Task 1:

1. R (A, B, C, D)
   F = {AB → C, D → C}
   i. AB → C, D → C, then ABD → C

      Minimal Key: ABD
      Derivations: A(B,D), B(A,D)
      Normal Forms: 1NF

   ii. A, B, D → C
      Checking 2NF: LHS is a proper subset of some minimal key
      Checking 3NF: Non-trivial, LHS is not a superkey, RHS contains a non-key attribute
      Checking BCNF: Non-trivial, LHS is not a superkey
      Therefore, 1NF

2. R (A, B, C, D)
   F = {AB → C, AB → D, D → C}
   i. AB → C, AB → D, then AB → CD
      AB → CD, D → C, then AB → C

      Minimal Key: AB
      Derivations: A(B,C), B(A,C)
      Normal Forms: 2NF

   ii. A, B → C
      A, B → C
      D → C
      Checking 2NF: Check if LHS is a proper subset of some minimal key or if RHS are not all key attributes.
      Checking FD: A, B → C
      Checking FD: A, B → D
      Checking FD: D → C

      Checking 3NF: Non-trivial, LHS is not a superkey, RHS contains a non-key attribute

      Checking BCNF: D → C is non-trivial and LHS is not a superkey
      Therefore, 2NF

3. R (A, B, C, D)
   F = {A → B, A → C}
   i. A → B, A → C, then A → BC

      Minimal Key: A
      Derivations: A(B,D), B(A,D)
      Normal Forms: 1NF

   ii. A → B
      Checking 2NF: LHS is a proper subset of some minimal key
      Checking 3NF: Non-trivial, LHS is not a superkey, RHS contains a non-key attribute
      Checking BCNF: Non-trivial, LHS is not a superkey
      Therefore, 1NF