Shivaji University , Kolhapur
Question Bank for Mar 2022 (Summer) Examination

Subject Code: 83859-Subject Name: Artificial Intelligence

Subjective Questions Unit-wise

Unit 1:

1. What do you understand by Artificial Intelligence? Give some real-world applications of AI.
2. Explain problem solving by Search, Search Algorithm Terminologies, Properties of Search Algorithms
3. What is knowledge based system? What are the different components of knowledge-based system?
4. Classification of AI systems with respect to environment
5. What is uncertainty in artificial intelligence? Which type of learning is based on uncertainty?
6. What are the sources of uncertainty in artificial intelligence? How do AI systems deal with uncertainty?
7. Which type of learning is based on uncertainties?How does uncertainty play important role in AI applications?
8. Write short note on
    a. Importance of AI in industries
    b. Evolution of AI
    c. Applications of AI

Unit 2:

1. What are the types of blind search? What is blind search techniques?
2. What are the problem solving techniques in blind search strategies?
3. What is problem space in artificial intelligence?
4. What is state in problem solving? Explain state space formulation in AI?
5. Explain mini-max algorithm
6. Write short note on
    1. Types of Environments in AI
    2. Types of search algorithms
    3. Types of knowledge in AI
    4. Alpha-beta pruning in AI?

Unit 3:

1. Explain Bayes Rule with proper example
2. Explain Bayesian Networks
3. How Bayesian Networks are represented, constructed and inference
4. Write short note on

a. Temporal model

b. Hidden Markov model.

5. What is MDP formulation?
6. What are the steps in a MDP process?
7. What is utility function MDP?
8. What is MDP policy?
9. What are the five essential parameters that define an MDP?
10. What is the difference between value iteration and policy iteration?
11. What do you mean by partially observable mdps?

Unit 4:

1. Explain different Forms of machine Learning
2. Write short note on
   a. Supervised,
   b. Unsupervised,
   c. Reinforcement Learning,
   d. LearningDecision Trees.
3. What are Expert Systems? Explain Stages in the development of an Expert System
4. What are Probability based Expert Systems?
5. What are Expert Systems? Difficulties in Developing Expert Systems
6. Explain Expert System Tools
7. What are Expert Systems? Applications of Expert Systems.

Unit 5:

1. What is passive reinforcement learning? Which one is an example of passive reinforcement learning?
2. What is the difference between passive and active reinforcement learning?
3. What is meant by reinforcement learning give 1 example? Explain its types.
4. What is utility in reinforcement learning? What is Direct utility estimation?
5. What is adaptive dynamic programming in artificial intelligence?
6. What is adaptive reinforcement learning?Does reinforcement learning use dynamic programming?

7. What do you mean by temporal difference learning? How does it work?Explain with an example?
8. What is an active learning model?
9. How does Q-learning work?

Unit 6

1. Write short Note on:
    1. Azure ML,
    2. Google AI,
    3. Swift AI,
    4. Tensorflow.
2. Explain important inbuilt libraries of Python NumPy, SciPy with examples
3. Explain important inbuilt libraries of Python matplotlib, nltk, SimpleAI with examples
4. Steps to install python, setting up path and running python

MCQ type Questions Unitwise

Unit-I

1. Artificial Intelligence is about_____.

    A. Playing a game on Computer

    B. Making a machine Intelligent

    C. Programming on Machine with your Own Intelligence

2. Which one is the right sequence in which AI field evolved?

A. 1950: Turing Test
   1960: Intelligent agents
   1970: AI commercialization began
   1980: Artificial neural networks
   1990: AI established as research field

B. 1950: Turing Test
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   1970: Artificial neural networks
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C. 1950: Turing Test
   1960: AI established as research field
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   1980: Artificial neural networks
   1990: Intelligent agents

D. 1950: Turing Test
   1960: AI established as research field
   1970: AI commercialization began
   1980: Intelligent agents
   1990: Artificial neural networks

D. Putting your intelligence in Machine

3. Who is known as the "Father of AI"?

A. Fisher Ada

B. Alan Turing

C. John McCarthy

D. Allen Newell

4. _____ is an application/applications of Artificial Intelligence.

