JNTU ONLINE EXAMINATIONS [Mid -1
AI]

1. Which approach encodes desired bahaviours directly as program code?
[01D01]
a. declarative
b. procedural
c. statistical
d. reasoning

2. An inference algoritham is said to be _ _ _ _ _ _ _ _ _ if it can derive any sentence that is entailed
[01D02]
a. sound
b. complete
c. truth preserving
d. logical preserving

3. What is the parameter passed as an argument to knowledge based agent's function?
[01M01]
a. general data
b. action
c. percept
d. time

4. What will be returned to the caller of knowledge based agent's function?
[01M02]
a. knowledge base
b.
action
c. percept
d. counter

5. In the wumpus world, the agent can perform various options. Choose the correct set from the following.
[01M03]
a. move forward, turn left by 。,90turn right by 9,0 grab, shoot.
b. Walk, turn left, turn right, shoot, packup
c. Grab, shoot, move forward, turn right, take
d. Pass through, kill, jump, grab, shoot

6. To infer hidden aspects of the current state prior to selecting actions, general knowledge has to be combined with current percepts. The process of combining is the work of ------- [01S01]
a. logical inferer
b. knowledge based
agent
c. learning agent
d. planning agent

7. Which is the central component of a knowledge based agent?
[01S02]
a. resolution
b. representation language
c. inference
d. knowledge
base

8. In the wumpus world game, the agent will perceive a breeze in a square if it is directly adjacent to a _ _ _ _ _ _ _
[01S03]
a. pit
b. wumpus
c. agent
d. heap of gold

9. In the wumpus world, if a square contains wumpus in directly adjacent squares the agent will perceive a _ _ _ _ _ _ _ _ _
[01S04]
a. bump
b. glitter

c. breeze

d.
stench

10. The percepts will be given to the agent in the form of a list of 5 symbols. Choose the
correct set of symbols.
[01S05]
a. stench,breeze,pit, glitter, gold
b. stench, breeze, glitter, bump,
scream
c. stench, pit, wumpus, glitter, bump
d. glitter, bump, scream, pit, stench.

11. The relation of logical entailment between sentences is represented using _ _ _
_
mathematical notation
[01S06]
a. α
b. ε
c.
d.

12. Which are mathematical abstractions, which simply fixes the truth or falsehood of
every
relavent sentence?
[01S07]
a. syntax
b. symantics
c. knowledge base
d.
model

13. Which is the logical equivalence known as contraposition
[02D01]
a.
b.
c.
d.

14. The problem of determining the satisifiablity of sentences in propositional logic is _ _ _
_
_ _ _ _ _ problem
[02D02]
a.NP-hard
b. NP-
complete
c. NP-incomplete
d. NP- uncertain

15. Which rule is known as proof by refutation? [02D03]
a. α =β if and only if the sentence is satisifiable
b. α β if and only if the sentence is satisifiable
c. α =β if and only if the sentence is unsatisifiable
d. if and only if the sentence is unsatisifiable

16. Validity and satisifiability are connected. Choose the sentence which explains this.
[02D04]
a. α is valid iff is satisfiable
b. α is satisifiable iff valid.
c. α is valid iff is unsatisfiable
d. α is satisifiable iff not valid.

17. The rules of wumpus world are best written using _ _ _ _ _ _ _ _ _ [02M01]
a. conjunction
b. disjunction
c. biconditional
d. imprecation

18. What is time complexity of truth table enumeration algorithm for deciding propositional
entailment? [02M02]
a. O(n)
b. O(2n)
c. O(2)
d. O(log
n)

19. What is space complexity of truth table enumeration algorithm for deciding propositional
entailment? [02M03]
a. O(n)
b. O(2n)

