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UNIVERSITY OF RUHUNA – FACULTY OF ALLIED HEALTH SCIENCES

DEPARTMENT OF PHARMACY

FOURTH BPHARM PART II EXAMINATION – JUNE 2018

PH 4231 MOLECULAR GENETICS (SEQ)

TIME: TWO HOURS

INSTRUCTIONS

- There are four (**04**) questions in Parts A and B of the SEQ paper.
- Answer each part in separate booklet provided.
- No paper should be removed from the examination hall.
- Do not use any correction fluid.
- Use illustrations where necessary.

Part A

01. Sexual and asexual reproductive mechanisms are seen in prokaryotic cells.

1.1. Compare and contrast sexual and asexual reproductive mechanisms seen in prokaryotic cells. (***30 marks***)

1.2. Briefly describe the term "interrupted mating" and state the usefulness of the method. (***20 marks***)

1.3. Briefly describe the mechanism of formation of F prime and state the importance of F prime in the prokaryotic reproductive process. (***30 marks***)

1.4. State the differences between bacterial conjugation process and Hfr conjugation process. (***20 marks***)

02. Mutations could be either harmful or beneficial for life of an organism.

2.1. Describe the term "frame shift mutation". (***20 marks***)

2.2. Describe the effects on protein synthesis in prokaryotes due to frame shift mutation. (***30 marks***)

2.3. Briefly describe an experiment to identify a mutagen causing mutation. (***30 marks***)

2.4. State the beneficial effects of mutations. (***20 marks***)

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03. Genetic disorders are divided into different categories.

3.1. State **three** examples of chromosomal trisomies and state their karyotypes.

(***15 marks***)

3.2. Briefly describe the term "autosomal dominant disorders" and give **two** examples.

(***20 marks***)

3.3. Briefly describe the term "mitochondrial genetic disorders". (***15 marks***)

Part B

3.4. Explain transcriptional and post transcriptional regulation. (***30 marks***)

3.5. Explain the scope of karyotyping. (***20 marks***)

04.

4.1. Explain cytogenetic abnormalities and exemptions of Mendelian inheritance with examples.

(***25 marks***)

4.2. Briefly define a gene (in scientific terms) and mention the components of prokaryotic and eukaryotic gene.

(***20 marks***)

4.3. Explain the several levels at which gene are regulated. (***10 marks***)

4.4. Draw the structure of the eukaryotic gene. (***20 marks***)

4.5. Briefly mention the changes you observe in chromatin structure during transcription.

(***25 marks***)

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