



Department of Genetic Engineering and Biotechnology
Faculty of Health and Life Sciences
B. Sc. (Hons.) in Genetic Engineering and Biotechnology
Final Examination Summer 2026

Course Code: 0512-2105

Course Title: Animal Breeding

Level and Term: L-2, T-1
Time: 02 Hours

Section 252 (A+B)

Course Teacher's Initial: KMH + SBN
Total Marks: 40

Answer the following questions:

- | | Marks |
|---|-------|
| 1. (a) Elaborate the guidelines for the use of biotechnology in the development of animal breeding programs. [CLO2, PLO2, C6] | 3.0 |
| (b) List the major methods of selection used in farm animals and briefly discuss any three suitable selection methods. [CLO1, PLO2, C4] | 5.0 |
| 2. (a) Define Embryo Transfer (ET) and briefly discuss the major steps involved in ET technology, highlighting its advantages, limitations, and applications. [CLO1, PLO2, C6] | 4.0 |
| (b) Demonstrate an overview of the <i>in vitro</i> fertilization (IVF) process and illustrate the complete IVF workflow with a suitable diagram. [CLO3, PLO2, C2] | 4.0 |
| 3. (a) Illustrate the techniques of artificial insemination (AI) in farm animals with suitable diagrams. What are the major applications of AI? [CLO3, PLO2, C2] | 5.0 |
| (b) State the principles of semen collection using an artificial vagina (AV). Briefly describe and illustrate the procedure for semen collection from a bull using an assembled AV. [CLO3, PLO2, C4] | 3.0 |
| 4. (a) Provide an overview of bull semen processing, including collection, evaluation, dilution, and preservation, with the help of necessary diagram. [CLO1, PLO2, C5] | 4.0 |
| (b) Define cloning and list its major types, applications, advantages, limitations, and ethical concerns. Illustrate the labelled steps of the Somatic Cell Nuclear Transfer (SCNT) process with a suitable diagram. [CLO3, PLO2, C1] | 4.0 |
| 5. (a) Provide an overview of the major methods used for pregnancy diagnosis in farm animals, with the help of suitable diagrams. [CLO3, PLO2, C6] | 4.0 |
| (b) Illustrate and briefly discuss the major factors influencing fertility in farm animals. [CLO3, PLO2, C2] | 4.0 |