c. O(2)
d. O(n)
20. If a sentence true in all models, it is _ _ _ _ _ _ _ _ [02M04]
a. sound
b. complete
c. atomic
d. valid
21. Which of the following equilence is distributivity of over [02M05]
a.
b.
c.
d.
**22. The indivisible syntactic elements consisting of a single proposition symbol is known as _
_ _ _ _ _ _ _ _ [02S01]**
a. syntactic sentance
b. atomic sentance
c. complex sentence
d. logic sentence
**23. Complex sentences are constructecd from simpler sentences using _ _ _ _ _ _ _ _
[02S02]**
a. logical connectives
b. logical premise
c. relational connectives
d. relational premise
**24. There are 5 logical connectives in common use for prepositional logic. Choose the correct
set from the following [02S03]**
a. negation, literal, predicate, conjection, implication
b. negation, conjunction, disjunction, implication, buconditional
c. negation, conjunction, disjunction, implication, predicate
d. negation, conjunction, disjunction, literal, biconditional
25. Which logical connective is known as rule [02S04]
a. negation
b. implication
c. disjunction
d. biconditional
26. The value of p q is false only when a [02S05]
a. p is false, q is false
b. p is false , q is true
c. p is true, q is false
d. p is true, q is true
27. Which is the implication elimation equilance [02S06]
a.
b.
c.
d.
28. The concept satisifiablity can be defined as _ _ _ _ _ _ _ _ [02S07]
a. a sentence is satisifiable if it is true in some model
b. a sentence is satisifiable if it is true in all models
c. a sentence is satisifiable if it is false in every model

d. a sentence is satisifiable if it is false in all models
**29. The monotonocity property says that
[03D01]**
a. The set of valid sentences increase in knowledge base
b. The set of atomic sentences is added to knowledge base
**c. The set of entailed sentences can only increase as information is added to
the
knowledge
base**
d. Knowledge base contains only satisifiable sentences
**30. (smoke fire) (smoke fire) sentence is _ _ _ _ _ _ _ _ _ _ _
[03D02]**
a. valid
b. unsatisifable
c. satisifaiable
d. avalid and unsatisifable

31. The equivalence for biconditional elimination is two inference rules. Which of the
following is one of them
[03D03]
a.
b.
c.
d.

32. "Any of the conjunctions can be inferred from a conjunctioin" this rule is known as _ _ _ _ _
[03M01]
a. modus ponens
b. logical conjunct**c.**
And
eliminationd.
validity

33. If KB ⊨ α then KB ⊨ α represents _ _ _ _ property
[03M02]
a. Demorgan
b. modus ponens
c. validity
d. monotonicity

34. smoke smoke sentence _ _ _ _
[03M03]
a. contradiction
b. tautology
c. satisifiable
d. unsatisifable

35. rule is called _ _ _ _ _ _ _ _ _ _
[03S01]
a. modus
ponens
b. monotonicity
c.
nonmonotonicity d.
modus ponemil

36. Which of the following rule is called modus ponens
[03S02]
a.
b.
c.
d.

37. Which of the following rule is known And - Elimination
[03S03]
a.
b.
c.
d.

38. Proof can be defined as _ _ _ _ _ _ _ _
[03S04]
a. a sequences of applications of atomic sentences
b. a sequences of applications of complete sentences
c. a sequences of applications of inference
rules
d. a sequences of applications of Tautologies

39. Convert " " into conjunctive normal form
[04D01]
a.
b.
c.
d.

40. Convert into CNF
[04D02]
a.
b.
c.
d.

41. If H1,H2,Hm and P Q then H1,H2,..,Hm _ _ _ _ _ _ _ _
[04D03]
a. P
b. Q
c. P
Q
d. P
Q

42. Which of the following statements is   correct
[04M01]
a. modus ponens is complete
b. monotonicity is sound and complete
c. and elimination is sound and complete
d. bidirectional elimination inference rule is sound

43. If resolution takes clauses, p1 p4 and p1 p2 then it returns _ _ _ **as a   new**
clause
[04M02]
a. p1 p1

b. p1 p2
c. p4 p2
d. p1 p4 p2

44. Which yields a complete inference algorithm   when coupled with any complete search
algorithm? [04S01]
a. proof
b. modus ponens
c. wumpus
d. resolution

45. Which of the following statements is wrong? [04S02]

a. resolution is sound
b. resolution is complete
c. resolution is sound and complete
d. resolution is sound but not complete

46. "A single literal can be viewed as a disjunction of one literal" is known as _ _ _ _ _ _
[04S03]
a. unit clause
b. resolution clause
c. factoring clause
d. complimentory clause

47. Removal of multiple copies of literals is called _ _ _ _ _ _ _ _ **[04S04]**
a. unification
b. purging
c. factoring
d. inferencing