A. Expert Systems

B. Gaming

C. Vision Systems

D. All of the above

5. Software that performs assigned tasks on the users behalf are categorized asIntelligent agents.

A. TRUE

B. FALSE

6. First expert system was MYCIN, in which year diagnosed bacterial infections of blood and suggested treatments?

A. 1974

B. 1994

C. 1997

D. 1980

7. In a _____, an agent sensor is capable to sense or access the complete state of an agent at each point in time.

A. fully observable environment

B. Partially Observable environment

C. Deterministic environment

D. Stochastic environment

8. Agent is in a _____ when it competes to optimize the output.

A. collaborative environment

B. Stochastic environment

C. Deterministic environment

D. competitive environment

9. Identify the Characteristic of AI Systems from the following:

A. Symbolic Processing

B. Non-algorithmic Processing

C. Both A & B

D. None of the above

10. AI systems aim to _____ intelligent problem solving.

A. identify

B. mimic

C. show

D. prove

11. _____ (Weizenbaum, 1965) used ML interface to act as an artificial psychoanalyst.

A. Eclica

B. Eliza

C. Enavia

D. Erona

12. Search based systems: _____.

A. State space search

B. Gives solution space to a problem

C. Includes actions, states, beliefs representing the status of a problem

D. All the above

13. Heuristics often provide _____.

A. the correct solution to a problem

B. knowledge

C. an incorrect answer

D. analyse the operation

14. Expert systems do not have human capabilities.

A. True

B. False

15. *Diagnosis Systems* _____.

A. infer malfunction or disease from observable data

B. identify object based on stated characteristics

C. compare data from a continually observed system to prescribe behaviour

D. configure a system according to specifications

Unit II

16. One kind of goal-based agent called a _____.

A. problem-solving agent

B. problem defining agent

C. goal defining agent

D. clearing agent

17. *GPS* solved many simple problems, but *GPS could not solve* _____.

A. any real-world problems

B. any computational problem

C. any classification problems

D. None of the above

18. To build a system to solve a particular problem, we need to:

A. Define the problem

B. Analyse the problem

C. Isolate the agent

D. Option A & B

19. A problem is defined by its '_____' and their '_____'.

A. actors, relations

B. agents, workers

C. elements, relations

D. roots, leaf nodes

20. A _____ is represented by a directed graph, nodes represent search state and paths represent the operators applied to change the state.

A. problem space

B. node relation

C. direction

D. solution

21. A _____decreases the complexity of a search at a cost.

A. end node

B. graph

C. directed graph

D. tree

22. A *tree is a graph* in which any two vertices are connected by exactly one path.

A. True

B. False

23. Any connected graph with no cycles is a tree.
    A. True
    B. False
24. A state space consists of a representation of the _____ can be in.
    A. states the system
    B. state of the actor
    C. state of the problem
    D. A & C
25. _____, search through the search space for all possible candidates for solution checking whether each candidate satisfies the problem's statement.
    A. Generate and Test Search
    B. heuristic functions
    C. Uninformed search or Brute-force algorithms
    D. Informed search algorithms
26. _____ uses heuristic functions that are specific to the problem, apply them to guide the search to try to reduce the time spent in searching.
    A. Generate and Test Search
    B. heuristic functions
    C. Uninformed search or Brute-force algorithms
    D. Informed search algorithms
27. With which search algorithm, highest layer of a decision tree is searched completely before proceeding to the next layer?
    A. Breadth-first search
    B. Depth-first search
    C. Bounded depth-first search
    D. Bounded breadth-first search
28. _____ is astrategy that extends the current path as far as possible before backtracking to the last choice point and trying the next alternative path
    A. Breadth-first search
    B. Depth-first search
    C. Bounded depth-first search

D. Bounded breadth-first search

29. _____ estimates ‘distance’ to goal state through explored nodes.

A. Brute force search

B. Blind search

C. Heuristic search

D. None of the above

30. Heuristicis useful in solving tough and complex problems, solutions of which would require infinite time.

A. True.

B. False.

Unit III

31. What is used for probability theory sentences?

A. Conditional logic

B. Logic

C. Extension of propositional logic

D. None of the mentioned

32. With probability in AI, what is the basic element of a language?

A. Literal

B. Variable

C. Random variable

D. All of the mentioned

33. How many types of random variables are available?

A. 1

B. 2

C. 3

D. 4

34. _____ involves conditioning on *everything* agent knows about a particular situation.

A. Posterior probability

B. prior probability

C. conditional probability

D. None of the above

35. _____ specifies how an agent should update its belief in a proposition based on a new piece of evidence.

