Unit 9 - Week 7

Assignment 7

Due on 2020-03-18, 23:59 IST.

1. Suppose $S_1$ asserts $S_2$ and $S_2$ is unsatisfiable. Then what can be said about $S_1$?
   - Satisfiable
   - Valid
   - Unsatisfiable
   - Not enough information
   No, the answer is incorrect.
   Score: 1 point
   Accepted Answers:
   - Unsatisfiable

2. Suppose $S_1$ asserts $S_2$ and $S_2$ is unsatisfiable. Then what can be said about $S_1$?
   - Satisfiable
   - Valid
   - Unsatisfiable
   - Not enough information
   No, the answer is incorrect.
   Score: 1 point
   Accepted Answers:
   - Satisfiable

3. You are given 19 binary variables and a CNF-clause containing 10 literals - one literal for each variable. How many valuation assignments to the 10 variables are possible which make this clause true?

4. CSAT is an example of which of the following?
   - Solving a single random problem
   - Solving a single random walk
   - Generating a random walk
   - Generating a random walk
   No, the answer is incorrect.
   Score: 1 point
   Accepted Answers:
   - Generating a random walk

5. Which of the following are advantages of DPLL over WalkSAT?
   - WalkSAT cannot tell if the problem is unsat or SAT
   - WalkSAT is not sound (DPLL is sound)
   - None of the above
   No, the answer is incorrect.
   Score: 1 point
   Accepted Answers:
   - None of the above

6. Which of the following statements is/are correct about resolution in propositional logic?
   - If $S$ is a set of clauses that resolve to a clause $C$, then $S$ is unsatisifiable.
   - Under the resolution technique, $P \lor P$ can be resolved to $P$.
   - If $S$ is a set of clauses that contain a clause $C$, then $S$ is unsatisifiable.
   - Resolution is a powerful technique to prove a set of clauses unsatisifiable.
   No, the answer is incorrect.
   Score: 1 point
   Accepted Answers:
   - Resolution is a powerful technique to prove a set of clauses unsatisifiable.

7. Which of the following components of a Knowledge Representation is used to encode the grammar that represents all sentences in the language?
   - Ambiguities
   - Knowledge Base
   - Syntax
   - Inference Engine
   No, the answer is incorrect.
   Score: 1 point
   Accepted Answers:
   - Ambiguities

8. Find the first assignment to the following CNF formula using model enumeration technique with MINISAT heuristic. Resolve clauses in selection using lexicographic order of variables and in the assignment using true over false. Report the answer as s = [1100] if s is true, false otherwise.

   $$\neg x_1 \lor \neg x_2, x_1 \lor \neg x_2, x_2 \lor \neg x_3, x_1 \lor \neg x_3, x_2 \lor \neg x_3$$

No, the answer is incorrect.
Score: 1 point
Accepted Answers:
- Type String 1100

9. Consider the following set of clauses. If $n$ is the number of all literals and $y$ is the number of pure literals then find the value of $10y$.

   $$\neg d_4 \lor \neg d_5, \neg d_4 \lor \neg d_6, \neg d_4 \lor \neg d_7, \neg d_4 \lor \neg d_8, \neg d_4 \lor \neg d_9$$

No, the answer is incorrect.
Score: 1 point
Accepted Answers:
- Type String 20

10. Which of the following statements are correct about WalkSAT?
   - The number of clauses satisfied increases by at least one in every move.
   - It is guaranteed to make one false clause true in every move.
   - It is asymptotically complete.
   - It iterates over all variables to find the best clause to turn.
   No, the answer is incorrect.
Score: 1 point
Accepted Answers:
- If it is guaranteed to make one false clause true in every move.
- It is asymptotically complete.