**Biology 9 – Unit 5: DNA/RNA/Proteins Practice #1 Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Block: \_\_\_\_**

**1.** Compare and contrast, with the use of a table, the genetic material between eukaryotes and prokaryotes. **(4)**

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**2.** Draw the structure of a DNA structure (double strands) with three nucleotides long.

(10)

**3.** Draw the structure of a DNA nucleotide.

(2)

**4.** Outline replication of the DNA strand.

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(4)

**5.** (a) Determine the strand of DNA that will be replicated from the DNA strand below.

 A  T  C  C  A  G  G  T  C  A  A  G

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(1)

(b) List **three** molecules required for replication and give a function for each.

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 (3)

**6**. Label and describe the leading and lagging strand of DNA on the diagram below and indicate the enzyme A and B.

(4)



**Biology 9 – Unit 5: DNA/RNA/Proteins Practice #2 Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Block: \_\_\_\_**

**1.** (a) Determine the strand of mRNA that is transcribed from the DNA strand below.

 A  T  C  C  A  G  G  T  C  A  A  G

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(1)

(b) List **three** molecules required for transcription and describe the function of each.

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(3)

**2.** State **two** differences between the structure of DNA and RNA.

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(2)

**3.** The diagram below shows one DNA nucleotide and part of a second nucleotide.



(a) State the names of structures I and II.

I. .......................................................... II. .........................................................

(1)

 (b) On the diagram above, draw the structures that are missing from the second nucleotide.

(1)

 (c) The two nucleotides would be permanently separated during DNA replication. State **one** process during which they would be temporarily separated.

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(1)

**4.** Draw the structure of a DNA and RNA molecule with three nucleotides long.

(10)

**5.** Outline the process of transcription.

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(4)

**Biology 9 – Unit 5: DNA/RNA/Proteins Practice #3 Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Block: \_\_\_\_**

**1.** Compare and contrast between the structure of DNA and RNA. **(6 marks)**

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**2.** The information needed to make polypeptides is carried in the mRNA from the nucleus to the ribosomes of eukaryotic cells. This information is decoded during translation. The diagram below represents the process of translation.



(a) (i) Annotate the diagram to show the direction in which the ribosome moves during translation.

(1)

 (ii) Label the diagram above to indicate the parts which are needed for translation.

(4)

(b) State the name of the next amino acid which will attach to the polypeptide.

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(1)

(c) Explain how transcription begins and ends.

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(2)

(d) Identify **two** locations within a eukaryotic cell where translation occurs.

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 (2)

**3.** Outline the process of transcription.

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 (4)

**4.** Compare DNA transcription with translation.

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(3)

**5.** Determine the strand of mRNA that is transcribed from the DNA strand below and the polypeptide chain which will be produced.

 A  G  C  C  A  A  G  T  C  A  A  T

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(2)