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University Examinations 2023/2024

THIRD YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR
OF SCIENCE IN BIOTECHNOLOGY

SHD 3304: MICROBIAL GENETICS

DATE: DECEMBER 2023

TIME: 2 HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions

QUESTION ONE (30 MARKS)

- a) Explain two mechanisms of antimicrobial resistance in bacteria (4 marks)
- b) Distinguish conjugation from transduction in prokaryotes (6 marks)
- c) Outline the extrachromosomal genetic elements occurring in prokaryotes (4 marks)
- d) Describe the categories of transposable elements in prokaryotes (6 marks)
- e) Illustrate the structure of a typical protein coding gene locus, highlighting the regulatory regions of the gene (6 marks)
- f) Describe two applications of genetic engineering in healthcare (4 marks)

QUESTION TWO (20 MARKS)

Discuss the differences between prokaryotic and eukaryotic genomes (20 marks)



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QUESTION THREE (20 MARKS)

Discuss the mechanisms of genetic exchange in microbes (20 marks)

QUESTION FOUR (20 MARKS)

Discuss the transcription level gene regulation mechanisms in prokaryotes (20 marks)



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