Chettinad College of Engineering & Technology
Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai.

Department of Computer Science and Engineering

CS8691 - Artificial Intelligence – (6th semester, 2017 Regulation)

MCQ Bank

Unit III - Knowledge Representation

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

a) True

b) False

Answer: a

2. Translate the following statement into FOL.

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

a) ∀ a philosopher(a) scholar(a)

b) ∃ a philosopher(a) scholar(a)

c) All of the mentioned

d) None of the mentioned

Answer: a

3. Translate the following statement into FOL.

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

a) ∀ a PhD(a) -> Master(a)

b) ∃ a PhD(a) -> Master(a)

c) A is true, B is true

d) A is false, B is false

Answer: a

4. Which among the following could the Existential instantiation of ∃x Crown(x) ^ OnHead(x, Johnny)?

a) Crown(John) ^ OnHead(John, Jonny)

b) Crown(y) ^ OnHead(y, y, x)

c) Crown(x) ^ OnHead(x, Jonny)

d) None of the mentioned

Answer: a

5. Which is created by using single propositional symbol?

a) Complex sentences

b) Atomic sentences

c) Composition sentences

d) None of the mentioned

Answer: b

Explanation: Atomic sentences are indivisible syntactic elements consisting of single propositional symbol.

6. Which is used to construct the complex sentences?

a) Symbols

b) Connectives

c) Logical connectives

d) All of the mentioned

Answer: c

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

a) 1

b) 2

c) 3

d) 4

Answer: b

Explanation: The two proposition symbols are true and false.

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

a) 2

b) 3

c) 4

d) 5

Answer: d

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

9. 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

Answer: a

Explanation: Because the meaning of the sentences is really needed to compute the truth.

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

a) Logical equivalence

b) Validity

c) Satisfiability

d) All of the mentioned

Answer: d

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

11. Which is also called single inference rule?

a) Reference

b) Resolution

c) Reform

d) None of the mentioned

Answer: b

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

12. Which is also called single inference rule?

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Answer: b

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

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

a) Multiple clause

b) Combine clause

c) Unit clause

d) None of the mentioned

Answer: c

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

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

a) Clauses

b) Variables

c) Propositional resolution

d) Proposition

Answer: c

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

15. 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

Answer: a

Explanation: First-order resolution requires the clause to be in disjunction of literals in Conjunctive Normal Form.

16. What is the condition of literals in variables?

a) Existentially quantified

b) Universally quantified

c) Quantified

d) None of the mentioned

Answer: b

Explanation: Literals that contain variables are assumed to be universally quantified.

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

a) Every sentence of propositional logic

b) Every sentence of inference

c) Every sentence of first-order logic

d) All of the mentioned

Answer: c

Explanation: Every sentence of first-order logic can be converted to inferred equivalent CNF sentence.

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

a) Search statement

b) Reading statement

c) Replaced statement

d) Original statement

Answer: d

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

19. 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: a

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

20. 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: b

Explanation: Propositional literals are complementary if one is the negation of the other.

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

a) Atomic sentences

b) Complex sentences

c) No further inference

d) All of the mentioned

Answer: c

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

22. Which closely resembles propositional definite clause?

a) Resolution

b) Inference

c) Conjunction

d) First-order definite clauses

Answer: d

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

23. 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

Answer: b

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

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

a) Positive literal

b) Negative literal

c) Generalized modus ponens

d) Neutral literal

Answer: c

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

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

a) Variables

b) No function symbols

c) First-order definite clauses

d) None of the mentioned

Answer: b

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

26. 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

Answer: a

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

27. How to eliminate the redundant rule matching attempts in the forward chaining?

a) Decremental forward chaining

b) Incremental forward chaining

c) Data complexity

d) None of the mentioned

Answer: b

Explanation: We can eliminate the redundant rule matching attempts in the forward chaining by using incremental forward chaining.

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

a) Old fact

b) Narrow fact

c) New fact

d) All of the mentioned

Answer: c

29. Which will solve the conjuncts of the rule so that the total cost is minimized?

a) Constraint variable

b) Conjunct ordering

c) Data complexity

d) All of the mentioned

Answer: b

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

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

a) 1

b) 2

c) 3

d) 4

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.

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

a) Forward chaining

b) Backward chaining

c) Hill-climb algorithm

d) None of the mentioned

Answer: b

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

32. Which is mainly used for automated reasoning?

a) Backward chaining

b) Forward chaining

c) Logic programming

d) Parallel programming

Answer: c

Explanation: Logic programming is mainly used to check the working process of the system.

33. What will backward chaining algorithm will return?

a) Additional statements

b) Substitutes matching the query

c) Logical statement

d) All of the mentioned

Answer: b

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

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

a) Queue

b) List

c) Vector

d) Stack

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.

35. What is used in backward chaining algorithm?

a) Conjuncts

b) Substitution

c) Composition of substitution

d) None of the mentioned

Answer: c

36. 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

Answer: a

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

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

a) Repeated states

b) Incompleteness

c) Complexity

d) Both Repeated states & Incompleteness

Answer: d

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

38. How the logic programming can be constructed?

a) Variables

b) Expressing knowledge in a formal language

c) Graph

d) All of the mentioned

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.

39. What form of negation does the prolog allows?

a) Negation as failure

b) Proposition

c) Substitution

d) Negation as success

Answer: a

40. Which is omitted in prolog unification algorithm?

a) Variable check

b) Occur check

c) Proposition check

d) Both Occur & Proposition check

Answer: b

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

41. 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

Answer: b

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

42. Wumpus World is a classic problem, best example of _____

a) Single player Game

b) Two player Game

c) Reasoning with Knowledge

d) Knowledge based Game

Answer: c

Explanation: Refer the definition of Wumpus World Problem.

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

a) Ponens

b) Clauses

c) Generalized Modus Ponens

d) Variables

Answer: c

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

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

a) 1

b) 2

c) 3

d) 4

Answer: d

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

45. 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

Answer: a