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University Examinations 2023/2024

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

SHD 3352: MOLECULAR DIAGNOSTICS AND GENE THERAPY

DATE: APRIL 2024

TIME: 2 HOURS

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

QUESTION ONE (30 MARKS)

- a) Explain two classifications of gene therapy (2 marks)
- b) Describe briefly the clinical applications of PCR (3 marks)
- c) Explain genotyping (3 marks)
- d) Outline 4 uses of genetic testing (4 marks)
- e) Describe western blot analysis for proteins (3 marks)
- f) Outline 4 different types of culture specimens (4 marks)
- g) Describe briefly RF LP and AFLP (2 marks)
- h) Elaborate fluorescence in situ hybridization (FISH) (3 marks)
- i) Explain gene-editing (3 marks)
- j) Why is quality control critical in clinical laboratory procedures (3 marks)

QUESTION TWO (20 MARKS)

- a) Describe the steps involved in polymerase chain reaction (10 marks)
- b) Discuss the different types of genetic tests (10 marks)

QUESTION THREE (20 MARKS)

Discuss viral and non-viral vectors used in gene therapy

QUESTION FOUR (20 MARKS)

- a) Discuss the applications of transgenic animals (10 marks)
- b) Describe enzyme linked immune absorbent assays (10 marks)