1) Select the group of traits that most often characterize the genetic marker:
a) it is a monomorphic variant that does not exhibit mendelian inheritance and can be identified exclusively in adults
b) it is a polymorphic variant that shows mendelian inheritance and can be identified at any developmental stage of the individual
c) it is a monomorphic variant which exhibits mendelian inheritance and can be identified at any developmental stage of the individual

2) Identify the types of markers that are currently most commonly used in livestock to assess diversity status:
a) single nucleotide polymorphisms (SNP markers)
b) microsatellites (STR markers)
c) isoenzymes

3) Select the indicators that are most frequently evaluated with regard to the state of genetic diversity in livestock populations:
a) effective population size and recombination rate in the genome
b) inbreeding coefficient and effective population size
c) inbreeding coefficient and mutation rate in the genome

4) Which factors determine the degree of genome autozygosity? (select the correct answer):
a) the level of genome autozygosity depends mainly on the age structure of the population
b) it is a process that is not influenced by any external factor
c) the level of genomic autozygosity depends mainly on the intensity of inbreeding and artificial selection

5) What value of the increase in inbreeding per generation (ΔF) should not be exceeded in small populations in order to avoid a significant loss of genetic diversity and to avoid negative impacts on their long-term sustainability? (select the correct answer):
a) 0.01 %
b) 0.1 %
c) 1 %

6) Indicate the correct definition of effective population size:
a) It is a group of individuals within a population with different origin whose crossing will lead to an increase in the degree of relatedness
b) It is a group of individuals within a population that cannot be crossed
c) It is a group of individuals within a population that are reproductively active and provides offspring to the next generation

7) Select the correct statement:
a) The genetic diversity of a population will not significantly decrease if its effective population size is lower than 100 individuals
b) The genetic diversity of a population will decrease if its effective size is less than 100 individuals, and in terms of long-term survival, the effective population size should be 500 individuals
c) The long-term survival of a population does not depend on the number of individuals in the population

8) Select the correct statement:

a) To express genetic relatedness, molecular genetic analysis uses the following indices: mean number of alleles and heterozygosity

b) To express genetic relatedness, molecular genetic analysis uses the following indices: Wright's F_{ST} index and Nei's genetic distances

c) Heterozygosity is considered to be a basic indicator of the genetic relatedness of populations

9) Wright's F_{ST} fixation index can take a range of values (select the correct answer):
a) 0 to 1
b) -1 to 1
c) -1 to 0

10) Select an approach that can be used to evaluate the impact of selection on the structure of the livestock genome?
a) based on phenotypic correlations
b) based on the heritability coefficient for a given phenotypic trait
c) based on the distribution of runs of homozygosity (ROH) in the genome