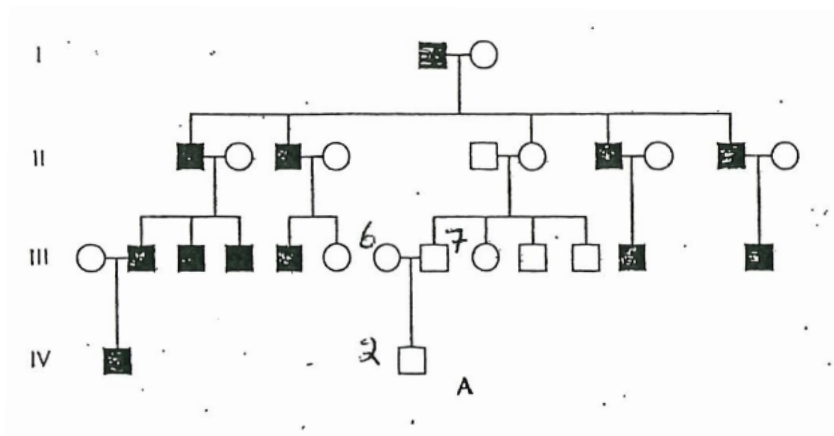


1.

- a Give a mode of inheritance: **Autosomal recessive (AR)**
- b Justify why that mode: **two instances of unaffected individuals having affected offspring, few individuals overall affected.**
- c Give the genotypes of

III-1 : **Aa**IV-1 : **Aa/AA**IV-4 : **aa**III-2 : **Aa**IV-3 : **aa**

- d Risk to III 1x2 of having an affected child: **both are heterozygous, assuming Mendelian: 25%**

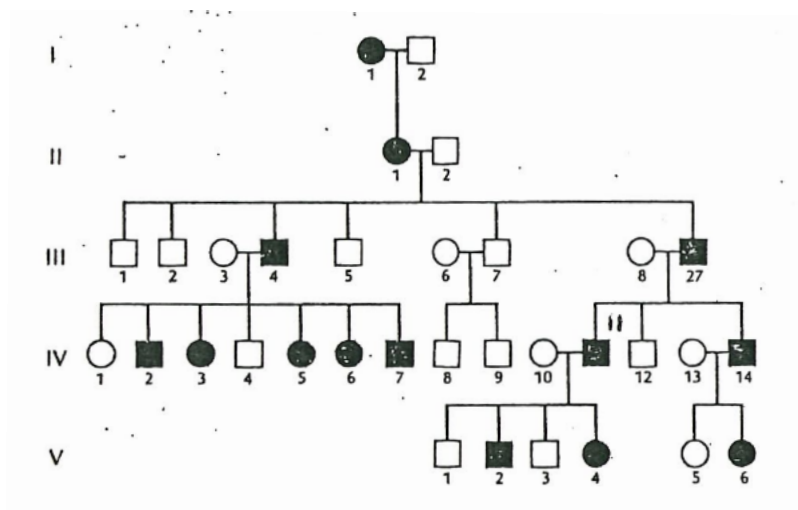


2.

- a Give a mode of inheritance: **Y-linked dominant (XD)**
- b Justify why that mode: **All affected fathers pass the disease to all sons, no father to daughter transmission.**
- c Give the genotypes of

III-6 : **XX/Xx/xx**III-7 : **yX/yx**IV-2 : **yX,Yx**

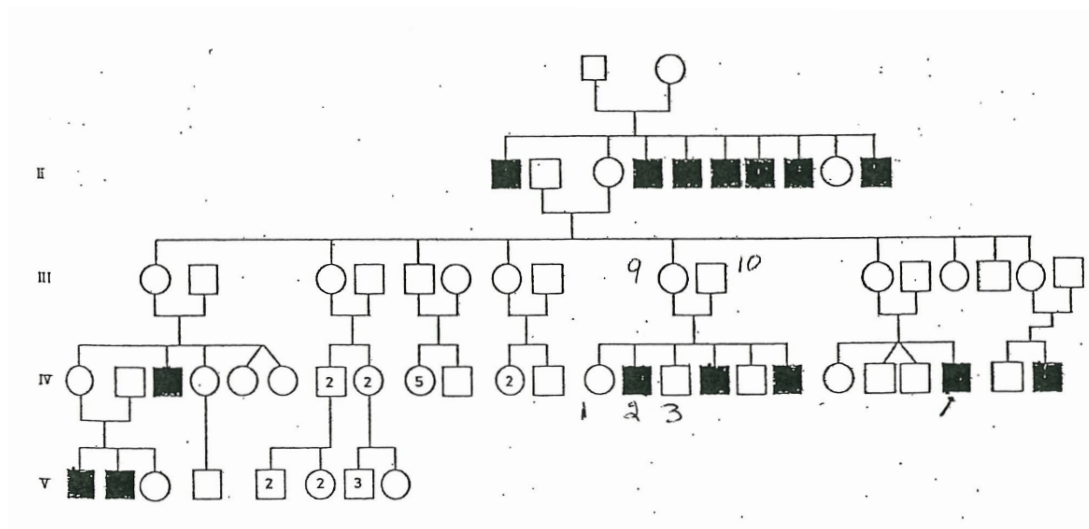
- d Risk to III 6x7 of having an affected child: **0%**



3.

