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BIOL110 Exam 4 – Practice Test Solutions

Problem #1: C

In RNA, Thymine is replaced with Uracil.

Problem #2: B

These proteins provide the starting point for polypeptide formation

Problem #3: D

DNA Polymerase adds nucleotides one by one in a smooth, continuous method to the leading strand.

Problem #4: D

DNA 3' GTA 5'
mRNA 5' CAU 3'

Remember, DNA is read 3' to 5', and mRNA is read 5' to 3' with Us instead of Ts.

Problem #5: A

DNA 3' GTA 5'
mRNA 5' CAU 3'
tRNA 3' GUA 5'

Remember, DNA is read 3' to 5', mRNA is read 5' to 3' with Us instead of Ts, and tRNA is read 3' to 5' with Us instead of Ts.

Problem #6: B

DNA 3' GTA CCT AGT 5'
mRNA 5' CAU GGA UCA 3'
AA Seq. HIS GLY SER

Remember, the amino acid is coded by the mRNA.

Problem #7: C

We're doing the same thing as the previous problem, only backwards.

AA Seq. TYR - ASP - PHE
mRNA 5' UA_ - GA_ - UU_ 3'
DNA 3' AT_ - CT_ - AA_ 5'

We don't know the third Amino acid in each codon, so we can leave it blank, but it won't matter, because there is only 1 answer that will match what is given.

Remember to check the ends, DNA is read 3' to 5', if the answer is given in 5' to 3', read it backwards.

Problem #8: B

tRNA 3' CAC 5'
mRNA 5' GUG 3'
DNA 3' CAC 5'

mRNA 5' GUG 3'
AA Seq. VAL

Problem #9: C

Cellular Respiration is the process of breaking down glucose for energy, this process is exergonic ($-\Delta G$) since it releases energy which can then be used by the cell to do work. Photosynthesis is the process in which plants create sugars from CO_2 and water, this process is endergonic ($+\Delta G$) since it requires energy from the sun.

Problem #10: A

What goes in: 1 glucose molecule, 2 ATP, 4 ADP, 2 NAD^+

What comes out: 2 pyruvate molecules, 4 ATP, 2 NADH

Net gain: 2 pyruvate molecules, 2 ATP, 2 NADH

Problem #11: A

A reduction is a GAIN of electrons. So a molecule which is reduced will accept an electron from another molecule.

Problem #12: C

In cellular respiration, the terminal electron acceptor is O_2 .

Problem #13: B

The terminal electron acceptor for fermentation is pyruvate, as there is no oxygen present. The terminal electron acceptor for Krebs cycle and ETC is oxygen.