BINDURA UNIVERSITY OF SCIENCE EDUCATION
FACULTY OF AGRICULTURE AND ENVIRONMENTAL SCIENCE

AGA407

Department of Animal Science
BSc Agricultural Science Part IV Examination
Livestock Improvement

3 HOURS (100 Marks)

INSTRUCTION: Answer any **FOUR** questions. Each question carries **25 marks**

1. Explain the following terms:

   a) Breeding value. [5 marks]

   b) Genetic gain. [5 marks]

   c) Correlated Response. [5 marks]

   d) Selection intensity. [5 marks]

   e) Breeding Scheme. [5 marks]

2. Discuss factors that affect response to selection. [25 marks]

3. Discuss the advantages and disadvantages of the following multiple trait selection methods,

   a) Selection index. [5 marks]

   b) Tandem Method. [5 marks]

   c) Independent culling. [5 marks]

   d) Correlated response. [5 marks]

   e) Mental index. [5 marks]

4.

   a) Explain the pierces of information required to construct a selection index.

   [5 marks]

   b) Given the following data, construct an appropriate selection index: [20 marks]

   Trait 1 FCE has an economic weight, $a1 = 0.34$. trait 2 ADG has an economic weight, $a2 = 18$.

   Additive genetic variance, V_A for FCE = 0.03. Phenotypic variance for FCE, $V_P = 0.06$

   V_A for ADG = 4.5, and V_P for AGD = 7.5. Additive genetic covariance between the 2 traits is -0.1, and phenotypic covariance between the two traits is -0.4.

5. Describe how you would set up a Group Breeding Scheme for the genetic improvement of village chicken for meat and egg production. **[25 marks]**

6. Discuss the following selection schemes in terms of meaning, procedure, advantages and disadvantages:

    a) On farm performance testing scheme. **[15 marks]**

    b) Central performance testing scheme. **[10 marks]**

End of Paper