48. Resolution has refutation completeness _ _ _ **means [04S05]**
a. resolution can be used to confirm a sentence
b. resolution can be used to refute a sentence
c. resolution can be used to enumerate true sentences
d. resolution can be used to confirm or refute a sentence, but it can't be used to
enumerate true sentences

49. A A is given by _ _ _ _ _ _ _ **[04S06]**
a. modus ponens
b. demorgan
c. unit clause
d. factoring

50. Resolution rule applies only to _ _ _ _ _ _ _ _ _ **of literals [04S07]**
a. complementory
b. disjunctions
c. conjunctions
d. implication

51. A sentence expressed as a _ _ _ _ _ _ _ _ **of literals is said to be in conjuctive normal form**
[04S08]
a. conjunction of disjunctions

b. disjunction of conjuctions
c. conjunction of negations
d. conjunction of implications

52. "if a set of clauses is unsatisfiable , then the resolution closure of those clauses contains the empty clause".this theorem is known as [04S09]

a. closure theorem
b. ground resolution theorem
c. unification resolution theorem
d. factoring theorem

53. (P P) and (P P) is always _ _ _ _ _ _ _ _ and _ _ _ _ _ _ [04S10]

a. tautology and valid
b. valid and tautology
c. tautology and contradiction
d. contradiction and tautology

54. Deciding entailment with horn clauses needs_ _ _ _ _ _ _ time [05D01]

a. exponential
b. linear
c. logarithmic
d. maximum

55. _ _ _ _ _ _ _ _ _ clauses form the basis for logic programming [05D02]

a. unit
b. horn
c. fact
d. definite

56. Which forms the head of the definite clause [05M01]

a. positive literal
b. complemented literal
c. negative literal
d. valid literal

57. Fact can be defined in terms of horn clauses as _ _ _ _ _ _ _ _ _ [05M02]

a. definite clause with no negative literal
b. definite clause with no positive literal
c. horn clause with no negative literal
d. horn clause with all types of literals

58. Generation of new facts is possible in _ _ _ _ _ _ _ _ _ [05M03]

a. backward chaining
b. goal directed reasoning
c.   forward chaining
d. forward chaining and backward chaining

59. Horn clauses can be made as integrity constraints. Integrity constraints are _ _ _ _ [05M04]

a. horn clauses with no positive literals
b. horn clauses with one positive literals
c. horn clauses with one negative literals
d. horn clauses with no negative literals

60. Horn clause is a _ _ _ _ _ _ _ _ of literals of which atmost one is positive. [05S01]

a. disjunction
b. conjunction
c. implication
d. biimplication

61. Horn clause is a disjunction of literals of which atmost one is _ _ _ _ _ _ _. [05S02]

a. complementary
b. negative
c. valid
d. positive

62. Horn clause with exactly one positive literal is called as _ _ _ _ _ _ _ _ [05S03]

a. unique clause
b. unit clause
c.   definite clause
d. simple clause

63. Knowledge base should contain
[05S04]
a. definite clauses
b. horn clauses
c. integrity constraints
d. only definite clauses with no integrity constraints

64. In AND-OR graph multiple links joined by an arc indicate a _ _ _ _ _ _ _ _
[05S05]
a. horn clause
b. definite clause
c. conjunction
d. disjunction

65. Fixed point is a point where _ _ _ _ _ _ _ _ _ _ are possible
[05S06]
a. new horn clauss
b. no new clauses
c. new predicates
d. no new inferences

66. Which of the following sentences pertaining to forward and backward chaining is correct.
[05S07]
a. forward chaining is goal directed reasoning b. backward chaining is data driven reasoning **c. forward chaining is data driven reasoning**
d. forward chaining is neither sound nor complete.

