(a) Suppose we have the propositional symbols $P_1, P_2, \ldots, P_n$, where $n > 2$, and consider the set of clauses
\[
\{\neg P_1, P_2\}, \{\neg P_2, P_3\}, \ldots, \{\neg P_n, P_1\}.
\]

(i) List the satisfying interpretations (if any) of this set of clauses, with brief justification. [3 marks]

(ii) Regarding the set of clauses above as a single propositional formula, and using the variable ordering $P_1, P_2, \ldots, P_n$, sketch the corresponding BDD. Does the choice of variable ordering here significantly affect the size of the resulting BDD? [5 marks]

(iii) Briefly describe the set of clauses that would be generated by a resolution theorem prover, starting with the set of clauses above. [3 marks]

(b) For the following set of clauses, either exhibit a model, or show that none exists using resolution. Below, $a$ and $b$ are constants, while $y$ and $z$ are variables.
\[
\{P(a, f(a)), P(a, b)\}
\{P(a, f(a)), \neg P(z, b), P(z, f(a))\}
\{\neg P(a, f(a)), P(g(y), f(a)), \neg P(a, y)\}
\{\neg P(a, f(a)), \neg P(g(y), f(a)), \neg P(a, y)\}
\]

[9 marks]