b) Linearization

c) Solarization

d) None of the
mentioned View

Answer

Answer: b

Explanation: Each and every total order plan is also called as linearization of the partial-order plan.

9. What are the two major aspects which combines AI Planning problem?

a) Search & Logic

b) Logic & Knowledge Based Systems

c) FOL & Logic

d) Knowledge Based
Systems View Answer

Answer: a

Explanation:

None.

10. _____algorithm translates a planning problem in to prepositional axioms.

a) GraphPlan

b) SatPlan

c) Greedy

d) None of the
mentioned View

Answer

Answer: b

Explanation: The SATPLAN algorithm translates a planning problem into propositional axioms and applies a satisfiability algorithm to find a model that corresponds a valid plan.

11. _____planning allows the agent to take advice from the domain designer in the form of decomposition rules.

- a) GraphPlan
- b) Hierarchical task network (HTN)

c) SatPlan

d) None of the mentioned View

Answer

Answer: b

Explanation:

None.

12. Standard planning algorithms assumes environment to be _____

- a) Deterministic
- b) Fully observable
- c) Single agent

d) Stochastic

View

Answer

Answer: a

Explanation: It assumes complete and correct information, deterministic and fully-observable environment, which many domains violates.

13. Conditional Plans allows the agent to sense the world during execution to decide what branch of plan to follow.

- a) True
- b) False

View

Answer

Answer: a

Explanation: Conditional plans do exist in real world planning problems. Incomplete information can be dealt by planning to use sensing actions to obtain the information needed.

14. A re-planning agent uses execution monitoring and splices in repairs as needed.

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

15. Incorrect information results in unsatisfied preconditions for actions and plans ____ detects violations of the preconditions for successful completion of the plan.

a) Conditional Plan

b) Conformant Planning

c) Execution monitoring

d) Both Conditional Plan & Execution monitoring View Answer

Answer: c

Explanation:

None.

8. Uncertain Knowledge and Reasoning

Uncertain Knowledge and Reasoning

1. Using logic to represent and reason we can represent knowledge about the world with facts and rules.

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

2. Uncertainty arises in the wumpus world because the agent's sensors give only _____

a) Full & Global information

b) Partial & Global Information

c) Partial & local Information

d) Full & local

information View

Answer

Answer: c

Explanation: The Wumpus world is a grid of squares surrounded by walls, where each square can contain agents and objects. The agent (you) always starts in the lower left corner, a square that will be labeled [1, 1]. The agent's task is to find the gold, return to [1, 1] and climb out of the cave. So uncertainty is there as the agent gives partial and local information only. Global variable are not goal specific problem solving.

3. A Hybrid Bayesian network contains _____

a) Both discrete and continuous variables

b) Only Discrete variables

c) Only Discontinuous variable

d) Both Discrete and Discontinuous variable View Answer

Answer: a

Explanation: To specify a Hybrid network, we have to specify two new kinds of distributions: the conditional distribution for continuous variables given discrete or continuous parents, and the conditional distribution for a discrete variable given continuous parents.

4. How is Fuzzy Logic different from conventional control methods?

a) IF and THEN Approach

b) FOR Approach

c) WHILE Approach

d) DO Approach View Answer

Answer: a

Explanation: FL incorporates a simple, rule-based IF X AND Y THEN Z approach to a solving control problem rather than attempting to model a system mathematically.

5. If a hypothesis says it should be positive, but in fact it is negative, we call it _____

a) A consistent hypothesis

b) A false negative hypothesis

c) A false positive hypothesis

d) A specialized hypothesis View Answer

Answer: c

Explanation: Consistent hypothesis go with examples, If the hypothesis says it should be negative but in fact it is positive, it is false negative. If a hypothesis says it should be positive, but in fact it is negative, it is false positive. In a specialized hypothesis we need to have certain restrict or special conditions.

6. The primitives in probabilistic reasoning are random variables.

a) True

b) False

View

Answer

Answer: a

Explanation: The primitives in probabilistic reasoning are random variables. Just like primitives in Propositional Logic are propositions. A random variable is not in fact a variable, but a function from a sample space S to another space, often the real numbers.

7. Which is true for Decision theory?

a) Decision Theory = Probability theory + utility theory

b) Decision Theory = Inference theory + utility theory

c) Decision Theory = Uncertainty + utility theory

d) Decision Theory = Probability theory +
preference View Answer

Answer: c

Explanation: The Wumpus world is a grid of squares surrounded by walls, where each square can contain agents and objects. The agent (you) always starts in the lower left corner, a square that will be labeled $[1, 1]$. The agent's task is to find the gold, return to $[1, 1]$ and climb out of the cave. So uncertainty is there as the agent gives partial and local information only. Global variable are not goal specific problem solving.

8. A constructive approach in which no commitment is made unless it is necessary to do so is

- a) Least commitment approach
 - b) Most commitment approach
 - c) Nonlinear planning
 - d) Opportunistic planning
- [View Answer](#)

Answer: a

Explanation: Because we are not sure about the outcome.

Semantic Interpretation

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

- a) Syntactic
 - b) Semantic
 - c) Pragmatic
 - d) None of the mentioned View
- Answer

Answer: b

Explanation: Semantic analysis is used to extract the meaning from the group of sentences.

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

- a) Interpretation
 - b) Augmented reality
 - c) Semantic interpretation
 - d) Augmented interpretation View
- Answer

Answer: c

Explanation: Semantic interpretation is the process of associating a 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 View

Answer

Answer: a

Explanation: Compositional semantics is the process of determining the meaning of $P*Q$ from P , Q and $*$.

4. What is used to augment a grammar for arithmetic expression with semantics?

a) Notation

b) DCG notation

c) Constituent

d) All of the
mentioned View

Answer

Answer: b

Explanation: DCG notation is used to augment a grammar 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 Logical term & Complete logical sentence

d) None of the
mentioned View

Answer

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 the English language?

- a) 1
- b) 2
- c) 3
- d) 4

View Answer

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 View

Answer

Answer: b

Explanation:

None.

8. What is meant by quasi-logical form?

- a) Sits between syntactic and logical form
- b) Logical connectives
- c) All of the mentioned

d) None of the
mentioned View
Answer

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

View Answer

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 View
Answer

Answer: c

Explanation:
None.

Object Recognition

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

a) Speech

b) Vision

c) Hear

d)

Perception

View

Answer

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

View Answer

Answer: c

Explanation: The three types of recognition are biometric identification, content-based image retrieval and handwriting recognition.

3. Which are recognized by vision?

a) Objects

b) Activities

c) Motion

d) Both Objects &
Activities View Answer

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 View
Answer

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 Bottom-up & Top-down segmentation

d) None of the
mentioned View
Answer

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

View

Answer

Answer: c

Explanation:

None.

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

a) Words

b) Color

c) Texture

d) Both Color &

Texture View Answer

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 View
Answer

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 View
Answer

Answer: c

Explanation: Because an object's shape can be manipulated with respect to the point.

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

a) Weighted sum of the shape

b) Size of the shape

c) Shape context

d) None of the
mentioned View
Answer

Answer: a

Explanation: The distance between two shapes can be defined as a weighted sum of the shape context distance between corresponding points.

Probability Notation

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

- a) 1
- b) 2
- c) 3
- d) 4

[View Answer](#)

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

[View Answer](#)

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 probability sentences?

- a) Syntactic distinction

b) Semantic distinction

c) Both Syntactic & Semantic distinction

d) None of the
mentioned View

Answer

Answer: a

Explanation: The dependance on experience is reflected in the syntactic distinction between prior probability statements.

4. Where does the degree of belief is applied?

a) Propositions

b) Literals

c) Variables

d)
Statements
View Answer

Answer: a

Explanation:
None.

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

a) 1

b) 2

c) 3

d) 4

View Answer

Answer: b

Explanation: The two formal languages used for stating propositions are propositional logic and first- order logic.

6. What is the basic element of a language?

a) Literal

b) Variable

c) Random variable

d) All of the
mentioned View

Answer

Answer: c

Explanation: The basic element for a language 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

View Answer

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 View

Answer

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 Discrete & Continuous

d) None of the
mentioned View

Answer

Answer: b

Explanation: For continuous variables, it is not possible 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 View Answer

Answer: d

Explanation:

None

Bayesian Networks

1. How many terms are required for building a bayes model?

- a) 1
- b) 2
- c) 3
- d) 4

View Answer

Answer: c

Explanation: The three required terms are a conditional probability and two unconditional probability.

2. What is needed to make probabilistic systems feasible in the world?

- a) Reliability
- b) Crucial robustness
- c) Feasibility
- d) None of the mentioned

View Answer

Answer: b

Explanation: On a model-based knowledge provides the crucial robustness needed to make probabilistic system feasible in the real world.