- Give a mode of inheritance: **Autosomal dominant (AD)**
- Justify why that mode: **All affected individuals have a parent that is affected.**
- Give the genotypes of

IV-8 : **aa** IV-10 : **aa** IV-11 : **Aa**
- Risk to IV 10×11 of having an affected child: **Aa×aa = 50%**

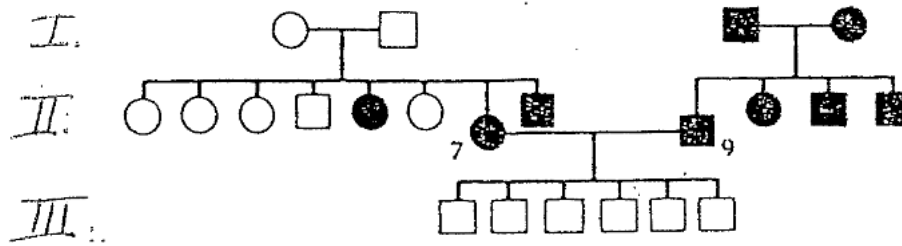


4.

- Give a mode of inheritance: **X-linked recessive (XR)**
- Justify why that mode: **Only males affected, but females can be carriers (and small chance to be affected, but none seen here).**
- Give the genotypes of

III-9 : **Xx** IV-1 : **Xx/XX** IV-3 : **YX**

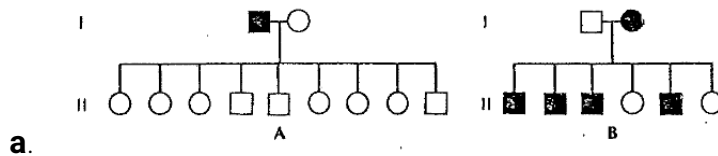
III-10 : **YX** IV-2 : **Yx**
- Risk to III 9×10 of having an affected child: **M: 50% F-carrier: 50%**

Extra Credit

a Explain this pedigree: **Due to gene complementation; $AAbb \times aaBB$.**

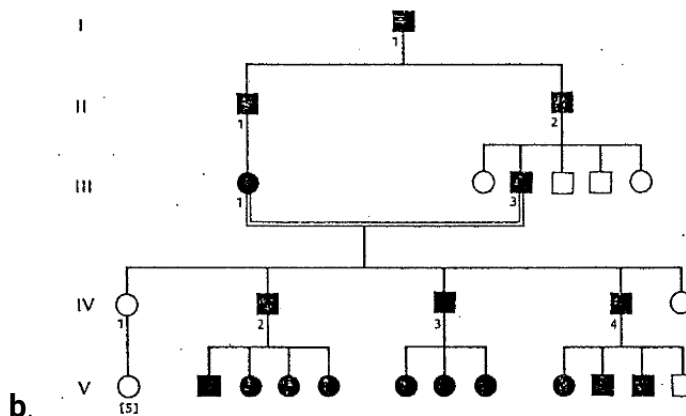
b Genotype of a child in III: **$AaBb$ (carriers)**

5. Give the mode of inheritance for the following pedigrees: (Assume the traits are rare)



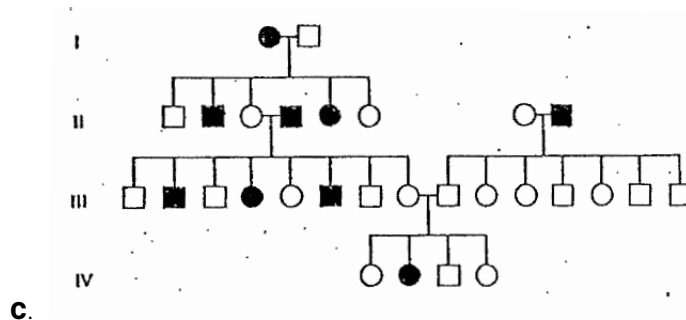
a.

▷ **X-linked recessive**



b.

▷ **Autosomal dominant**



c.

▷ **Autosomal recessive + autosomal dominant**