

BMI3702

May/June 2017

BIOMEDICAL TECHNIQUES

Duration 2 Hours

100 Marks

EXAMINATION PANEL AS APPOINTED BY THE DEPARTMENT

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 2 pages

ANSWER ALL THE QUESTIONS

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

All the best!

[TURN OVER]

QUESTION 1

- 1 1 There are 3 key temperature changes in a PCR reaction
- 1 1 1 What are these temperatures? (3)
- 1 1 2 What is occurring at each of these temperatures? (3)
- 1 2 The thermocycler cycles through the 3 temperatures 25-30 times Why? (3)
- 1 3 PCR reactions are performed with *Taq* DNA polymerase What is the key feature of this enzyme that makes it different from most other enzymes? (4)
- 1 4 What is the role of the DNA primers in a PCR reaction? (4)
- 1 5 In gel electrophoresis, to which pole does the DNA migrate? Why? (3)
- 1 6 What are the reasons for completely sequencing a genome? (10)
- [30]**

QUESTION 2

- 2 1 Discuss the application of flow cytometry in biomedical sciences (10)
- 2 2 What is the most distinct feature of animal cell culture? (5)
- 2 3 What do you understand by the term hybridoma technology? (10)
- 2 4 Distinguish between roller bottle and spinner cultures (10)
- 2 5 Compare primary cell lines and established cell lines (10)
- [45]**

QUESTION 3

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 you would take to prevent shearing of the eukaryotic DNA [10]

QUESTION 4

Discuss in detail the theory and applications of western blotting.

[15]

TOTAL: 100