3. Where does the bayes rule can be used?

- a) Solving queries

- b) Increasing complexity
- c) Decreasing complexity
- d) Answering probabilistic query [View Answer](#)

Answer: d

Explanation: Bayes rule can be used to answer the probabilistic queries conditioned on one piece of evidence.

4. What does the bayesian network provides?

- a) Complete description of the domain
- b) Partial description of the domain
- c) Complete description of the problem
- d) None of the mentioned [View Answer](#)

Answer: a

Explanation: A Bayesian network provides a complete description of the domain.

5. How the entries in the full joint probability distribution can be calculated?

- a) Using variables
- b) Using information
- c) Both Using variables & information
- d) None of the mentioned [View Answer](#)

Answer: b

Explanation: Every entry in the full joint probability distribution can be calculated from the information in the network.

6. How the bayesian network can be used to answer any query?

a) Full distribution

b) Joint distribution

c) Partial distribution

d) All of the mentioned View

Answer

Answer: b

Explanation: If a bayesian network is a representation of the joint distribution, then it can solve any query, by summing all the relevant joint entries.

7. How the compactness of the bayesian network can be described?

a) Locally structured

b) Fully structured

c) Partial structure

d) All of the mentioned View

Answer

Answer: a

Explanation: The compactness of the bayesian network is an example of a very general property of a locally structured system.

8. To which does the local structure is associated?

a) Hybrid

b) Dependant

- c) Linear
- d) None of the mentioned View

Answer

Answer: c

Explanation: Local structure is usually associated with linear rather than exponential growth in complexity.

9. Which condition is used to influence a variable directly by all the others?

- a) Partially connected
- b) Fully connected

c) Local connected

- d) None of the mentioned View

Answer

Answer: b

Explanation:

None.

10. What is the consequence between a node and its predecessors while creating bayesian network?

- a) Functionally dependent
- b) Dependant
- c) Conditionally independent

- d) Both Conditionally dependant & Dependant View Answer

Answer: c

Explanation: The semantics to derive a method for constructing bayesian networks were led to the consequence that a node can be conditionally independent of its predecessors.

Fuzzy Logic

1. What is the form of Fuzzy logic?

a) Two-valued logic

b) Crisp set logic

c) Many-valued logic

d) Binary set

logic View

Answer

Answer: c

Explanation: With fuzzy logic set membership is defined by certain value. Hence it could have many values to be in the set.

2. Traditional set theory is also known as Crisp Set theory.

a) True

b) False

View

Answer

Answer: a

Explanation: Traditional set theory set membership is fixed or exact either the member is in the set or not. There is only two crisp values true or false. In case of fuzzy logic there are many values. With weight say x the member is in the set.

3. The truth values of traditional set theory is _____ and that of fuzzy set is

—

a) Either 0 or 1, between 0 & 1

b) Between 0 & 1, either 0 or 1

c) Between 0 & 1, between 0 & 1

d) Either 0 or 1, either 0
or 1 View Answer

Answer: a

Explanation: Refer the definition of Fuzzy set and Crisp set

4. Fuzzy logic is extension of Crisp set with an extension of handling the concept of Partial Truth.

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

5. The room temperature is hot. Here the hot (use of linguistic variable is used) can be represented by

a) Fuzzy Set

b) Crisp Set

c) Fuzzy & Crisp Set

d) None of the
mentioned View

Answer

Answer: a

Explanation: Fuzzy logic deals with linguistic variables.

6. The values of the set membership is represented by _____

a) Discrete Set

b) Degree of truth

c) Probabilities

d) Both Degree of truth &
Probabilities View Answer

Answer: b

Explanation: Both Probabilities and degree of truth ranges between 0 – 1.

7. Japanese were the first to utilize fuzzy logic practically on high-speed trains in Sendai.

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

8. Fuzzy Set theory defines fuzzy operators. Choose the fuzzy operators from the following.

a) AND

b) OR

c) NOT

d) All of the
mentioned View

Answer

Answer: d

Explanation: The AND, OR, and NOT operators of Boolean logic exist in fuzzy logic, usually defined as the minimum, maximum, and complement;

9. There are also other operators, more linguistic in nature, called _____ that can be applied to fuzzy set theory.

a) Hedges

b) Lingual Variable

c) Fuzz Variable

d) None of the
mentioned View

Answer

Answer: a

Explanation:

None.

10. Fuzzy logic is usually represented as _____

a) IF-THEN-ELSE rules

b) IF-THEN rules

c) Both IF-THEN-ELSE rules & IF-THEN rules

d) None of the
mentioned View

Answer

Answer: b

Explanation: Fuzzy set theory defines fuzzy operators on fuzzy sets. The problem in applying this is that the appropriate fuzzy operator may not be known. For this reason, fuzzy logic usually uses IF- THEN rules, or constructs that are equivalent, such as fuzzy associative matrices.

Rules are usually expressed in the form:

IF variable IS property THEN action

11. Like relational databases there does exists fuzzy relational databases.

a) True

b) False

View

Answer

Answer: a

Explanation: Once fuzzy relations are defined, it is possible to develop fuzzy relational databases. The first fuzzy relational database, FRDB, appeared in Maria Zemankova dissertation.

12. _____ is/are the way/s to represent uncertainty.

a) Fuzzy Logic

b) Probability

c) Entropy

d) All of the mentioned View

Answer

Answer: d

Explanation: Entropy is amount of uncertainty involved in data. Represented by $H(\text{data})$.

13. _____ are algorithms that learn from their more complex environments (hence eco) to generalize, approximate and simplify solution logic.

a) Fuzzy Relational DB

b) Ecorithms

c) Fuzzy Set

d) None of the mentioned View

Answer

Answer: c

Explanation: Local structure is usually associated with linear rather than exponential growth in complexity.

Hidden Markov Model

1. Which algorithm is used for solving temporal probabilistic reasoning?

- a) Hill-climbing search
 - b) Hidden markov model
 - c) Depth-first search
 - d) Breadth-first search
- View Answer

Answer: b

Explanation: Hidden Markov model is used for solving temporal probabilistic reasoning that was independent of transition and sensor model.

2. How does the state of the process is described in HMM?

- a) Literal
 - b) Single random variable
 - c) Single discrete random variable
 - d) None of the mentioned
- View Answer

Answer: c

Explanation: An HMM is a temporal probabilistic model in which the state of the process is described by a single discrete random variable.

3. What are the possible values of the variable?

- a) Variables
- b) Literals

c) Discrete variable

d) Possible states of the world View Answer

Answer: d

Explanation: The possible values of the variables are the possible states of the world.

4. Where does the additional variables are added in HMM?

a) Temporal model

b) Reality model

c) Probability model

d) All of the mentioned View Answer

Answer: a

Explanation: Additional state variables can be added to a temporal model while staying within the HMM framework.

5. Which allows for a simple and matrix implementation of all the basic algorithm?

a) HMM

b) Restricted structure of HMM

c) Temporary model

d) Reality model View Answer

Answer: b

Explanation: Restricted structure of HMM allows for a very simple and elegant matrix implementation of all the basic algorithm.

6. Where does the Hidden Markov Model is used?

- a) Speech recognition
- b) Understanding of real world
- c) Both Speech recognition & Understanding of real world
- d) None of the mentioned View

Answer

Answer: a

Explanation:

None.

7. Which variable can give the concrete form to the representation of the transition model?

- a) Single variable
- b) Discrete state variable
- c) Random variable
- d) Both Single & Discrete state variable View Answer

Answer: d

Explanation: With a single, discrete state variable, we can give concrete form to the representation of the transition model.

8. Which algorithm works by first running the standard forward pass to compute?

- a) Smoothing
- b) Modified smoothing
- c) HMM
- d) Depth-first search algorithm View Answer

Answer: b

Explanation: The modified smoothing algorithm works by first running the standard forward pass to compute and then running the backward pass.

9. Which reveals an improvement in online smoothing?

- a) Matrix formulation
- b) Revelation

c) HMM

d) None of the mentioned View

Answer

Answer: a

Explanation: Matrix formulation reveals an improvement in online smoothing with a fixed lag.

10. Which suggests the existence of an efficient recursive algorithm for online smoothing?

- a) Matrix
- b) Constant space
- c) Constant time

d) None of the mentioned View

Answer

Answer: b

Explanation:

None.

Expert Systems

1. In LISP, the function returns t if <integer> is even and nil otherwise _____

a) (evenp <integer>)

b) (even <integer>)

c) (numeven <integer>)

d) (numnevenp
<integer>) View Answer

Answer: a

Explanation:

None.

