Ex. 1

*Draw a pedigree based on the information below*

This is the story of Joan and James Williams. When James proposed marriage to Joan he explained to her that he was a carrier of the sickle cell gene. Joan who was, a biology teacher and knowledgeable in the area of Mendelian genetics was not worried about their future offspring because she knew she was not a carrier.

Three beautiful children were born to Joan and James. Their first born was a girl, Elena, followed by two precocious boys, Willie and Keith. Although Joan was not worried about the presence of sickle cell disease, she insisted on having all her children tested merely because her husband was a carrier. The results from the blood test indicated that Joan had given birth to three carriers.

Elena followed in her mother’s footsteps and became a biology teacher. She too insisted that her husband Eric Jackson be tested for the presence of the sickle cell gene. Fortunately, Eric’s test showed the DNA sequence for normal hemoglobin.

Keith’s wife, Marsha was tested. Her results indicated she was a carrier like Keith. When Joan found out about Marsha, she advised them to talk extensively with a genetic counselor before starting a family. However Marsha’s strong belief in the family caused her to ignore her mother- in law’s advice. She simply wanted to have children, and she did, Cedric, Jeff and Nita. Unfortunately her oldest son was born with sickle cell disease, her middle child was a carrier, and the baby girl was normal.

Elena and Eric had decided to wait before starting a family, because they wanted to become financial secure and stable. After seven years of marriage they decided to start a family. Over the next six years they were blessed with four children. Nya, their oldest came into the world with normal hemoglobin, Eric Jr. and baby Shenita were both carriers, and the second son, Jason, was normal.

Ex.2

*Draw a pedigree based on the information below.*

Bob is 30 and Ann is 23. Ann is currently 3 months pregnant. Bob and Ann come to you for genetic counseling concerning their risk of having a child with Duchenne muscular dystrophy seen in other family members. Tom (Ann’s youngest brother) is diagnosed by Duchenne muscular dystrophy in 4 years of age. Ann and Tom have the same biologic mother but other fathers. Ann’s mother (Stracy) divorced when she was 6 years of age. Stacy was married again to Peter. They have one son (Tom) whose is affected by Duchenne muscular dystrophy. They have also an adopted dizygotic’s twins (Mark and Betty). While Ann is a young women. She want to have a baby on the one side but on the another side she afraid that a history will be recur. In this situation a couple going to you for a genetic counseling. Testing of the Stracy’s family showed that her older brother Greg was affected. A men deceased at 17 of lung pneumonia. Stracy younger siblings: other brother – Andrew who is infertility and her sister –Rose are unaffected. Rose and her husband have five boys (all healthy), but Rose had one prior spontaneous abortion (SAB). Ann’s grandparents are alive and well in their 70’s. All of grandmother other deceased siblings were unaffected. Because Ann’s mother has a carrier genotype the probability that Ann has the same genotype is higher (the chance 50%). Fortunately Ann’s testing showed that she is healthy.
Determine the most likely mode of inheritance (Ex 3 - 6)

Ex. 3

Ex. 4

Ex. 5
Ex. 6

Ex. 7
Complete a pedigree of this family. Indicate affected individuals in this way that the pedigree shows a paternal imprinting.