1.

1. Since the individual domain is not proposed in this question, the total individual domain is used.
   * assume M(x) : x is a people.
   * assume F(x) : x with black hair.
   * Propositional symbolization as x(M(x)⇒F(x)) .
   * assume a is a girl with blonde hair, then M(a) is true,F(a) is false.
   * so M(a)⇒F(a) is false,
   * Therefore Propositional is false.
2. assume G(x) : x boarded the moon.
   * Propositional symbolization as x(M(x)∧G(x)).
   * assume a is an American who completed the Apollo program on the moon in 1969.
   * so M(a)∧G(a) is true.
   * Therefore Propositional is true.
3. assume H(x) : x boarded the Jupiter.
   * Propositional symbolization as ￢x(M(x)∧H(x)).
   * No one has boarded Jupiter so far.
   * assume anyone is a,then M(a) ∧H(a) of all is false.
   * Therefore x(M(x)∧H(x)) is false.
   * so Propositional is true.
4. assume F(x) : x is a student studying in the US.
   * G(x) : x is Asian.
   * Propositional symbolization as ￢x(F(x)⇒G(x)).
   * Therefore Propositional is true.

2.

1. tautology : just Replacement instance p⇒(q⇒p)
2. contradiction: just Replacement instance ￢p⇒(q⇒p)
   * explain 1:Individual domain N,F(x):x>5,G(x) : x>4, formula is true.
   * explain 2: Individual domain N,F(x):x<5,G(x) : x<4, formula is false.
   * in conclusion:Non permanent satisfaction
3. FTTTF

4.

1. ∀ x Even(x) ⇔ ∃ y x=y + y.
2. ∀ x Prime(x) ⇔ ∀ y, z x=y ×z ⇒ y =1 ∨ z =1.
3. ∀ x Even(x) ⇒ ∃ y, z Prime(y) ∧ Prime(z) ∧ x=y + z.