2. Which of the following is an advantage of using an expert system development tool?

a) imposed structure

b) knowledge engineering assistance

c) rapid prototyping

d) all of the
mentioned View
Answer

Answer: d

Explanation:

None.

3. An AI system developed by Daniel Bobrow to read and solve algebra word problems.

a) SHRDLU

b) SIMD

c) BACON

d)

STUDENT

View

Answer

Answer: d

Explanation:

None.

4. The “Turing Machine” showed that you could use a/an _____ system to program any algorithmic task.

a) binary

b) electro-chemical

c) recursive

d) semantic

View

Answer

Answer: a

Explanation:

None.

5. MCC is investigating the improvement of the relationship between people and computers through a technology called _____

a) computer-aided design

b) human factors

c) parallel processing

d) all of the

mentioned View

Answer

Answer: b

Explanation:

None.

6. The first widely-used commercial form of Artificial Intelligence (AI) is being used in many popular products like microwave ovens, automobiles and plug in circuit boards for

desktop PCs. It allows machines to handle vague information with a deftness that mimics human intuition. What is the name of this Artificial Intelligence?

- a) Boolean logic
- b) Human logic
- c) Fuzzy logic
- d) Functional

logic View

Answer

Answer: c

Explanation:

None.

7. In his landmark book Cybernetics, Norbert Wiener suggested a way of modeling scientific phenomena using not energy, but _____

- a) mathematics
- b) intelligence
- c) information
- d) history

View

Answer

Answer: c

Explanation:

None.

8. Input segments of AI programming contain(s)?

- a) sound
- b) smell
- c) touch

d) none of the
mentioned View

Answer

Answer: d

Explanation:

None.

9. Which of the following applications include in the Strategic Computing Program?

a) battle management

b) autonomous systems

c) pilot's associate

d) all of the
mentioned View

Answer

Answer: d

Explanation:

None.

10. In LISP, the function evaluates <object> and assigns this value to the unevaluated
<sconst>.

a) (constant <sconst> <object>)

b) (defconstant <sconst> <object>)

c) (eva <sconst> <object>)

d) (eva <object>
<sconst>) View Answer

Answer: b

Explanation:

None.

9. Learning

Learning – 1

1. What will take place as the agent observes its interactions with the world?

a) Learning

b) Hearing

c) Perceiving

d) Speech

View

Answer

Answer: a

Explanation: Learning will take place as the agent observes its interactions with the world and its own decision making process.

2. Which modifies the performance element so that it makes better decision?

a) Performance element

b) Changing element

c) Learning element

d) None of the
mentioned View

Answer

Answer: c

Explanation: A learning element modifies the performance element so that it can make better decision.

3. How many things are concerned in the design of a learning element?

- a) 1
- b) 2
- c) 3
- d) 4

[View Answer](#)

Answer: c

Explanation: The three main issues are affected in design of a learning element are components, feedback and representation.

4. What is used in determining the nature of the learning problem?

- a) Environment
- b) Feedback
- c) Problem
- d) All of the mentioned View

[Answer](#)

Answer: b

Explanation: The type of feedback is used in determining the nature of the learning problem that the agent faces.

5. How many types are available in machine learning?

- a) 1
- b) 2
- c) 3
- d) 4

View Answer

Answer: c

Explanation: The three types of machine learning are supervised, unsupervised and reinforcement.

6. Which is used for utility functions in game playing algorithm?

- a) Linear polynomial
- b) Weighted polynomial
- c) Polynomial
- d) Linear weighted polynomial View Answer

Answer: d

Explanation: Linear weighted polynomial is used for learning element in the game playing programs.

7. Which is used to choose among multiple consistent hypotheses?

- a) Razor
- b) Ockham razor
- c) Learning element
- d) None of the mentioned View Answer

Answer: b

Answer: b

Explanation: Ockham razor prefers the simplest hypothesis consistent with the data intuitively.

8. What will happen if the hypothesis space contains the true function?

- a) Realizable

b) Unrealizable

c) Both Realizable & Unrealizable

d) None of the
mentioned View

Answer

Answer: b

Explanation: A learning problem is realizable if the hypothesis space contains the true function.

9. What takes input as an object described by a set of attributes?

a) Tree

b) Graph

c) Decision graph

d) Decision
tree View

Answer

Answer: d

Explanation: Decision tree takes input as an object described by a set of attributes and returns a decision.

10. How the decision tree reaches its decision?

a) Single test

b) Two test

c) Sequence of test

d) No test
View

Answer

Answer: c

Explanation: A decision tree reaches its decision by performing a sequence of tests.

Learning – 2

1. Factors which affect the performance of learner system does not include?

- a) Representation scheme used
 - b) Training scenario
 - c) Type of feedback
 - d) Good data structures
- [View Answer](#)

Answer: d

Explanation: Factors which affect the performance of learner system does not include good data structures.

2. Which of the following does not include different learning methods?

- a) Memorization
 - b) Analogy
 - c) Deduction
 - d) Introduction
- [View Answer](#)

Answer: d

Explanation: Different learning methods include memorization, analogy and deduction.

3. Which of the following is the model used for learning?

- a) Decision trees
- b) Neural networks
- c) Propositional and FOL rules
- d) All of the mentioned View Answer

Answer: d

Explanation: Decision trees, Neural networks, Propositional rules and FOL rules all are the models of learning.

4. Automated vehicle is an example of _____

- a) Supervised learning
- b) Unsupervised learning
- c) Active learning
- d) Reinforcement learning View Answer

Answer: a

Explanation: In automatic vehicle set of vision inputs and corresponding actions are available to

learner hence it's an example of supervised learning.

5. Which of the following is an example of active learning?

- a) News Recommender system
- b) Dust cleaning machine

c) Automated vehicle

d) None of the
mentioned View

Answer

Answer: a

Explanation: In active learning, not only the teacher is available but the learner can ask suitable perception-action pair examples to improve performance.

6. In which of the following learning the teacher returns reward and punishment to learner?

a) Active learning

b) Reinforcement learning

c) Supervised learning

d) Unsupervised
learning View Answer

Answer: b

Explanation: Reinforcement learning is the type of learning in which teacher returns reward or punishment to learner.

7. Decision trees are appropriate for the problems where _____

a) Attributes are both numeric and nominal

b) Target function takes on a discrete number of values.

c) Data may have errors

d) All of the
mentioned View

Answer

Answer: d

Explanation: Decision trees can be used in all the conditions stated.

8. Which of the following is not an application of learning?

- a) Data mining
- b) WWW
- c) Speech recognition
- d) None of the mentioned View

Answer

Answer: d

Explanation: All mentioned options are applications of learning.

9. Which of the following is the component of learning system?

- a) Goal
- b) Model
- c) Learning rules
- d) All of the mentioned View

Answer

Answer: d

Explanation: Goal, model, learning rules and experience are the components of learning system.

10. Which of the following is also called as exploratory learning?

- a) Supervised learning
- b) Active learning
- c) Unsupervised learning

d) Reinforcement
learning [View Answer](#)

Answer: c

Explanation: In unsupervised learning, no teacher is available hence it is also called unsupervised learning

Learning – 3

1. Which is not a desirable property of a logical rule-based system?

- a) Locality
- b) Attachment
- c) Detachment
- d) Truth-Functionality View

Answer

Answer: b

Explanation: Locality: In logical systems, whenever we have a rule of the form $A \Rightarrow B$, we can conclude B, given evidence A, without worrying about any other rules. Detachment: Once a logical proof is found for a proposition B, the proposition can be used regardless of how it was derived. That is, it can be detached from its justification. Truth-functionality: In logic, the truth of complex sentences can be computed from the truth of the components. However, there are no Attachment properties in a Rule-based system. Global attribute defines a particular problem space as user specific and changes according to user's plan to problem.

2. How is Fuzzy Logic different from conventional control methods?

- a) IF and THEN Approach
- b) FOR Approach
- c) WHILE Approach
- d) DO Approach

View Answer

Answer: a

Explanation: FL incorporates a simple, rule-based IF X AND Y THEN Z approach to a solving control problem rather than attempting to model a system mathematically.

3. In an Unsupervised learning _____

- a) Specific output values are given
- b) Specific output values are not given
- c) No specific Inputs are given
- d) Both inputs and outputs are given

Answer: b

Explanation: The problem of unsupervised learning involves learning patterns in the input when no specific output values are supplied. We cannot expect the specific output to test your result. Here the agent does not know what to do, as he is not aware of the fact what propose system will come out. We can say an ambiguous un-proposed situation.

