

BINDURA UNIVERSITY OF SCIENCE EDUCATION
BIOLOGICAL SCIENCES DEPARTMENT
BScBZH/ HBSsc/ BScEd

EXAMINATION: GENETICS (BZH 107)

TIME: 2 HOURS

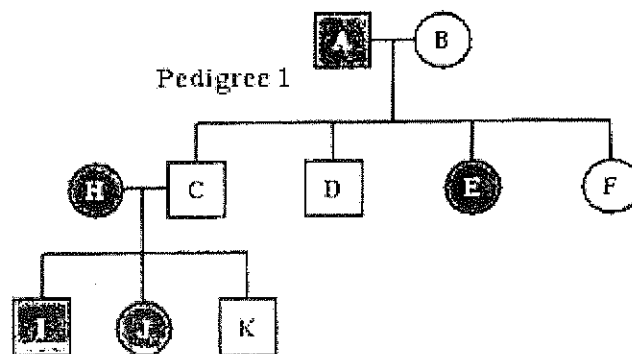
JAN 2025

INSTRUCTIONS

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 subdivisions, the mark value of each sub division is given in brackets. Illustrate your answers where appropriate with large, clearly labelled diagrams. You should not spend more than thirty minutes on each question.

SECTION A (COMPULSORY)

1. Provided is a pedigree diagram showing the inheritance of the polydactyl trait in human beings. The dark shapes show individuals expressing the trait and the clear shapes show individuals not affected. Use the letters 'R' and 'r' to refer to the allele for the trait.



- a) Describe the possible mode of inheritance of the character shown in the diagram. [8]
- b) Give the possible genotypes of H, C, I, J and k. [10]
- c) Describe Mendel's laws of inheritance. [7]

SECTION B

2. Give an account of chromosomal mutations. [25]
3. Write an essay on sex determination. [25]
4. Explain any five common deviations from Mendelian inheritance patterns. [25]
5. Write short notes on any **FIVE** of the following:
 - a) DNA polymerase III [5]
 - b) Chargaff rules [5]
 - c) Semiconservative replication [5]
 - d) Okazaki fragments [5]
 - e) Transforming principle [5]
 - f) Flow of genetic information [5]
6. Discuss gene-environment interaction using examples. [25]

END OF EXAMINATION QUESTION PAPER