

Multiple Choice Questions for Intelligent System

1. What is Artificial intelligence?
 - a) Putting your intelligence into Computer
 - b) Programming with your own intelligence
 - c) Making a Machine intelligent
 - d) Playing a Game
 - e) Putting more memory into Computer

2. Which is not the commonly used programming language for AI?
 - a) PROLOG
 - b) Java
 - c) LISP
 - d) Perl
 - e) Java script

3. Which instruments are required for perceiving and acting upon the environment?
 - a) Sensors and Actuators
 - b) Sensors
 - c) Perceiver
 - d) None of the above

4. Artificial Intelligence has its expansion in the following application. (Mark all that apply)
 - a) Planning and Scheduling
 - b) Game Playing
 - c) Diagnosis
 - d) Robotics
 - e) All of the above

5. An 'agent' is anything that,
 - a) Perceives its environment through sensors and acting upon that environment through actuators
 - b) Takes input from the surroundings and uses its intelligence and performs the desired operations
 - c) A embedded program controlling line following robot
 - d) All of the mentioned

6. What is perception sequence of an agent?

- a) A periodic inputs sets
- b) a complete history of everything the agent has ever perceived
- c) Both a) and b)
- d) None of the mentioned

7. Agents behaviour can be best described by

- a) Perception sequence
- b) Agent function
- c) Sensors and Actuators
- d) Environment in which agent is performing

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

- a) True
- b) False

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

- a) True
- b) False

10. What is rational at any given time depends on

- a) The performance measure that defines the criterion of success
- b) The agent's prior knowledge of the environment
- c) The actions that the agent can perform
- d) The agent's percept sequence to date
- e) All mentioned

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

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

12. How many types are available in uninformed

search method? a) 3

b) 4

c) 5

d) 6

13. 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

14. 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) Both a & c

15. How many successors are generated in backtracking search?

a) 1

b) 2

c) 3

d) 4

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

a) $O(b)$

b) $O(bl)$

c) $O(m)$

d) $O(bm)$

17. How many parts does a problem consists of?

a) 1

b) 2

c) 3

d) 4

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

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

a) Breath-first algorithm

- b) Tree algorithm
- c) Bidirectional search algorithm
- d) None of the mentioned

19. 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

20. 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

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

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

- a) True
- b) False

22. The Task Environment of an agent consists of

- a) Sensors
- b) Actuators
- c) Performance Measures
- d) Environment
- e) All mentioned above

Explanation: The task environment of an agent is described by four parts performance measures, sensors, actuators and environment, generally known as the PEAS descriptions.

23. 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

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

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

Explanation: The four types of agents are Simple reflex, Model based, Goal based and Utility based agents.

25. Categorize Crossword puzzle in Fully Observable / Partially Observable.a) Fully Observable
- b) partially Observable

26. The game of Poker is a single agent.

- a) True
- b) False

27. Satellite Image Analysis System is (Choose the one that is not applicable).a) Episodic
- b) Semi-Static
 - c) Single agent
 - d) Partially Observable

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

28. What is the rule of simple reflex agent?

- a) Simple-action rule
- b) Condition-action rule
- c) Both a & b
- d) None of the mentioned

29. An agent is composed of,

- a) Architecture
- b) Agent Function

- c) Perception Sequence
- d) **Architecture and Program**

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

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

- 0a) **Learning agent**
- b) Observing agent
- c) Reflex agent
- d) None of the mentioned

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

- a) Solve the given problem and reach to goal
- b) To find out which sequence of action will get it to the goal state
- c) **Both a) and b)**
- d) Neither a) nor b)

32. What is state space?

- a) The whole problem
- b) Your Definition to a problem
- c) Problem you design
- d) **Representing your problem with variable and parameter**
- e) A space where you know the solution

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

- a) **True**
- b) False

34. 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

35. A problem in a search space is defined by,

- a) Initial state
- b) Goal test
- c) Intermediate states
- d) All of the above

Explanation: A problem has four components initial state, goal test, set of actions, path cost.

36. 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

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

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

- a) True
- b) False

Explanation: an optimal solution has the lowest path cost among all solutions.

38. The process of removing detail from a given state representation is called _____. a) Extraction

- b) Abstraction
- c) Information Retrieval
- d) Mining of data

39. A problem solving approach works well for

- a) 8-Puzzle problem
- b) 8-queen problem
- c) Finding an optimal path from a given source to a destination
- d) Mars Hover (Robot Navigation)

Explanation: Problem-solving approach works well for toy problems and real-world problems.

40. 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 colouring problem
- d) Depth first search traversal on a given map represented as a graph

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

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

Explanation: Knowledge and reasoning could aid to reveal other factors that could complete environment.

42. 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 experienced
- d) Only a and b

43. A knowledge-based agent can combine general knowledge with current percepts to infer hidden aspects of the current state prior to selecting actions. State whether True or False.