4. Inductive learning involves finding a _____

- a) Consistent Hypothesis
- b) Inconsistent Hypothesis
- c) Regular Hypothesis
- d) Irregular

Hypothesis View
Answer

Answer: a

Explanation: Inductive learning involves finding a consistent hypothesis that agrees with examples. The difficulty of the task depends on the chosen representation.

5. Computational learning theory analyzes the sample complexity and computational complexity of

- a) Unsupervised Learning
 - b) Inductive learning
 - c) Forced based learning
 - d) Weak learning View
- Answer

Answer: b

Explanation: Computational learning theory analyzes the sample complexity and computational complexity of inductive learning. There is a tradeoff between the expressiveness of the hypothesis language and the ease of learning.

6. If a hypothesis says it should be positive, but in fact, it is negative, we call it _____

- a) A consistent hypothesis
 - b) A false negative hypothesis
 - c) A false positive hypothesis
 - d) A specialized hypothesis View
- Answer

Answer: c

Explanation: Consistent hypothesis go with examples, If the hypothesis says it should be negative but infect it is positive, it is false negative. If a hypothesis says it should be positive, but in fact, it is negative, it is false positive. In a specialized hypothesis we need to have certain restrict or special conditions.

7. Neural Networks are complex_____with many parameters.

- a) Linear Functions
- b) Nonlinear Functions
- c) Discrete Functions

d) Exponential
 Functions View
 Answer

Answer: b

Explanation: Neural networks parameters can be learned from noisy data and they have been used for thousands of applications, so it varies from problem to problem and thus use nonlinear functions.

8. A perceptron is a _____

- a) Feed-forward neural network
- b) Backpropagation algorithm
- c) Backtracking algorithm
- d) Feed Forward-backward
 algorithm View Answer

Answer: a

Explanation: A perceptron is a Feed-forward neural network with no hidden units that can be representing only linear separable functions. If the data are linearly separable, a simple weight updated rule can be used to fit the data exactly.

9. Which of the following statement is true?

- a) Not all formal languages are context-free
- b) All formal languages are Context free
- c) All formal languages are like natural language
- d) Natural languages are context-oriented
 free View Answer

Answer: a

Explanation: Not all formal languages are context-free.

10. Which of the following statement is not true?

- a) The union and concatenation of two context-free languages is context-free
- b) The reverse of a context-free language is context-free, but the complement need not be
- c) Every regular language is context-free because it can be described by a regular grammar
- d) The intersection two context-free languages is context-free View Answer

Answer: d

Explanation: The union and concatenation of two context-free languages are context-free; but intersection need not be.

Neural Networks – 1

1. A 3-input neuron is trained to output a zero when the input is 110 and a one when the input is

111. After generalization, the output will be zero when and only when the input is? a) 000 or 110 or 011 or 101
b) 010 or 100 or 110 or 101

c) 000 or 010 or 110 or 100

d) 100 or 111 or 101 or 001

[View Answer](#)

Answer: c

Explanation: The truth table before generalization

is: Inputs Output

000 \$

001 \$

010 \$

011 \$

100 \$

101 \$

110 0

111 1

where \$ represents don't know cases and the output is random.

After generalization, the truth table becomes:

Input s	Output
000	0
001	1
010	0
011	1
100	0
101	1
110	0
111	1

2. What is perceptron?

- a) a single layer feed-forward neural network with pre-processing
- b) an auto-associative neural network
- c) a double layer auto-associative neural network

d) a neural network that contains feedback [View Answer](#)

Answer: a

Explanation: The perceptron is a single layer feed-forward neural network. It is not an auto-associative network because it has no feedback and is not a multiple layer neural network because the pre-processing stage is not made of neurons.

3. What is an auto-associative network?

a) a neural network that contains no loops

b) a neural network that contains feedback

c) a neural network that has only one loop

d) a single layer feed-forward neural network with pre-processing [View Answer](#)

Answer: b

Explanation: An auto-associative network is equivalent to a neural network that contains feedback. The number of feedback paths(loops) does not have to be one.

4. A 4-input neuron has weights 1, 2, 3 and 4. The transfer function is linear with the constant of proportionality being equal to 2. The inputs are 4, 10, 5 and 20 respectively. What will be the output?

a) 238

b) 76

c) 119

d) 123

[View Answer](#)

Answer: a

Explanation: The output is found by multiplying the weights with their respective inputs, summing the results and multiplying with the transfer function. Therefore:

$$\text{Output} = 2 * (1*4 + 2*10 + 3*5 + 4*20) = 238.$$

5. Which of the following is true?

- (i) On average, neural networks have higher computational rates than conventional computers.
- (ii) Neural networks learn by example.
- (iii) Neural networks mimic the way the human brain works.

a) All of the mentioned are true

b) (ii) and (iii) are true

c) (i), (ii) and (iii) are true

d) None of the mentioned View

Answer

Answer: a

Explanation: Neural networks have higher computational rates than conventional computers because a lot of the operation is done in parallel. That is not the case when the neural network is simulated on a computer. The idea behind neural nets is based on the way the human brain works. Neural nets cannot be programmed, they can only learn by examples.

6. Which of the following is true for neural networks?

- (i) The training time depends on the size of the network.
- (ii) Neural networks can be simulated on a conventional computer.
- (iii) Artificial neurons are identical in operation to biological ones.

a) All of the mentioned

b) (ii) is true

c) (i) and (ii) are true

d) None of the
mentioned View

Answer

Answer: c

Explanation: The training time depends on the size of the network; the number of neuron is greater and therefore the number of possible 'states' is increased. Neural networks can be simulated on a conventional computer but the main advantage of neural networks – parallel execution – is lost.

Artificial neurons are not identical in operation to the biological ones.

7. What are the advantages of neural networks over conventional computers?

(i) They have the ability to learn by example

(ii) They are more fault tolerant

(iii) They are more suited for real time operation due to their high 'computational' rates

a) (i) and (ii) are true

b) (i) and (iii) are true

c) Only (i)

d) All of the
mentioned View

Answer

Answer: d

Explanation: Neural networks learn by example. They are more fault tolerant because they are

always able to respond and small changes in input do not normally cause a change in output. Because of their parallel architecture, high computational rates are achieved.

8. Which of the following is true?

Single layer associative neural networks do not have the ability to:

- (i) perform pattern recognition
- (ii) find the parity of a picture
- (iii) determine whether two or more shapes in a picture are connected or not

a) (ii) and (iii) are true

b) (ii) is true

c) All of the mentioned

d) None of the mentioned View

Answer

Answer: a

Explanation: Pattern recognition is what single layer neural networks are best at but they don't have

the ability to find the parity of a picture or to determine whether two shapes are connected or not.

9. Which is true for neural networks?

a) It has set of nodes and connections

b) Each node computes it's weighted input

c) Node could be in excited state or non-excited state

d) All of the mentioned View

Answer

Answer: d

Explanation: All mentioned are the characteristics of neural network.

10. What is Neuro software?

a) A software used to analyze neurons

- b) It is powerful and easy neural network
- c) Designed to aid experts in real world
- d) It is software used by Neurosurgeon [View Answer](#)

Answer: b

Explanation:

None.

Neural Networks – 2

1. Why is the XOR problem exceptionally interesting to neural network researchers?

- a) Because it can be expressed in a way that allows you to use a neural network
- b) Because it is complex binary operation that cannot be solved using neural networks
- c) Because it can be solved by a single layer perceptron
- d) Because it is the simplest linearly inseparable problem that exists. [View Answer](#)

Answer: d

Explanation:

None.

2. What is back propagation?

- a) It is another name given to the curvy function in the perceptron
- b) It is the transmission of error back through the network to adjust the inputs
- c) It is the transmission of error back through the network to allow weights to be adjusted so that the network can learn

d) None of the
mentioned View
Answer

Answer: c

Explanation: Back propagation is the transmission of error back through the network to allow weights to be adjusted so that the network can learn.

3. Why are linearly separable problems of interest of neural network researchers?

- a) Because they are the only class of problem that network can solve successfully
- b) Because they are the only class of problem that Perceptron can solve successfully

c) Because they are the only mathematical functions that are continue

d) Because they are the only mathematical functions you can
draw View Answer

Answer: b

Explanation: Linearly separable problems of interest of neural network researchers because they are the only class of problem that Perceptron can solve successfully.

4. Which of the following is not the promise of artificial neural network?

- a) It can explain result
- b) It can survive the failure of some nodes

c) It has inherent parallelism

d) It can handle
noise View Answer

Answer: a

Explanation: The artificial Neural Network (ANN) cannot explain result.

