



**UNIVERSITY OF RUHUNA – FACULTY OF MEDICINE**  
**ALLIED HEALTH SCIENCES DEGREE PROGRAMME**  
**FOURTH BPHARM PART II EXAMINATION – JULY 2016**  
**PH 4231 MOLECULAR GENETICS (SEQ)**

**TIME: TWO HOURS**

**INSTRUCTIONS**

- Answer **all** questions.
- No paper should be removed from the examination hall.
- Do not use any correction fluid.
- Use illustrations where necessary.

1. Microbial genes are expressed its function by the process of transcription and translation.
  - 1.1. Briefly describe the transcription and translation process seen in the prokaryotes. (20 marks)
  - 1.2. Briefly describe,
    - 1.2.1. Repressible gene (10 marks)
    - 1.2.2. Inducible gene (10 marks)
    - 1.2.3. Catabolic repression (10 marks)
  - 1.3. Describe the term operon. (20 marks)
  - 1.4. Briefly describe the process of genetic recombination. (30 marks)
  
2. Bacterial sexual reproduction involves different complex processes.
  - 2.1. List three main bacterial sexual reproductive processes. (10 marks)
  - 2.2. Describe each process briefly. (30 marks)
  - 2.3. Briefly describe the term "Hrf Conjugation". (20 marks)
  - 2.4. Briefly describe the term "Interrupted mating". (20 marks)
  - 2.5. Briefly describe the term "F-Prime". (20 marks)
  
3. Alteration of the genetic sequence of DNA causes genetic disorders.
  - 3.1. List five main categories of genetic disorders. (10 marks)
  - 3.2. Briefly describe categories of genetic disorders listed in 3.1 giving one example for each. (50 marks)
  - 3.3. Describe the term "Karyotype" (10 marks)
  - 3.4. Describe the term "Mutation" (10 marks)
  - 3.5. List different types of mutations. (10 marks)
  - 3.6. Describe the term "Pedigree". (10 marks)

4.

4.1.

4.1.1. State four different uses of genetic testing. (15 marks)

4.1.2. Following are the different chemical agents used in cytogenetic test methods carried out in a genetic diagnostic laboratory.

Identify the test **method/s** which use/s the chemical agent. State the purpose of using these agents in the particular test method. (30 marks)

A). Colcemid

Test method/s

Purpose

B). Trypsin

Test method/s

Purpose

C). Hemagglutinin

Test method/s

Purpose

D). Fluorophore

Test method/s

Purpose

E). Ethidium bromide

Test method/s

Purpose

4.1.3. Discuss briefly the advantages and disadvantages of different test methods you have mentioned in 4.1.2. (15 marks)

4.2.

4.2.1. State Mendelian inheritance patterns seen in human disease traits. (10 marks)

4.2.2. Describe briefly a pattern of inheritance you have mentioned in 4.2.1. (30 marks)

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