

W1-2-60-1-6

**JOMO KENYATTA UNIVERSITY**

**OF**

**AGRICULTURE AND TECHNOLOGY**

**UNIVERSITY EXAMINATIONS 2012/2013**

**YEAR I SEMESTER I EXAMINATION FOR THE DEGREE OF MASTER OF SCIENCE IN MOLECULAR BIOLOGY AND BIOINFORMATICS**

**HBB 3201: FUNDAMENTAL OF MOLECULAR BIOLOGY**

**DATE: AUGUST 2013 TIME: 2 HOURS**

**INSTRUCTIONS: ANSWER ANY FIVE QUESTIONS**

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**QUESTION ONE (30 MARKS)**

Using structural illustration distinguish between;

(a) Pyrimidine and Purine Nucleosides. (5 marks)

(b) Replication in leading and lagging strand. (5 marks)

(c) Dispensive and conservative replication. (5 marks)

(d) 70s rRNA and 80s rRNA. (5 marks)

**QUESTION TWO (20 MARKS)**

 (a) Discuss the difference between;

 i. Deuaturation of DNA in vitro and in vivo. (5 marks)

 ii. Multiple and nested PCR. (5 marks)

(b) Discuss the structural and functional differences between DNA polymelane and RNA polymerase. (10 marks)

**QUESTION THREE (20 MARKS)**

(a) Discuss the principle and procedures in Southern blot technique. (15 marks)

(b) What are the applications of the technique in (a) above. (5 marks)

**QUESTION FOUR (20 MARKS)**

(a) Discuss the types and causes of mutation. (15 marks)

(b) Discuss how the carcinogenic potential of an agent

 can be assessed in vitro. (5 marks)

**QUESTION FIVE (20 MARKS)**

Describe in detail the transcription of DNA in a prokaryotic cell.

**QUESTION SIX (20 MARKS)**

(a) Describe the various levels of protein structure. (10 marks)

(b) How has the process of translation been exploited

 in biotechnology. (10 marks)