NAME____KEY_____

Circle the best answer for each question:

Assume simple dominance and independent assortment in a cross between the following individuals $Tt Gg Ii Ff \times TT Gg II ff$ (3 points each)

1. The probability that the $Tt\;Gg\;Ii\;Ff$ parent will produce a gamete containing all four recessive alleles is

- a. 3/4 c. 1/4 b. 1/2 **d**. 1/16
 - **d**. 1/16 e. 1/32

2. The expected frequency of the offspring genotype $Tt \ Gg \ II \ Ff$ is

- a. 3/4 c. 1/4
- b. 1/2 d. 1/16 e. 1/32
- 3. The probability of obtaining an offspring with the dominant phenotype for all 4 traits is a. 3/4 c. 1/4
 - a. 3/4 c. 1/4 b. 1/2 **d**. 3/8
- e. 1/16
- 4. Which of the following is always true of homologous chromosomes (4 points)
 - a. they carry identical alleles at all loci
 - b. they are separated during mitosis
 - c. they undergo synapsis during anaphase 2 of meiosis
 - d. they determine the sex of their bearer

e. they carry genes for the same traits

5. A Woman with ABO blood type AB marries a man who also has ABO blood type AB. What is the probability that their first child will be a boy and have blood type B? (4 pt) **SHOW YOUR WORK** $I^A I^B$

 I^{A} $I^{A} I^{A} I^{A} I^{B}$ P[type B] = 1/4, P[boy] = 1/2 I^{B} $I^{A} I^{B} I^{B} I^{B}$ P[type B and boy] = 1/4 * 1/2 =**1/8**

6. In plants, leaf length is determined by additive effects of a large number of gene loci. This kind of inheritance is an example of: (4 pt)

- a. co-dominance
- b. polygenic inheritance
- c. multiple alleles per locus
- d. non-homology of chromosomes
- e. none of the above
- 7. Which of the following is true concerning sex chromosomes (4 pt)
 - a. plants do not have sex chromosomes
 - b. in animals with ZW sex determination both sexes are heterogametic
 - c. human males are hemizygous for traits on the X chromsosome
 - d. conditions due to defects on the Y chromosome are equally common in males and females
 - e. none of these is true