



**UNIVERSITY OF RUHUNA – FACULTY OF ALLIED HEALTH SCIENCES**  
**DEPARTMENT OF PHARMACY**  
**FOURTH BPHARM PART II EXAMINATION – OCTOBER/NOVEMBER 2022**  
**PH 4231 MOLECULAR GENETICS – SEQ**

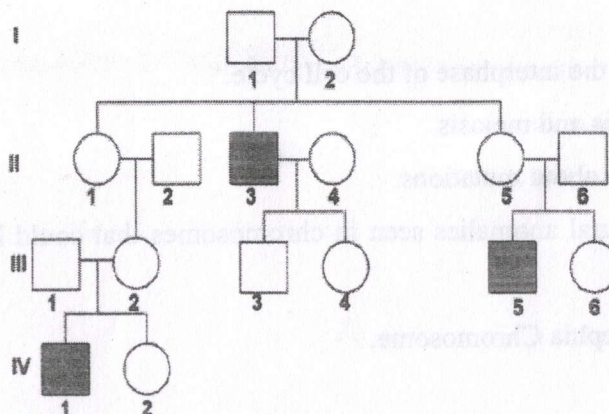
**TIME: TWO HOURS**

**INSTRUCTIONS**

- There are **four** questions in part A and B in this SEQ paper.
- Answer all questions.
- No paper should be removed from the examination hall.
- Do not use any correction fluid.
- Use illustrations where necessary.

**PART A**

- 1.1. List three importance of pedigree analysis. **(15 marks)**
- 1.2. “Multiple alleles” is an example for deviations from Mendel's Law of Inheritance. Briefly explain this phenomenon using an example. **(20 marks)**
- 1.3. What is a karyogram? **(10 marks)**
- 1.4. Name three genetic disorders that can be identified using karyotyping. **(15 marks)**
- 1.5. The below pedigree shows the inheritance of colour blindness in a family. Colour blindness is a X-linked recessive trait ( $X^b$ ). The allele for normal vision is dominant and is represented by  $X^B$ .



- 1.5.1. What are the genotypes of the founding parents and their F1 off springs? **(20 marks)**
- 1.5.2. Is the mother of the colour blind boy in the generation 4, a colour blind person, a carrier or a person with normal colour vision? **(10 marks)**

1.5.3. Who has the same Y chromosome as the I-1 male? Give all correct answers.

(10 marks)

2.

2.1. What is meant by “gene expression”?

(05 marks)

2.2. List three functions of “General transcription factors (GTFs)” in eukaryotic transcription.

(15 marks)

2.3. Describe the “Transcription” process that occurs in prokaryotes.

(30 marks)

### PART B

2.4. Write short notes on

2.4.1. Mitochondrial genetic disorders

(25 marks)

2.4.2. Consanguinity and its effects

(25 marks)

3. “Bacterial sexual processes are not so regular”.

3.1. State three bacterial sexual processes.

(15 marks)

3.2. Briefly describe any two processes mentioned in 3.1.

(40 marks)

3.3. State four differences between prokaryotes and eukaryotes.

(20 marks)

3.4. Briefly explain genetic code.

(25 marks)

4.

4.1. Briefly explain the interphase of the cell cycle.

(20 marks)

4.2. Compare mitosis and meiosis.

(10 marks)

4.3. Briefly mention about mutations.

(40 marks)

4.4. List five structural anomalies seen in chromosomes that could lead to genetic disorder.

(10 marks)

4.5. State on Philadelphia Chromosome.

(20 marks)

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