67. Which datastructures are necessary for forward chaining
[05S08]
a. trees
b. tables
c. DA graphs
d. AND-OR graphs

68. One of the following sentences is incorrect choose it.
[06D01]
a.
b.
c.
d.

69. Sentences that allow reasoning "across time " are called _ _ _ _ _ _
[06D02]
a. permanent
b. synchronic
c. diachronic
d. fixed

70. The number of arguments of a function symbols is called as _ _ _ _ _ _ _ _ _ _
[06M01]
a. cardinality
b. order
c. degree
d. arity

71. A term with no variables is called a _ _ _ _ _ _ _ _ _
[06M02]
a. minterm
b. atomic term
c. ground term
d. constant

72. Quantifiers are useful
[06M03]
a. to express properties of entire collections of objects
b. to express objects by name
c. to write predicates
d. to write properties of objects using functioins

73. Rules, that lead to hidden causes from observed effects are known as _ _ _ _ _ _ [06M04]

a. inference rules

b.   diagnostic rules

c. atomic rules

d. causal rules

74. Rules that generate certain percepts from some hidden property of the world are known as _ _ _ _ _ _ _ [06M05]

a. inference rules

b. diagnostic rules

c. atomic rules

d. causal rules

75. _ _ _ _ _ _ _ is a collection of objects arranged in a fixed order. [06S01]

a. domain

b. domain element

c. tuple

d. class

76. Which of the following symbols is not associated with first-order logic [06S02]

a. constant symbols

b. variable symbols

c. predicate symbols

d. function symbols

77. Which symbols stand for relations? [06S03]

a. table

b. matrix

c. predicate

d. constant

78. _ _ _ _ _ _ _ _ is needed to specify exactly which objects ,relations and functions are referred in a model.[06S04]

a. syntax

b. semantics

c. inference

d. interpretation

79. Which of the following is a logical expression that refers to an object? [06S05]

a. method

b. function

c. predicate

d. term

80. What will fix the referent of every term? [06S06]

a. predicate

b. function

c. interpretation

d. constant

81. _ _ _ _ _ _ _ _ is used to state about some object in the universe without naming it. [06S07]

a. any quantifier

b. any ground term

c. universal quantifer

d. existential quantifer

82. Entailment for first-order logic is _ _ _ _ _ _ [07D01]

a. complete

b. decidable

c. semidecidable

d. not decidable

83. "Any entailed sentence can be proved using first order inference via propositionalization".The statement reveals that this approach is _ _ _ _ _ _ [07M01]

a. NP-hard

b. NP-uncertain

c. sound

d. complete

84. "Any sentence obtained by substituting a ground term for the variable can be inferred".this rule is known as [07S01]

a. universal quantifier

b. universal instantiation

c. existential quantifier

d. existential instantiation

85. _ _ _ _ _ _ _ _ _ _ rule gives a name to the object where the name must not already belong to another object. **[07S02]**
a. universal quantifier
b. universal instantiation
c. existential quantifier
d. existential instantiation

86. Which is a special case of a process "skolemization" [07S03]
a. universal quantifier
b. universal instantiation
c. existential quantifier
d. existential instantiation

87. Which instantiation can be applied many times to produce many different consequences to a knowledge base [07S04]
a. universal
b. existential
c. predicate
d. propositional

88. Which instantiation have to be applied only once on knowledge base [07S05]

a. universal
b. existential
c. predicate
d. propositional

89. Existential instantiation has to be applied _ _ _ _ _ **times , then the existentially qualified**
sentence is discarded
[07S06]
a. 1
b. 2
c. 3
d. many

90. Universally quantified sentence can be replaced by the _ _ _ _ _ _ _
instantiations.
[07S07]
a. set of all
possible
b. one
c. all
d. two

91. The process of discarding quantified sentences from knowledge base is called _ _ _
_ _
[07S08]
a. inferencing
b. factoring
c. prediction
d. propositionalization

92. For a predicate with n arguments , the subsumption lattice contains _ _ _ _ _ _
nodes
[08D01]
a. O(n)
b. O(n)
c. O(2n)
d. O(2)

93. To unify knows(john,x),knows(x,Elizabeth) sentences _ _ _ _ _ _ _ _ _ _ **concept has to**
be
used .
[08D02]
a. generalized modus ponen
b. standardizing
apart
c. lifting
d. most general unifier

94. Which of the following contains most general unifier
[08M01]
a.
UNIFY(knows(john,x),knows(john,jane))={x/jane} b.
UNIFY(knows(john,x),knows(y,bill))={x/bill,y/john} **c.**
UNIFY(knows(john,x),knows(y,z))={y/john,x/z}
d. UNIFY(knows(john,x),knows(x,elizabeth))=fail