5. Neural Networks are complex_____with many parameters.

a) Linear Functions

b) Nonlinear Functions

c) Discrete Functions

d) Exponential
Functions View

Answer

Answer: a

Explanation: Neural networks are complex linear functions with many parameters.

6. A perceptron adds up all the weighted inputs it receives, and if it exceeds a certain value, it outputs a 1, otherwise it just outputs a 0.

a) True

b) False

c) Sometimes – it can also output intermediate values as well

d) Can't say

View Answer

Answer: a

Explanation: Yes the perceptron works like that.

7. What is the name of the function in the following statement “A perceptron adds up all the weighted inputs it receives, and if it exceeds a certain value, it outputs a 1, otherwise it just outputs a 0”?

a) Step function

b) Heaviside function

c) Logistic function

d) Perceptron
function View

Answer

Answer: b

Explanation: Also known as the step function – so answer 1 is also right. It is a hard thresholding function, either on or off with no in-between.

8. Having multiple perceptrons can actually solve the XOR problem satisfactorily: this is because each perceptron can partition off a linear part of the space itself, and they can then combine their results.

- a) True – this works always, and these multiple perceptrons learn to classify even complex problems
- b) False – perceptrons are mathematically incapable of solving linearly inseparable functions, no matter what you do
- c) True – perceptrons can do this but are unable to learn to do it – they have to be explicitly hand- coded
- d) False – just having a single perceptron is enough View Answer

Answer: c

Explanation:

None.

9. The network that involves backward links from output to the input and hidden layers is called

- a) Self organizing maps
- b) Perceptrons
- c) Recurrent neural network
- d) Multi layered perceptron View Answer

Answer: c

Explanation: RNN (Recurrent neural network) topology involves backward links from output to the input and hidden layers.

10. Which of the following is an application of NN (Neural Network)?

- a) Sales forecasting
- b) Data validation
- c) Risk management
- d) All of the mentioned

View

Answer

Answer: d

Explanation: All mentioned options are applications of Neural Network.

Decision Trees

1. A _____ is a decision support tool that uses a tree-like graph or model of decisions and their possible consequences, including chance event outcomes, resource costs, and utility.

a) Decision tree

b) Graphs

c) Trees

d) Neural
Networks View
Answer

Answer: a

Explanation: Refer the definition of Decision tree.

2. Decision Tree is a display of an algorithm.

a) True

b) False
View

Answer

Answer: a

Explanation:

None.

3. What is Decision Tree?

a) Flow-Chart

b) Structure in which internal node represents test on an attribute, each branch represents outcome of test and each leaf node represents class label

c) Flow-Chart & Structure in which internal node represents test on an attribute, each branch represents outcome of test and each leaf node represents class label

d) None of the mentioned View

Answer

Answer: c

Explanation: Refer the definition of Decision tree.

4. Decision Trees can be used for Classification Tasks.

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

5. Choose from the following that are Decision Tree nodes?

a) Decision Nodes

b) End Nodes

c) Chance Nodes

d) All of the mentioned View

Answer

Answer: d

Explanation:

None.

6. Decision Nodes are represented by _____

a) Disks

b) Squares

c) Circles

d) Triangles

View

Answer

Answer: b

Explanation:

None.

7. Chance Nodes are represented by _____

a) Disks

b) Squares

c) Circles

d) Triangles

View

Answer

Answer: c

Explanation:

None.

8. End Nodes are represented by _____

a) Disks

b) Squares

c) Circles

d) Triangles

View

Answer

Answer: d

Explanation:

None.

9. Which of the following are the advantage/s of Decision Trees?

a) Possible Scenarios can be added

b) Use a white box model, If given result is provided by a model

c) Worst, best and expected values can be determined for different scenarios

d) All of the
mentioned View

Answer

Answer: d

Explanation:

None.

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 View

Answer

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

View Answer

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 View

Answer

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 View

Answer

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 View

Answer

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 Constraint & Entailment constraint
- d) None of the mentioned View

Answer

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

View Answer

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) Trilogy

d) None of the
mentioned View

Answer

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 View

Answer

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 approach

c) Both Top-down & Bottom-up approach

d) None of the
mentioned View

Answer

Answer: a

Explanation:

None.

10. Communicating, Perceiving and Acting

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 View

Answer

Answer: b

Explanation: Communication is the intentional exchange of information brought about by the 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 View

Answer

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

View Answer

Answer: c

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

4. What is defined by a set of strings?

- a) Signs
- b) Formal language
- c) Communication
- d) None of the mentioned

View Answer

Answer

Answer: b

Explanation: A formal language is defined by a 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) Grammar

d) Phrase

View

Answer

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 View

Answer

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 View

Answer

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

[View Answer](#)

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

[View Answer](#)

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 View

Answer

Answer: a

Explanation: The two types of parsing are top-down parsing and bottom-up parsing.

11. Semantic grammars are _____

a) Encode semantic information into a syntactic grammar

b) Decode semantic information into a syntactic grammar

c) Encode syntactic information into a semantic grammar

d) Decode syntactic information into a semantic grammar View Answer

Answer: a

Explanation: Semantic grammars encode semantic information into a syntactic grammar.

12. What is a top-down parser?

a) Begins by hypothesizing a sentence (the symbol S) and successively predicting lower level constituents until individual pre-terminal symbols are written

b) Begins by hypothesizing a sentence (the symbol S) and successively predicting upper level constituents until individual pre-terminal symbols are written

c) Begins by hypothesizing lower level constituents and successively predicting a sentence (the symbol S)

d) Begins by hypothesizing upper level constituents and successively predicting a sentence (the symbol S) View Answer

Answer: a

Answer: a

Explanation: A top-down parser begins by hypothesizing a sentence (the symbol S) and successively predicting lower level constituents until individual pre-terminal symbols are written.

13. Perception involves _____

- a) Sights, sounds, smell and touch
- b) Hitting
- c) Boxing
- d) Dancing

View

Answer

Answer: a

Explanation: Perception involves Sights, sounds, smell and touch.

Perception

1. The process by which you become aware of messages through your sense is called

- a) Organization
- b) Sensation
- c) Interpretation-Evaluation
- d) Perception

Answer: d

Explanation: None.

2. Susan is so beautiful; I bet she is smart too. This is an example of _____

- a) The halo effect
 - b) The primary effect
 - c) A self-fulfilling prophecy
 - d) The recency effect
- [View Answer](#)

Answer: a

Explanation:

None.

3. _____ prevents you from seeing an individual as an individual rather than as a member of a group.

- a) Cultural mores
- b) Stereotypes

c) Schematas

d)

Attributions

[View Answer](#)

Answer: c

Explanation:

None.

4. When you get fired from your job and you determine it is because your boss dislikes you, you are most likely exhibiting?

a) Self-promotion

b) Fundamental attribution error

c) Over-attribution

d) Self-serving

bias [View Answer](#)

Answer: d

Explanation:

None.

5. What is Mindless processing?

a) careful, critical thinking

b) inaccurate and faulty processing

c) information processing that relies heavily on familiar schemata

d) processing that focuses on unusual or novel events [View Answer](#)

Answer: c

Explanation:

None.

6. Selective retention occurs when?

a) we process, store, and retrieve information that we have already selected, organized, and

interpreted

b) we make choices to experience particular stimuli

c) we make choices to avoid particular stimuli

d) we focus on specific stimuli while ignoring other stimuli View Answer

Answer: a

Explanation:

None.

7. Which of the following strategies would NOT be effective at improving your communication competence?

a) Recognize the people, objects, and situations remain stable over time

b) Recognize that each person's frame of perception is unique

c) Be active in perceiving

d) Distinguish facts from inference View Answer

Answer: a

Explanation:

None.

8. _____ is measured by the number of mental structures we use, how abstract they are, and how elaborate they interact to shape our perceptions.

a) intrapersonal structure

b) perceptual set

c) self-justification

d) none of the mentioned View Answer

Answer

Answer: d

Explanation:

None.

9. What is a perception check?

- a) a cognitive bias that makes us listen only to information we already agree with
- b) a method teachers use to reward good listeners in the classroom
- c) any factor that gets in the way of good listening and decreases our ability to interpret correctly
- d) a response that allows you to state your interpretation and ask your partner whether or not that interpretation is correct

View Answer

Answer: d

Explanation:

None

Speech Recognition

1. What is the dominant modality for communication between humans?

a) Hear

b) Speech

c) Smell

d) None of the
mentioned View

Answer

Answer: b

Explanation: Speech is the dominant modality for communication between humans and reliable speech recognition between machines.