- a) True
- b) False

44. 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

45. 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

46. ' $\alpha \models \beta$ ' (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

47. Which is created by using single propositional symbol?

- a) Complex sentences
- b) Atomic sentences
- c) Composition sentences
- d) None of the mentioned

48. Which is used to construct the complex sentences?

- a) Symbols
- b) Connectives
- c) Logical connectives
- d) All of the mentioned

49. How many proposition symbols are there in artificial intelligence? a) 1

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

Explanation: The two proposition symbols are true and false.

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

- a) 2
- b) 3
- c) 4
- d) 5

Explanation: The five logical symbols are negation, conjunction, disjunction, implication and biconditional.

51. 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

Explanation: Forward chain can grow by adding new atomic sentences until no further inference is made.

52. Which closely resembles propositional definite clause?

- a) Resolution
- b) Inference
- c) Conjunction
- d) First-order definite clauses

Explanation: Because they are disjunction of literals of which exactly one is positive.

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

- a) Existentially quantified
- b) Universally quantified
- c) Both a & b
- d) None of the mentioned

Explanation: First-order literals will accept variables only if they are universally quantified.

54. Which is more suitable normal form to be used with definite clause?

a) Positive literal

- b) Negative literal
- c) Generalized modus ponens
- d) Neutral literal

55. Which will be the instance of the class data log knowledge bases? a) Variables

b) No function symbols

c) First-order definite clauses

d) None of the mentioned

56. Which knowledge base is called as fixed point?

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

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

c) Both a & b

d) None of the mentioned

57. 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

58. 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

59. 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

60. How many possible sources of complexity are there in forward chaining? a) 1

b) 2

c) 3

d) 4

Explanation: The three possible sources of complexity are an inner loop, algorithm rechecks every rule on every iteration, 0algorithm might generate many facts irrelevant to the goal.

61. 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

62. Which values are independent in minimax search algorithm?

- a) Pruned leaves x and y
- b) Every states are dependant
- c) Root is independent
- d) None of the mentioned

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

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

64. Which search is similar to minimax search?

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

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.

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

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

d) Both a & b

66. Where does the value 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

67. How the effectiveness of the alpha-beta pruning gets increased? a) Depends on the nodes

b) Depends on the order in which they are executed

c) Both a & b

d) None of the mentioned

68. 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

69. 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

70. 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

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.

71. What is the dominant modality for communication between humans? a) Hear

b) Speech

- c) Smell
- d) None of the mentioned

72. What kind of signal is used in speech recognition?

- a) Electromagnetic signal
- b) Electric signal
- c) Acoustic signal
- d) Radar

73. What is viewed as problem of probabilistic inference?

- a) Speech recognition
- b) Speaking
- c) Hearing
- d) Utterance

74. Which specifies the prior probability of each utterance?

- a) Sound model
- b) Model
- c) Language model
- d) All of the mentioned

Explanation: Because it contains the group of words that can help to specify the prior probability of each utterance.

75. Which model gives the probability of each word following each other word?

- a) Bigram model
- b) Diagram model
- c) Gram model
- d) Speech model

76. What is the study of how the language sounds?

- a) Speechology
- b) Biology
- c) Triology
- d) Phonology

77. What are periodic changes in pressure that propagate

through the air? a) Air waves

b) **Sound waves**

c) Rate

d) None of the mentioned

Explanation: Sound waves are periodic changes in pressure that propagate through the air and it can be measured by a microphone.

78. What is called as the properties of the signal that extend over interval? a) Hops

b) Rate

c) **Frames**

d) All of the mentioned

Explanation: Speech system summarizes the properties of the signal that extend over interval called frames.

79. 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 model**

d) All of the mentioned

80. Which are partially captured by triphone model?

a) Articulation effects

b) **Coarticulation effects**

c) Both a & b

d) None of the mentioned

Explanation: Coarticulation effects are partially captured by triphone model, which can be manipulated by acoustic model.

81. DEC advertised 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

82. 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

83. Seymour Papert of the MIT AI lab created a programming environment for children called:

- a) BASIC
- b) LOGO
- c) MYCIN
- d) FORTRAN

84. The Strategic Computing Program is a project of the:

- a) Defence Advanced Research Projects Agency
- b) National Science Foundation
- c) Jet Propulsion Laboratory
- d) All of the mentioned

85. 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

86. In LISP, the addition $3 + 2$ is entered as

- a) $3 + 2$
- b) 3 add 2
- c) $3 + 2 =$
- d) (+ 3 2)

87. Weak AI 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 using mental models implemented on a computer.

d) All of the mentioned

88. In LISP, the function returns t if is a CONS cell and nil otherwise:

a) (cons<object>)

b) (consp<object>)

c) (eq<object>)

d) (cous = <object>)

89. 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

90. 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

91. 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

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:

Inputs	Output
000	0
001	1
010	0
011	1
100	0
101	1
110	0
111	1

92. A perceptron is:

- 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

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.

93. An auto-associative network is:

- 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

94. 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. The output will be:

- a) 238
- b) 76
- c) 119
- d) 123

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

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

95. 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

96. 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

97. 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

98. 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

99. 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

100. Neuro software is:

- 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 Neuro surgeon