1. Landsteiner performed an experiment in which he injected the haptens *levo-dextro-* and *meso-*tartaric acid which had each been individually conjugated to carrier protein into three separate rabbits. After an appropriate interval, he collected antiserum from each individually immunized animal. He then mixed each of these antisera with *levo-dextro-* and *meso-*tartaric acid conjugated to a different carrier protein and recorded whether he saw formation of precipitate. When he mixed *dextro-*tartaric acid with antiserum from a rabbit immunized with *meso-*tartaric acid, he saw the formation of precipitate. What does this suggest?
   a. There was no antibody present in the antiserum.
   b. The antibodies from the *meso-*tartaric acid antiserum were able to cross react with *dextro-*tartaric acid hapten.
   c. Antibodies against *dextro-*tartaric acid can also recognize *meso-*tartaric acid.
   d. The *meso-*tartaric acid antiserum contains antibodies that only recognize the carrier protein.
   e. Antibodies from the *meso-*tartaric acid antiserum ONLY recognize *meso-*tartaric acid and cannot recognize and bind any other isoforms.

2. Which of the following cell types differentiates from a common lymphoid progenitor stem cell?
   a. Erythrocytes
   b. Mast cells
   c. Monocytes
   d. B cells
   e. Thrombocytes

3. Which if the following statements is FALSE regarding common myeloid progenitor stem cells?
   a. They are totipotent
   b. They can differentiate to form red blood cells
   c. They can differentiate to form granulocytes
   d. They give rise to cells important for the innate immune response
   e. All the above statements are true

4. Which of the following is/are an example of primary lymphoid tissue?
   a. The bursal equivalent
   b. Lymph nodes
   c. Thymus
   d. A and B are correct
   e. A and C are correct

5. Which of the following is the most predominant form of granulocyte?
   a. Neutrophils
   b. Basophils
   c. Eosinophils
   d. T lymphocytes
6. Which of the following cells are main effectors of cell-mediated immunity as part of the adaptive immune response?
   a. B lymphocytes
   b. T lymphocytes
   c. Macrophages
   d. Neutrophils
   e. Mast cells

7. Heart valves from pigs are sometimes used in human valve replacement procedures. This is an example of a(n):
   a. Isograft
   b. Allograft
   c. Idiograft
   d. Xenograft
   e. Myellograft

8. C.C. Little performed a series of experiments involving allografts between mice of similar or different genetic background. These experiments allowed him to predict the genetic rules that governed transplantation success when F2 mice receive Parental (P) donor tissue using the formula $f = (3/4)^n$. What does $f$ represent?
   a. The number of tissues grafted from one individual to another
   b. The frequency of survival of the grafted tissue
   c. The frequency of rejection of the grafted tissue
   d. The frequency of segregating genes that contribute to graft survival
   e. The number of generations the mice were inbred

9. Which of the following molecules is most likely NOT immunogenic?
   a. DNA
   b. Antibodies
   c. Hapten
   d. Carrier protein
   e. Haptenated protein

10. If two mouse strains are congenic to one another, the major known difference between these strains is:
    a. A very small region of a chromosome
    b. A single locus
    c. Passenger loci
    d. One pair of chromosomes
    e. They are genetically identical