**WACE 2010?**

**Question 43 (20 marks)**

1. Explain how DNA is replicated. (6 marks)

**Question 43 (20 marks)**

(a) Explain how DNA is replicated. (6 marks)

**Description Marks**

Any 6 points for 1 mark each

 Occurs during cellular interphase

 Two strands of DNA molecule separate

 Enzyme involvement/helicase

 Known as chromatids

 Each section contains half of the genetic information

 And serves as the template for matching nucleotides

 Bases match as A to T and C to G

 Free nucleotides bond to matching base

 New identical molecule is formed

Labelled Diagram form accepted with full marks if annotated with above

points

1–6

**Total 6**

(b) Describe the differences between nuclear DNA and mitochondrial DNA. Include in your

answer an explanation of how the inheritance of mitochondrial DNA is unique.

(6 marks)

Any 6 for 1 mark each

 nDNA located in nucleus

 mtDNA located in the mitochondria

 nDNA is spiral twisted strand –

 mtDNA is formed in small circular molecules

 nDNA codes for all protein synthesis/gene expression

 mtDNA codes of transfer RNA/making some enzymes

 half of ones nDNA comes from each parent

 mtDNA is inherited from mothers only

 Mitochondria in sperm are destroyed during fertilisation

 mtDNA has a higher mutation rate then nDNA

1–6

**Total 6**