2. What kind of signal is used in speech recognition?

a) Electromagnetic signal

b) Electric signal

c) Acoustic signal

d) Radar
View

Answer

Answer: c

Explanation: Acoustic signal is used to identify a sequence of words uttered by a speaker.

3. What is viewed as problem of probabilistic inference?

a) Speech recognition

b) Speaking

c) Hearing

d)

Utterance

View

Answer

Answer: a

Explanation: Speech recognition is viewed as problem of probabilistic inference because different words can sound the same.

4. Which specifies the prior probability of each utterance?

a) Sound model

b) Model

c) Language model

d) All of the

mentioned View

Answer

Answer: c

Explanation: Because it contains the group of words that can help to specify the prior probability of each utterance.

5. Which model gives the probability of each word following each other word?

a) Bigram model

b) Diagram model

c) Gram model

d) Speech

model View

Answer

Answer: a

Explanation: Bigram model gives the probability of each word following each other word in speech recognition.

6. What is the study of how the language sounds?

a) Speechology

b) Biology

c) Trilogy

d)

Phonology

View

Answer

Answer: d

Explanation:

None.

7. What are periodic changes in pressure that propagate through the air?

a) Air waves

b) Sound waves

c) Rate

d) None of the

mentioned View

Answer

Answer: b

Explanation: Sound waves are periodic changes in pressure that propagate through the air and it can be measured by a microphone.

8. What is called as the properties of the signal that extend over interval?

a) Hops

b) Rate

c) Frames

d) All of the
mentioned View

Answer

Answer: c

Explanation: Speech system summarize the properties of the signal that extend over interval called frames.

9. Which is used to capture the internal structure of the phones?

a) One-state phone model

b) Two-state phone model

c) Three-state phone mone

d) All of the
mentioned View

Answer

Answer: c

Explanation:

None.

10. Which are partially captured by triphone model?

a) Articulation effects

b) Coarticulation effects

c) Both Articulation & Coarticulation effects

d) None of the
mentioned View

Answer

Answer: b

Explanation: Coarticulation effects are partially captured by triphone model, which can be manipulated by acoustic model.

Image Perception

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

a) Sense

b) Perception

c) Reading

d) Hearing

View

Answer

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 View

Answer

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 View

Answer

Answer: c

Explanation:

None.

4. How to increase the brightness of the pixel?

a) Sound

b) Amount of light

c) Surface

d) Waves

View

Answer

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

View Answer

Answer: b

Explanation: There are two kinds of reflection. They are the 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

View

Answer

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

View Answer

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 View

Answer

Answer: a

Explanation: Canny edge detection is assuming any two neighboring that are both edge pixels with consistent orientation and must 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 View

Answer

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

View Answer

Answer: c

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

Robotics – 1

1. What is the name for information sent from robot sensors to robot controllers?

a) temperature

b) pressure

c) feedback

d) signal

[View](#)

[Answer](#)

Answer: c

Explanation:

None.

2. Which of the following terms refers to the rotational motion of a robot arm?

a) swivel

b) axle

c) retrograde

d) roll

[View Answer](#)

Answer: d

Explanation:

None.

3. What is the name for space inside which a robot unit operates?

a) environment

b) spatial base

c) work envelope

d) exclusion

zone View

Answer

Answer: c

Explanation:

None.

4. Which of the following terms IS NOT one of the five basic parts of a robot?

a) peripheral tools

b) end effectors

c) controller

d) drive

View

Answer

Answer: a

Explanation:

None.

5. Decision support programs are designed to help managers make _____

a) budget projections

b) visual presentations

c) business decisions

d) vacation

schedules View

Answer

Answer: c

Explanation:

None.

6. PROLOG is an AI programming language which solves problems with a form of symbolic logic known as predicate calculus. It was developed in 1972 at the University of Marseilles by a team of specialists. Can you name the person who headed this team?

- a) Alain Colmerauer
- b) Niklaus Wirth
- c) Seymour Papert

d) John
McCarthy View
Answer

Answer: a

Explanation:

None.

7. The number of moveable joints in the base, the arm, and the end effectors of the robot determines

- a) degrees of freedom
- b) payload capacity

c) operational limits
d) flexibility

View
Answer

Answer: a

Explanation:

None.

8. Which of the following places would be LEAST likely to include operational robots?

- a) warehouse
- b) factory
- c) hospitals

d) private
homes View
Answer

Answer: d

Explanation:

None.

9. For a robot unit to be considered a functional industrial robot, typically, how many degrees of freedom would the robot have?

a) three

b) four

c) six

d) eight

View

Answer

Answer: c

Explanation:

None.

10. Which of the basic parts of a robot unit would include the computer circuitry that could be programmed to determine what the robot would do?

a) sensor

b) controller

c) arm

d) end

effector View

Answer

Answer: b

Explanation:

None.

Robotics – 2

1. Which of the following terms refers to the use of compressed gasses to drive (power) the robot device?

a) pneumatic

b) hydraulic

c) piezoelectric

d)

photosensitive

[View Answer](#)

Answer: a

Explanation:

None.

2. With regard to the physics of power systems used operate robots, which statement or statements are most correct?

a) hydraulics involves the compression of liquids

b) hydraulics involves the compression of air

c) pneumatics involve the compression of air

d) chemical batteries produce AC

[power View Answer](#)

Answer: c

Explanation:

None.

3. The original LISP machines produced by both LMI and Symbolics were based on research performed at _____

a) CMU

b) MIT

c) Stanford University

d) RAMD

View

Answer

Answer: b

Explanation:

None.

4. Which of the following statements concerning the implementation of robotic systems is correct?

a) implementation of robots CAN save existing jobs

b) implementation of robots CAN create new jobs

c) robotics could prevent a business from closing

d) all of the mentioned View

Answer

Answer: d

Explanation:

None.

5. Which of the following IS NOT one of the advantages associated with a robotics implementation program?

a) Low costs for hardware and software

b) Robots work continuously around the clock

c) Quality of manufactured goods can be improved

d) Reduced company cost for worker fringe benefits View Answer

Answer: a

Explanation:

None.

6. Which of the following “laws” is Asimov’s first and most important law of robotics?

a) robot actions must never result in damage to the robot

b) robots must never take actions harmful to humans

c) robots must follow the directions given by humans

d) robots must make business a greater profit View Answer

Answer: b

Explanation:

None.

7. In LISP, the function returns t if <object> is a CONS cell and nil otherwise _____

a) (cons <object>)

b) (consp <object>)

c) (eq <object>)

d) (cous =
<object>) View

Answer

Answer: b

Explanation:

None.

8. In a rule-based system, procedural domain knowledge is in the form of _____

a) production rules

b) rule interpreters

c) meta-rules

d) control
rules View

Answer

Answer: a

Explanation:

None.

9. If a robot can alter its own trajectory in response to external conditions, it is considered to be

- a) intelligent
 - b) mobile
 - c) open loop
 - d) non-servo View
- Answer

Answer: a

Explanation:

None.

10. One of the leading American robotics centers is the Robotics Institute located at?

- a) CMU
- b) MIT
- c) RAND
- d) SRI

View Answer

Answer: a

Explanation:

None.

Natural Language Processing – 1

4. Modern NLP algorithms are based on machine learning, especially statistical machine learning.

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

5. Choose from the following areas where NLP can be useful.

a) Automatic Text Summarization

b) Automatic Question-Answering Systems

c) Information Retrieval

d) All of the
mentioned View

Answer

Answer: d

Explanation:

None.

6. Which of the following includes major tasks of NLP?

a) Automatic Summarization

b) Discourse Analysis

c) Machine Translation

d) All of the
mentioned View

Answer

Answer: d

Explanation: There is even bigger list of tasks of NLP.

http://en.wikipedia.org/wiki/Natural_language_processing#Major_tasks_in_NLP.

7. What is Coreference Resolution?

- a) Anaphora Resolution
- b) Given a sentence or larger chunk of text, determine which words (“mentions”) refer to the same objects (“entities”)
- c) All of the mentioned
- d) None of the mentioned

View Answer

Answer: b

Explanation: Anaphora resolution is a specific type of coreference resolution.

8. What is Machine Translation?

- a) Converts one human language to another
- b) Converts human language to machine language
- c) Converts any human language to English
- d) Converts Machine language to human language

View Answer

Answer: a

Explanation: The best known example of machine translation is google translator.

9. The more general task of coreference resolution also includes identifying so-called “bridging relationships” involving referring expressions.

- a) True
- b) False

View

Answer

Answer: a

Explanation: Refer the definition of Coreference Resolution.

10. What is Morphological Segmentation?

- a) Does Discourse Analysis
- b) Separate words into individual morphemes and identify the class of the morphemes
- c) Is an extension of propositional logic
- d) None of the mentioned View

Answer

Answer: b

Explanation:

None.

