

**BMI3702**

October/November 2017

**BIOMEDICAL TECHNIQUES**

Duration 2 Hours

100 Marks

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EXAMINATION PANEL AS APPOINTED BY THE DEPARTMENT

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**Closed book examination.**

**This examination question paper remains the property of the University of South Africa and may not be removed from the examination venue**

This paper consists of TWO (2) pages

**ANSWER ALL QUESTIONS**

**Students must answer the questions in the examination answer book provided.**

All the best!

**[TURN OVER]**

**QUESTION 1**

- 1 1 Describe how PCR can be used to detect infectious agents in diagnoses (10)
- 1 2 PCR is performed in cycles of three steps. Discuss each step involved (10)
- 1 3 What are the reasons for completely sequencing of a genome? (10)
- [30]**

**QUESTION 2**

- 2 1 Discuss the application of flow cytometry in biomedical sciences (10)
- 2 2 Explain why polyacrylamide electrophoresis is not suitable for plasmid DNA analysis (5)
- 2 3 What type of electrophoresis would be better to study the subunit structure of a protein, PAGE or SDS PAGE? Explain (10)
- 2 4 Explain the purposes of protein and nucleic acid "blotting" (10)
- 2 5 The dye ethidium bromide is often used to detect the presence of nucleic acids on electrophoresis supports. Explain its functions as an indicator (5)
- [40]**

**QUESTION 4**

In isolating eukaryotic DNA, it is essential that the DNA is not sheared and that high molecular weight DNA be isolated. Describe in details the practical steps involved in eukaryotic DNA isolation and precautions one would take to prevent shearing of the eukaryotic DNA (10)

**QUESTION 5**

- 4 1 Discuss the steps and practical means that one would employ to optimize tissue culture (10)
- 4 2 Discuss the following within a social and a medical context
- 4 2 1 Genetic disease (5)
- 4 2 2 Antimicrobial resistance in bacteria (5)
- [20]**

**TOTAL: 100 Marks**