A. Expected Values

B. Bayes Rule

C. Bayesian Networks

D. All of the above

36. Bayesian Networks is also known as _____.

A. Bayes network

B. Bayes net,

C. Belief network, or decision network

D. All the above

37. _____ is a special sort of belief network used to represent sequences of values in Hidden Markov Model.

A. Structured learning

B. Markov assumption

C. Temporal model

D. Markov Chains

38. A hidden Markov model (HMM**)** is an augmentation of the Markov chain to include observations.

A. True

B. False

39. In hidden Markov model (HMM), problem of _____or belief-state _____ is to determine current state based on current and previous observations.

A. filtering

B. monitoring

C. smoothing

D. Both A & B

40. The problem of _____ is to determine a state based on past and future observations

A. filtering

B. monitoring

C. smoothing

D. Both A & B

Unit IV

41. Machine Learning is a field of science that deals with getting computer programing knowledge through experience and predicting the output.

    A. True

    B. False

42. The output of ML is target value defined in the _____.

    A. available data

    B. training data

    C. test data

    D. predicted data

43. _____ problems are supervised learning problem that involves predicting a numerical label.

    A. Regression

    B. Classification

    C. Supervised

    D. Hypothetical

44. _____ deals with supervised learning problem that involves predicting a class label.

    A. Regression

    B. Classification

    C. Supervised

    D. Hypothetical

45. _____ describes a class of problems that involves using a model to describe or extract relationships in data.

    A. Unsupervised Learning

    B. Supervised Learning

    C. Clustering

    D. Density Estimation

46. With _____, the learner is not told which actions to take, but instead must discover which actions yield the most reward by trying them.
    A. Reinforcement Learning
    B. Supervised Learning
    C. Unsupervised Learning
    D. Machine Learning
47. _____ usually mimic human thinking ability while making a decision, so it is easy to understand.
    A. Classification rules
    B. Decision Trees
    C. Regression Rules
    D. Projection
48. In a decision tree terminologies, a _____ is from where the decision tree starts and it represents the entire dataset, which further gets divided into two or more homogeneous sets.
    A. Root Node
    B. Leaf Node
    C. Splitting Node
    D. Parent/Child node
49. With the steps of decision tree, in step to find the best attribute in the dataset using **ASM, ASM** stands for?
    A. All Selection Measure
    B. Attribute Selection Measure
    C. Attacker Selection Measure
    D. Avoided Selection Measure
50. An expert system is not used to replace the human experts; instead, it is used to assist the human in making a complex decision.
    A. True.
    B. False

Unit V

51. A _____ describes a class of problems where an agent operates in an environment and must *learn* to operate using feedback.
    A. Supervised Learning
    B. Reinforcement Learning
    C. Unsupervised Learning
    D. Machine Learning
52. In _____ an agent executes a **sequence of trials or runs** (continue until the agent reaches the terminal state)
    A. Direct Utility Estimation
    B. Adaptive Dynamic Programming(ADP)
    C. Temporal Difference Learning (TD)
    D. Active Learning
53. _____ does not require the agent to learn the transition model.
    A. Temporal Difference Learning
    B. Adaptive Dynamic Programming(ADP)
    C. Direct Utility Estimation
    D. Adaptive Programming
54. Q-learning is a _____ method which does not require the agent to learn the transitional model.
    A. Direct Utility Estimation
    B. Adaptive Dynamic Programming
    C. TD learning
    D. Active Learning
55. In _____ agent's policy is fixed which means that it is told what to do.
    A. Passive reinforcement learning
    B. Active reinforcement learning
    C. Direct reinforcement learning
    D. All reinforcement learning's
56. In Q-learning, The Agent uses the Q-value in a state todetermine the best action to take.
    A. True

B. False

Unit VI

57. From inbuilt libraries of Python take one out.
    A. NumPy,
    B. SciPy,
    C. Matplotlib and nltk,
    D. SimplerAI
58. Python is an open source programming language.
    A. True.
    B. False.
59. Python is a _____scripting language.
    A. high-level,
    B. interpreted,
    C. interactive and object-oriented
    D. All the above
60. As python can run on a wide variety of hardware platforms and has the same interface on all platforms, it is said to be _____.
    A. Portable
    B. Interactive
    C. Extendable
    D. Scalable