1. AI definitions can be systematized into 4 categories. Which of the following is NOT one of these categories?
   a) To behave human
   b) to reason rationally
   c) to reason creatively
   d) to behave rationally
2. To pass the Turing test, a computer should be capable of:
   a) navigating in space
   b) natural language processing
   c) automated reasoning
   d) speech synthesis
3. To conduct the Turing Test, we require:
   a) 1 computer 2 humans
   b) 2 computers and 1 human
   c) 2 computers and 2 humans
   d) 3 computers and 1 human
4. The field of AI was established at Dartmouth conference, in the year
   a) 1946
   b) 1956
   c) 1966
   d) 1976
5. Which of the following reasearch topics is NOT in the focus of AI, according to ACM classification?
   a) Machine learning
   b) robotics
   c) computer networks
   d) theorem prooving
6. Which search strategy inserts the newly expanded nodes at the beggining of the *open* list?
   a) Breadth-first search
   b) depth-first search
   c) uniform cost search
   d) heuristic search
7. The biggest weakness of breadth-first search is
   a) it's not optimal
   b) it's not complete
   c) states get repeated
   d) exponential space complexity
8. The time complexity of depth-first search is
   a) O(bm)
   b) O(b^m)
   c) O(bd)
   d) O(b^d)
9. If optimal solution is at depth *d,* which of the following strategies is guaranteed to find this optimal solution?
   a) Depth-first search
   b) depth-limited search with k>d
   c) depth-limited search with k=d
   d) depth-limited search with k<d

10. The asymptotic time complexity of iterative deepening search is
    a) exponential
    b) linear
    c) constant
    d) tractable
11. A search strategy which always finishes in finite time is necessarily
    a) optimal
    b) complete
    c) of linear time complexity
    d) none of the above
12. For each state, heuristic function *h* defines:
    a) the actual cost from the initial state
    b) an estimated cost from the initial state
    c) the actual cost to reach the final state
    d) an estimated cost to reach the final state
13. If the costs are not recorded (*g(n)=0)*, the A* algoritm effectively degenerates to:
    a) breadth-first search
    b) best-first search
    c) uniform cost search
    d) hill-climbing search
14. Let *h1* be the number of displaced squares, and *h2* be the sum of L1 distances do final positions. Most informed optimistic heuristics is
    a) h1(s)+h2(s)
    b) min(h1(s),h2(s))
    c) max(h1(s),h2(s))
    d) max(h1(s),1)
15. Which of the following algorithms has a tractable (at most polynomial) space complexity?
    a) Depth-first search
    b) hill-climbing search
    c) A* search
    d) none of the above
16. In the *open* list we have (a,4),(b,3) and (c,2). Heuristic is h(a) = 1, h(b) =3 and h(c) = 5. Next node to be considered by A* is:
    a) (a,4)
    b) (b,3)
    c) (c,2)
    d) any of the three nodes
17. Let {a,b} → S, succ(a) = {(b,3)} and h(a) = 6, h(b) = 2. Heuristic *h* is definitively
    a) optimistic
    b) not optimistic
    c) consistent
    d) not consistent
18. The purpose of the minimax algorithm is to
    a) minimize the maximal gain
    b) maximize the minimal loss
    c) maximize the minimal gain
    d) minimize the maximal loss

19. Let succ(A) = {B, C}, succ(B) = {D, E}, succ(C)={F,G}, h(D) = -1, h(E) = 2, h(F) = 3, h(G) = 0. What is the minimax value of the MAX node A?
    a) -1
    b) 124
    c) 2
    d) 3
20. With minimax, we need a heuristic function because minimax is of
    a) linear time complexity
    b) linear space complexity
    c) exponential time complexity
    d) exponential space complexity
21. If the value of a heuristic function for a game state for the MAX palyer is negative, then from that state the MIN player will likely
    a) win the game
    b) lose the game
    c) maximize his loss
    d) minimize his gain
22. Algorithm A1 uses heuristics h1 at depth d1, while algorithm A2 uses h2 at depth d2. A1 will more often win over A2 if
    a) h1 > h2
    b) d1 > d2
    c) d1 = d2 && h1 > h2
    d) h1 = h2 && d1 > d2
23. Let β be the current minimax value of a MIN node, and *m* the current minimax value of its child node. Pruning occurs when:
    a) m = β
    b) m <= β
    c) m >= β
    d) none of the above
24. The epistemological commitment of propositional logic is:
    a) that there exist facts that are either true or false
    b) that there exists objects and relations between them
    c) that for each fact we know wheter it's true or false
    d) the same as that of FOL
25. Implication „If Paris is the capital of France, then Rome is the capital of Italy”, under interpretation conformant to the state of world, is:
    a) false
    b) true
    c) inconsistent
    d) satisfiable
26. Which of the following formulae is the logical consequence of formula F?
    a) ~F
    b) ~G
    c) F -> G
    d) G -> G
27. Which of the following is a *term* of first order logic
    a) ~P(x)
    b) ODD(x, add(x,1))
    c) add(x,1)
    d) John

28. The formula Ax(ODD(x) V EVEN(x)) is:
    a) true
    b) consistent
    c) valid
    d) not interpretable
29. The model of the formula ~Ax(PIG(x) -> FLIES(x)) is a world in which
    a) all pigs fly
    b) no pigs fly
    c) some pigs fly
    d) some pigs don't fly
30. What does ├ F→ G mean?
    a) All models of F are models of G
    b) F -> G is a theorem
    c) F -> G is a valid formula
    d) F is the deductive consequence of G
31. Inference rule A→B, A ├ B is sound because the formula (A→B) && A && ┐B is
    a) a theorem
    b) valid
    c) satisfiable
    d) inconsistent
32. With factorization applied whenever applicable, the resolvent of A V ¬B V ¬B and ¬A V B V C is the clause
    a) C
    b) ¬B V C
    c) ¬B V B V C
    d) ¬B V ¬B V B V C
33. In PL, refutation resolution without factorization is
    a) sound
    b) complete
    c) undecidable
    d) inconsistent
34. The most general unifier (MGU) of P(a, x) and P(y, f(y)) is the substitution
    a) {a/y, a/x}
    b) {a/y, x/y}
    c) {a/y, f(a)/x}
    d) {a/y, f(y)/x}
35. The set of support (SoS) strategy is complete. This means that refutation resolution in FOL with SoS will
    a) never terminate to return false
    b) sometimes terminate and return true or false
    c) return true whenever it terminates
    d) always terminate and return true or false