NP HW5

12. Boolean Formula e.g.

$((A \wedge (\bar{B} \wedge T)) \vee (\bar{A} \wedge C)) \wedge ((B \wedge \bar{C}) \vee F)$

a)

```
Satifiable(H)   H ⇒ Yes / No
Safitute(H, x, v)   V

    text ← test(0, 1, n)
    for(bool in text){
      for(x in all){          // all are elements in n
        if(bool[i] == 1)
            substitute(H, x, true)
        else
            substitute(H, x, false)
        if(satisfiable(H)){ return bool}
        i++
      }
    }
```

b) $N_o.bool = 2^n$

$O(n) \Rightarrow O(2^n n^{(r+y)})$

13 a) satisfiable_num( ){

```
while (k<=n && kz=0){
    if (satisfiable_num(H,k));
        optimal = k
}
bool = test(0,1,n,k)
  for (bool in test)
    for (X in variables)
      if (bool[i] = 1)
        substitute(H, X, true)
      else
        substitute(H, X, false)
      if (satisfiable(H) return(bool)
  itr
```

(b) $O(i \cdot n^r + n!(n)^{r+2}) = O(n! \cdot n^{(r+2)})$