1. a. Briefly discuss each of the following terms used in breeding:

   i) Heterosis ii) Test Cross iii) Homozygote iv) Heredity

   v) Complete Dominance

   (15 Marks)

   b. What is the purpose of animal selection in breeding and discuss the different types of selection that can be done. (5 Marks)

2. a. Briefly discuss the term cross breeding. State its primary advantages. (5 Marks)

   b. Write brief notes on the following breeding schemes.
   i) Two-Breed Cross
   ii)Two-Breed Rotational Cross
   iii) Static terminal sire (15 Marks)

3. Artificial Insemination is a technology that involves accessing superior semen from any place in the world, collecting the semen, determining the number of sperm cells per unit volume of semen, dilution with suitable media and use as fresh semen or storage for future use.

a) Briefly highlight the justifications of opting for artificial insemination over and above the conventional method of mating. (10 Marks)

b) Discuss the merits and the potential demerits of artificial insemination. (10 marks)

4. a. Discuss the term phenotypic variation. Give and explain the factors that cause phenotypic variation in farm animals. (10 Marks)

   b. Define the term qualitative traits and give examples of these traits. (5 Marks)

   c. Discuss the features of qualitative traits. (5 Marks)

5.

	Polled –Black			Horned-Red
P	PPBB	X		ppbb

F1 PpBb (All Polled and Black)

a.i) What type of gene interaction is demonstrated in this example. (2 Marks)

ii) If the F1 generation is mated amongst themselves what is the resulting genotype and phenotype of the F2 generation. (4 Marks)

iii) What type of inheritance is demonstrated in this example? (2 Marks)

iv) Explain giving examples two other types of gene interactions that you know.

(2 Marks)

b.i) Define the term Purebreeding (2 Marks)

ii. Differentiate between Inbreeding and Linebreeding. (8 Marks)