Natural Language Processing – 2

1. Given a stream of text, Named Entity Recognition determines which pronoun maps to which noun.

a) False

b) True

[View Answer](#)

Answer: a

Explanation: Given a stream of text, Named Entity Recognition determines which items in the text maps to proper names.

2. Natural Language generation is the main task of Natural language processing.

a) True

b) False

[View](#)

[Answer](#)

Answer: a

Explanation: Natural Language Generation is to Convert information from computer databases into readable human language.

3. OCR (Optical Character Recognition) uses NLP.

a) True

b) False

[View](#)

[Answer](#)

Answer: a

Explanation: Given an image representing printed text, determines the corresponding text.

4. Parts-of-Speech tagging determines _____

- a) part-of-speech for each word dynamically as per meaning of the sentence
- b) part-of-speech for each word dynamically as per sentence structure
- c) all part-of-speech for a specific word given as input
- d) all of the mentioned View

Answer

Answer: d

Explanation: A Bayesian network provides a complete description of the domain.

5. Parsing determines Parse Trees (Grammatical Analysis) for a given sentence.

- a) True
- b) False

View

Answer

Answer: a

Explanation: Determine the parse tree (grammatical analysis) of a given sentence. The grammar for natural languages is ambiguous and typical sentences have multiple possible analyses. In fact, perhaps surprisingly, for a typical sentence there may be thousands of potential parses (most of which will seem completely nonsensical to a human).

6. IR (information Retrieval) and IE (Information Extraction) are the two same thing.

- a) True
- b) False

View

Answer

Answer: b

Explanation: Information retrieval (IR) – This is concerned with storing, searching and retrieving information. It is a separate field within computer science (closer to databases),

but IR relies on some NLP methods (for example, stemming). Some current research and applications seek to bridge the gap between IR and NLP.

Information extraction (IE) – This is concerned in general with the extraction of semantic information from text. This covers tasks such as named entity recognition, Coreference resolution, relationship extraction, etc.

7. Many words have more than one meaning; we have to select the meaning which makes the most sense in context. This can be resolved by _____

a) Fuzzy Logic

b) Word Sense Disambiguation

c) Shallow Semantic Analysis

d) All of the
mentioned View
Answer

Answer: b

Explanation: Shallow Semantic Analysis doesn't cover word sense disambiguation.

8. Given a sound clip of a person or people speaking, determine the textual representation of the speech.

a) Text-to-speech

b) Speech-to-text

c) All of the mentioned

d) None of the
mentioned View
Answer

Answer: b

Explanation: NLP is required to linguistic analysis.

9. Speech Segmentation is a subtask of Speech Recognition.

a) True

b) False

View

Answer

Answer: a

Explanation:

None.

10. In linguistic morphology _____ is the process for reducing inflected words to their root form.

a) Rooting

b) Stemming

c) Text-Proofing

d) Both Rooting &

Stemming View Answer

Answer: b

Explanation:

None.

11. LISP Programming

LISP Programming – 1

1. DEC advertises that it helped to create “the world’s first expert system routinely used in an industrial environment,” called XCON or _____

- a) PDP-11
- b) RI
- c) VAX
- d) MAGNOM

2. Prior to the invention of time-sharing, the prevalent method of computer access was

- a) batch processing
- b) telecommunication
- c) remote access
- d) all of the mentioned View

Answer

Answer: a

Explanation:

None.

3. Seymour Papert of the MIT AI lab created a programming environment for children called

- a) BASIC
- b) LOGO
- c) MYCIN

d)
FORTRAN

View

Answer

Answer: b

Explanation:

None.

4. Which of the following is a project of the Strategic Computing Program?

- a) Defense Advanced Research Projects Agency
- b) National Science Foundation
- c) Jet Propulsion Laboratory

d) All of the
mentioned View

Answer

Answer: a

Explanation:

None.

5. The original LISP machines produced by both LMI and Symbolics were based on research performed at?

- a) CMU
- b) MIT

c) Stanford University

d) RAMD

View

Answer

Answer: b

Explanation:

None.

6. In LISP, the addition $3 + 2$ is entered as

_____ a) $3 + 2$

b) 3 add 2

c) $3 + 2 =$

d) (+ 3 2)

7. What is Weak AI?

a) the embodiment of human intellectual capabilities within a computer

b) a set of computer programs that produce output that would be considered to reflect intelligence if it were generated by humans

c) the study of mental faculties using mental models implemented on a computer

d) all of the mentioned View

Answer

Answer: c

Explanation:

None.

8. In LISP, the function returns t if is a CONS cell and nil otherwise _____

a) (cons)

b) (consp)

c) (eq)

d) (cous =)

View

Answer

Answer: b

Explanation:

None.

9. In a rule-based system, what is the form of procedural domain knowledge?

a) production rules

b) rule interpreters

c) meta-rules

d) control

rules View

Answer

Answer: a

Explanation:

None.

10. If a robot can alter its own trajectory in response to external conditions, it is considered to be

a) intelligent

b) mobile

c) open loop

d) non-

servo View

Answer

Answer: a

Explanation:

None.

11. In LISP, what is the function assigns the symbol x to y?

a) (setq y x)

b) (set y = 'x')

c) (setq y = 'x')

d) (setq y 'x')

View Answer

Answer: d

Explanation:

None.

12. One of the leading American robotics centers is the Robotics Institute located at?

a) CMU

b) MIT

c) RAND

d) SRI

View Answer

Answer: a

Explanation:

None.

LISP Programming – 2

1. In LISP, the following function (minusp (-20 4 8 8 1)) returns?

- a) T
- b) F
- c) NIL
- d) -20

View Answer

Answer: a

Explanation:

None.

2. In LISP, which of the following function assigns the value 10 to the symbol a?

- a) (setq a 10)
- b) (a = b) where b = 10
- c) (a = 10) (d) (setq 10 a)
- d) All of the mentioned

View Answer

Answer: a

Explanation:

None.

3. In LISP, the atom that stands for “False” is _____

- a) t
- b) nil
- c) y

d) time

View Answer

Answer: b

Explanation:

None.

4. The expert system developed at MIT to solve mathematical problems is known as

–

a) RAND

b) ISIS

c) MACSYMA

d) MOLGEN

View

Answer

Answer: c

Explanation:

None.

5. Which approach to speech recognition avoids the problem caused by the differences in the way words are pronounced according to context?

a) continuous speech recognition

b) connected word recognition

c) isolated word recognition

d) speaker-dependent
recognition View Answer

Answer: c

Explanation:

None.

6. A KES knowledge base contains information in the form of _____

a) associations

b) actions

c) free text

d) all of the
mentioned View

Answer

Answer: d

Explanation:

None.

7. In AI programming, a list may contain _____

a) cells

b) fields

c) pointers

d) all of the
mentioned View

Answer

Answer: d

Explanation:

None.

8. In LISP, the function (minusp (-20 4 8 8 1)) returns?

a) T

b) F

c) NIL

d) -20

View Answer

Answer: a

Explanation:

None.

9. Special programs that assist programmers are called _____

- a) heuristic processors
- b) symbolic programmers
- c) intelligent programming tools

d) program
recognizers View
Answer

Answer: c

Explanation:

None.

10. If the English Philosopher Thomas Hobbes could be called 'grandfather' of artificial intelligence,

then who could be called its father?

- a) A.M. Turning
- b) John McCarthy
- c) Allen Newell

d) Herbert
Simon View
Answer

Answer: a

Explanation:

None.

LISP Programming – 3

1. LISP machines also are known as _____

- a) AI workstations
- b) Time-sharing terminals
- c) Super mini computers
- d) All of the mentioned View

Answer

Answer: a

Explanation:

None.

2. What are the two subfields of Natural language processing?

- a) context and expectations
- b) generation and understanding
- c) semantics of pragmatics
- d) recognition and synthesis View

Answer

Answer: b

Explanation:

None.

3. How many ALU(s) is/are control by one control unit is SIMD (single instruction stream, multiple data stream) architecture?

- a) one or more ALUs
- b) One ALU
- c) Only two ALU

d) Impossible to
say [View Answer](#)

Answer: a

Explanation:

None.

4. Which of the following function returns t if the object is a number in LISP?

a) (number <object>)

b) (numberp <object>)

c) (numericp <object>)

d) (numeric
<object>) [View](#)

Answer

Answer: b

Explanation:

None.

5. Which of the following have computers traditionally done better than people?

a) storing information

b) responding flexibly

c) computing numerically

d) both storing information & computing
numerically [View Answer](#)

Answer: d

Explanation:

None.