95. UNIFY(employs(x,richard),employs(AIMA.org,y))= _ _ _ _ _ _ _ _ _ _ _
[08M02]
a. {x/richard,y/AIMA.org}
b. {y/richard,x/AIMA.org}
c. {x/employee,y/employer}
d. {y/employee,x/employer}

96. **Lifted inference rules require finding substitutions that make different logical expressions**
look identical.this process is called _ _ _ _ _ _ _ _ _
[08S01]
a. factoring
b. lifting
c. unification
d. identification

97. **In the process of unification , renaming one sentence variables to avoid name clashes is**
known as _ _ _ _ _ _ _ _ _ _ _
[08S02]
a. changing
b. purging apart
c.   standardizing apart

d. lifting apart

98. **Unify algorithm accepts SUBST(θ,p),SUBST(θ,q) as argument to return a nifier for them if**
one exists.the unifier for above sentences is _ _ _ _ _ _ _ _ _ _ _
[08S03]
a. UNIFY(pθ   )=q
b.   UNIFY(θ ,q)=p
c. UNIFY(p,q)=θ
d. UNIFY(θ ,p)=q

99. **UNIFY(knows(john,x),knows(y,bill))=** _ _ _ _ _ _ _ _ _ _ _ _
[08S04]
a. x/bill,y/john

b.   y/bill,x/john
c.   bill/x,john/y
d.   bill/y,john/x

100. **UNIFY(hate(x,y),hate(macus,z))=** _ _ _ _ _ _ _ _ _ _ _ _
[08S05]
a. x/marcus,y/z

b.   y/marcus,x/z
c.   z/marcus,x/y
d.   y/marcus,y/z

101. **Predicate indexing in unification follows** _ _ _ _ _ _ _ _ **concept**
[08S06]
a. cluster indexing
b. tree indexing
c.   hash
indexing
d. secondary indexing

102. **Unifying premise of a rule with a suitable set of facts in the knowledge base is**
called as _ _ _ _ _ _ _ _
a. instantiation
b.   pattern
matching
c. unification
d. pattern lifting

103. **What is considered as a key componenet of production system**
[09D02]
a. rules
b. predicates
c.   rete
networks
d. computer networks

104. A knowledge base is called a fixed point of the inference process when _ _ _ _
_ _
_ _ _ _ _
[09M01]
a. no new inferences are
possible
b. inferences are dynamically added c.
inferencing is possible
d. new predicates are possible

105. Conjunct ordering problem is :
[09M02]
a. find an ordering to solve the conjuncts of the rule premise so that the total
cost is
minimized
b. find an ordering to solve the conjuncts of the rule premise so that the total space is minimized
c. find an ordering to solve the conjuncts of the rule premise so that the total time is minimized
d. find an ordering to solve the conjuncts of the rule cosequent so that the total cost is minimized

106. The data complexity of forward chaining is _ _ _ _ _ _ _ _ _ _ _ _ _
[09M03]
a. linear
b. polynomial
c. exponential
d. quadratic

107. Finding all possible unifiers such that the premise of a rule unifies with a
suitable
set of facts in the knowledge base is known as _ _ _ _ _ _ _ _ _ _
[09S01]
a. Usnification

b. Factoring
c. Psattern
matching
d. Substitution

108. Matching a definite clause against a set of facts is _ _ _ _ _ _ _ _ _ _
[09S02]
a. NP-
hard
b. NP-prase
c. NP-complete
d. NP-incomplete

109. _ _ _ _ _ _ _ _ are used to capture all the partial matches of the rules
avoiding
recomputation
[09S03]
a. and-or graphs
b. or graphs
c. semantic networks
d. rate
networks

110. Which was the first algorithm to address the problems of pattern
matching
[09S04]
a. AO* algorithm
b. Rete
algorithm
c. Rote algorithm
d. A* algorithm

111. Which set contains only relevant variable binding from the goal
information
[09S05]
a. goal set
b. rule set
c. variable set
d. magic
set

112. Space requirements of backward chaining algorithm are _ _ _ _ _ _ _ _
[10D01]
a.
linear
b. quadrtic
c. polynomial
d. exponential

