BINDURA UNIVERSITY OF SCIENCE EDUCATION

SCIENCE & MATHEMATICS EDUCATION DEPARTMENT

DipScEdSc

HEREDITY AND GENETICS (DB004/BZ005)

EXAMINATION
2 HOURS (100 MARKS)

JUN 2024

INSTRUCTIONS TO CANDIDATES

Answer FOUR questions. You MUST answer QUESTION 1 (Section A) and any THREE questions from Section B. Each question carries 25 MARKS. Where a question contains sub-divisions, the mark value of each sub-division is given in brackets. Illustrate your answer where appropriate with large clearly labelled diagrams. You should not spend more than thirty minutes on each question.

SECTION A (COMPULSORY)

1. (a) In pea plants alleles for purple colour and cut leaves are dominant to alleles for green stems and uncut leaves . Using a genetic diagram show genotypes and phenotypes of the progeny produced after crossing two plants heterozygous for purple colour and cut leaves (15)

   (b)Explain advantages and disadvantages of crossbreeding (10)

SECTION B

2. Describe the events that occur at each stage of meiosis.
3. Write short notes on any **FIVE** of the following:
   (a) Natural selection. (5 marks)
   (b) Hierarchy of dominance. (5 marks)
   (c) Transformation experiment. (5 marks)
   (d) Biological significance of mitosis. (5 marks)
   (e) DNA packaging into chromosomes. (5 marks)
   (f) Genetic code. (5 marks)
4. Discuss deviations from Mendelian principles.
5. Give a detailed account of the structure of DNA.
6. Write an essay on the different types of RNA and their roles in protein synthesis.

END OF EXAMINATION QUESTION PAPER