6. The characteristics of the computer system capable of thinking, reasoning and learning are known as _____

a) machine intelligence

b) human intelligence

c) artificial intelligence

d) virtual
intelligence View
Answer

Answer: c

Explanation:

None.

7. What part of the manufacturing process relate to each stage of the process and to the process as a whole?

a) field service

b) design

c) distribution

d) project
management View
Answer

Answer: d

Explanation:

None.

8. The area of AI that investigates methods of facilitating communication between people and computers is ____

a) natural language processing

b) symbolic processing

c) decision support

d) robotics
View
Answer

Answer: a

Explanation:

None.

9. In the 16th century, a Czech rabbi reportedly created a living clay man whose name has become a synonym for an artificial human. What was the clay man's name?

- a) Frankenstein
- b) Golem
- c) Paracelsus
- d) Hal

View Answer

Answer: b

Explanation:

None.

10. For speech understanding systems to gain widespread acceptance in office automation, they must feature

- a) speaker independence
- b) speaker dependence
- c) isolated word recognition
- d) all of the mentioned

View Answer

Answer: a

Explanation:

None

12. Other AI Algorithms & Statistics

Artificial Intelligence Algorithms

1. What is a Cybernetics?

- a) Study of communication between two machines
- b) Study of communication between human and machine
- c) Study of communication between two humans
- d) Study of Boolean values [View Answer](#)

Answer: b

Explanation: Cybernetics is Study of communication between human and machine.

2. What is the goal of artificial intelligence?

- a) To solve real-world problems
- b) To solve artificial problems
- c) To explain various sorts of intelligence
- d) To extract scientific causes [View Answer](#)

Answer: c

Explanation: The scientific goal of artificial intelligence is to explain various sorts of intelligence.

3. 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 View Answer

Answer: a

Explanation: An Algorithm is complete if It terminates with a solution when one exists.

4. Which is true regarding BFS (Breadth First Search)?

- a) BFS will get trapped exploring a single path
- b) The entire tree so far been generated must be stored in BFS
- c) BFS is not guaranteed to find a solution if exists
- d) BFS is nothing but Binary First Search View Answer

Answer: b

Explanation: Regarding BFS-The entire tree so far been generated must be stored in BFS.

5. What is a heuristic function?

- a) A function to solve mathematical problems
- b) A function which takes parameters of type string and returns an integer value
- c) A function whose return type is nothing
- d) A function that maps from problem state descriptions to measures of desirability View Answer

Answer: d

Explanation: Heuristic function is a function that maps from problem state descriptions to measures of desirability.

6. The traveling salesman problem involves n cities with paths connecting the cities. The time taken for traversing through all the cities, without knowing in advance the length of a minimum tour, is

- a) $O(n)$
- b) $O(n^2)$
- c) $O(n!)$
- d) $O(n/2)$

View

Answer

Answer: c

Explanation: The traveling salesman problem involves n cities with paths connecting the cities. The time taken for traversing through all the cities, without knowing in advance the length of a minimum tour, is $O(n!)$.

7. What is the problem space of means-end analysis?

- a) An initial state and one or more goal states
- b) One or more initial states and one goal state
- c) One or more initial states and one or more goal state
- d) One initial state and one goal state

View Answer

Answer: a

Explanation: The problem space of means-end analysis has an initial state and one or more goal states.

8. An algorithm A is admissible if _____

- a) It is not guaranteed to return an optimal solution when one exists
- b) It is guaranteed to return an optimal solution when one exists
- c) It returns more solutions, but not an optimal one
- d) It guarantees to return more optimal solutions

[View Answer](#)

Answer: b

Explanation: An algorithm A is admissible if It is guaranteed to return an optimal solution when one exists.

9. Knowledge may be

I. Declarative.

II. Procedural.

III. Non-procedural.

- a) Only (I)
- b) Only (II)
- c) Only (III)
- d) Both (I) and (II)

[View Answer](#)

Answer: d

Explanation: Knowledge may be declarative and procedural.

10. Idempotency law is

I. $P \cup P = P$.

II. $P \cap P = P$.

III. $P + P = P$.

- a) Only (I)
- b) Only (II)
- c) Only (III)
- d) Both (I) and (II) View Answer

Answer: a

Explanation: Idempotency Law is $P \vee P = P$.

Statistics AI

1. In 1985, the famous chess player David Levy beat a world champion chess program in four straight games by using orthodox moves that confused the program. What was the name of the chess program?

- a) Kaissa
- b) CRAY BLITZ

- c) Golf
- d) DIGDUG

View

Answer

Answer: b

Explanation:

None.

2. The explanation facility of an expert system may be used to _____

- a) construct a diagnostic model
- b) expedite the debugging process
- c) explain the system's reasoning process
- d) explain the system's reasoning process & expedite the debugging process

View Answer

Answer: d

Explanation:

None.

3. Visual clues that are helpful in computer vision include _____

- a) color and motion

b) depth and texture

c) height and weight

d) color and motion, depth and texture View Answer

Answer: d

Explanation:

None.

4. In which of the following areas may ICAI programs prove to be useful?

a) educational institutions

b) corporations

c) department of Defense

d) all of the mentioned View Answer

Answer

Answer: d

Explanation:

None.

5. A network with named nodes and labeled arcs that can be used to represent certain natural language grammars to facilitate parsing.

a) Tree Network

b) Star Network

c) Transition Network

d) Complete Network View Answer

Answer

Answer: c

Explanation:

None.

6. Computers normally solve problem by breaking them down into a series of yes-or-no decisions represented by 1s and 0s. What is the name of the logic that allows computers to assign numerical values that fall somewhere between 0 and 1?

- a) Human logic
 - b) Fuzzy logic
 - c) Boolean logic
 - d) Operational logic
- View Answer

Answer: b

Explanation:

None.

7. The company that grew out of research at the MIT AI lab is _____

- a) AI corp
 - b) LMI
 - c) Symbolics
 - d) Both LMI & Symbolics
- View Answer

Answer: d

Explanation:

None.

8. Which technique is being investigated as an approach to automatic programming?

- a) generative CAI
- b) specification by example
- c) non-hierarchical planning

d) all of the
mentioned View

Answer

Answer: b

Explanation:

None.

9. The primary method that people use to sense their environment is _____

a) reading

b) writing

c) speaking

d) seeing

View

Answer

Answer: d

Explanation:

None.

10. The Newell and Simon program that proved theorems of Principia Mathematica was

a) Elementary Perceiver

b) General Problem Solver

c) Logic Theorist

d) Boolean

Algebra View

Answer

Answer: c

Explanation:

None.

11. The cray X-MP, IBM 3090 and connection machine can be characterized as

a) SISD

b) SIMD

c) MISD

d) MIMD

View

Answer

Answer: b

Explanation:

None

Miscellaneous

1. Which of the following contains output segments of AI programming?

- a) Printed language and synthesized
- b) Manipulation of physical object
- c) Locomotion

d) All of the mentioned View

Answer

Answer: d

Explanation:

None.

2. In LISP, the square root of X is referenced as _____

- a) sqrt(x)
- b) (sqrt x)
- c) x/2
- d) x/3

View Answer

Answer: b

Explanation:

None.

3. How can you evaluate $1.25 + \sqrt{144}$ in

LISP? a) $1.25 + \sqrt{1.44}$

b) $(1.25 + \sqrt{1.44})$

c) $(+1.25 \sqrt{1.44})$

d) All of the mentioned View

Answer

Answer: c

Explanation:

None.

4. When a top-level function is entered, the LISP processor does?

a) It reads the function entered

b) It prints the result returned by the function

c) Large memory and high-speed processor

d) All of the mentioned View

Answer

Answer: b

Explanation:

None.

5. Which kind of planning consists of successive representations of different levels of a plan?

a) Hierarchical planning

b) Non-hierarchical planning

c) Project planning

d) All of the mentioned View

Answer

Answer: a

Explanation:

None.

6. The component of an ICAI (Intelligent Computer Assisted Instruction) presenting information to the student is the?

a) Student model

b) Problem solving expertise

c) Tutoring module

d) All of the mentioned View

Answer

Answer: c

Explanation:

None.

7. In which of the following situations might a blind search be acceptable?

a) Real life situation

b) Complex game

c) Small search space

d) All of the mentioned View

Answer

Answer: c

Explanation:

None.

8. The hardware feature of LISP machines generally includes _____

a) Large memory and high-speed processor

b) Letter quality printers and eight-inch disk drives

c) A mouse and specialized keyboard

d) A mouse and specialized keyboard, Letter quality printers and eight-inch disk drives View Answer

Answer: d

Explanation:

None.