113. Tabled logic programming combines _ _ _ _ _ _ _ _ _ with _ _ _ _ _ _ _
_ _
[10D02]
a. goal directedness of backward chaining , dynamic programming efficiency of
forward
chaining
b. goal directedness of backward chaining , logic programming efficiency of forward chaining
c. logic programming efficiency of backward chaining, dynamic programming efficiency of
forward chaining
d. dynamic programming efficiency of backward chaining, logic programming efficiency of forward
chaining

114. Backward chaining algorithm uses _ _ _ _ _ _ _ of substitution
[10M01]
a. lifting **b.**
composition
c. equality
d. predicate

115. SUBST(COMPOSE(θ_1, θ_2),p)= _ _ _ _ _ _ _ _ _ _ _
[10M02]
a. SUBST(θ_2,SUBST(θ_1,p))
b. SUBST(θ_2,COMPOSE(θ_1,p))
c. COMPOSE(θ_2,SUBST(θ_1,p))
d. SUBST(θ_1,SUBST(θ_2,p))

116. Which paralleism come from the possibility of solving each conjunct in the
body of an implication [10M03]
a. OR parallelism
b. pipelining

c. AND
parallelism
d. materialization

117. Constraint satisfaction problems can be encoded as _ _ _ _ _ _
[10M04]
a. atomic rules
b. ground term
c. unit clauses
d. definite
clauses

118. Backward chaining algorithm is _ _ _ _ _ _ _ _ _ _ _ _
[10S01]
a. hill climbing algorithm
b. generate and test search
c. depth first search
algorithm
d. breadth-first search algorithm

119. Which of the following is a logic programming language
[10S02]
a. LISP
b.
PROLOG
c. PERL
d. PYTHON

120. Which of the following sentences about prolog is not correct
[10S03]
a. PROLOG is logic programming language
b. PROLOG allows negation as failure
c. PROLOG unification algorithm omits "occur check"
d. PROLOG does not include "syntactic sugar" for
list

121. Which of the following sentences about PROLOG is correct
[10S04]
a. PROLOG is functional programming language
b. PROLOG has usage of objects
c. PROLOG equality has full power of logical equality
d. PROLOG includes "syntactic sugar" for list notation and arithmetic
122. What is a 'TRIAL' IN BACKWARD CHAINING ALGORITHM
[10S05]
a. predicate
b. variable
c. function
d. stack data structure
123. Which parallelism come from the possibility of a goal unifying with many different
clauses in the knowledge base
[10S06]
a. OR parallelism
b. pipelining
c. AND parallelism
d. materialization
124. Resolution can produce _ _ _ _ _ _ _ _ _ proofs for existential goals
[11D01]
a. constructive
b. nonconstructive
c. complete
d. clear
125. A clause with n atoms is stored as n different rules.this technique is known as _ _
_ _ _ _ _ _
[11D02]
a. unifying
b. splitting
c. locking
d. factoring
126. The arguments of the skolem function are _ _ _ _ _ _
[11M01]
a. predicates
b. any quantified variable
c. universally quantified variables
d. existential quantifiers
127. First order factoring reduces two literals to one if they are _ _ _ _ _ _ _
[11M02]
a. identical
b. equal
c. unifiable
d. substitutable
128. Propositional factoring reduces two literals to one if they are _ _ _ _ _ _ _ _
[11M03]
a. identical
b. equal
c. unifiable
d. substitutable
129. Completeness theorem for first order logic is stated as _ _ _ _ _ _ _ _ _
[11S01]
a. every sentence is valid
b. every entailed sentence is contingency
c. every entailed sentence has a finite proof
d. every entailed sentence has a resolution
130. Which is the first step in the CNF conversion
[11S02]
a. moving negation inwards
b. implication elimination
c. standardize variables
d. skolemization

131. Skolemization is the process of removing _ _ _ _ _ _ _ _ _ _ [11S03]
a. existential quantifiers by elimination
b. universal quantifiers by elimination
c. implication elimination
d. general variable elimination

132. Removal of redundant literals to the first order case is known as _ _ _ _ _ _ _ _ [11S04]
a. unification
b. substitution
c. factoring
d. resolution

133. Which of the following rule resolves exactly two literals [11S05]
a. resolvent
b. unifiable
c. atomic
d. binary resolution