



Faculty of Medicine, University of Ruhuna
Medical Laboratory Science Degree Programme

Year End examination Year 2 – July 2015
Basic Genetics and Molecular Biology – Theory II- SEQ
Monday 27th July 2015 Time: 10.00 am - 12.00 noon (Two hours)

To file. II.



1. The somatic cells can pass genetic information to the daughter cells by mitosis. Describe the steps in the mitosis. (100)

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2. 1. State the functions of the following enzymes related to replication. (20)

- a. Ligase.
- b. Topoisomerase.
- c. DNA polymerase.
- d. Helicase.

2.2. Discuss the differences in transcription and replication processes in eukaryotes. (40)

2.3 Describe how telomere is important in DNA replication. (40)

3.1 Explain the reasons for using DNA polymerase from *Thermus aquaticus* for PCR rather than a DNA polymerase from a better-characterized bacterium such as E.coli? (20)

3.2 Explain – “The PCR can only be used to amplify genes that have already been cloned and sequenced”. (20)

3.3 Explain the steps in qPCR reaction and the relevant temperatures. (30)

3.4 State the principle/s of agarose gel electrophoresis used in separation of DNA. (30)

4.1 Describe what is cloning and its uses. (20)

4.2 State the difference between a sticky end and a blunt end after a restriction? (10)

4.3 Explain the steps in preparation of a recombinant plasmid. (50)

4.4 What is the difference between artificial embryo twinning and somatic nuclear transfer? (20)