Your name_____

Tasks for understanding TRANSCRIPTION and TRANSLATION

Task 1. Understanding the complementarity principle.

a) Write down what would the complementary strand look like:

DNA:

plus strand (leading): 5’ - TAC TAC GGT AGG TAT ACC TTG - 3’

minus strand (lagging): _’ - _____ - _‘

b) Transcribe the DNA sequence given above into a mRNA (*hint*: you should pay attention to which of the two strands is actually transcribed?)

mRNA: _’ - _____ - _’

Task 2. Understanding translation (use the printouts of Genetic code tables).

a) Translate the given mRNA molecules into an amino acid sequence (*hint*: first codon starts at 1st nucleotide, i.e., first reading frame)! You can use either the 1-letter or 3-letter code, or both!

1. AUGGGGAUUGUACUAACUUGCCACCGCUAA

2. GGGAACUUCUGGCAGGUUCCCAGGUCUUAG

How would the example No 2. above look if you translate it in the **second** reading frame?

_____

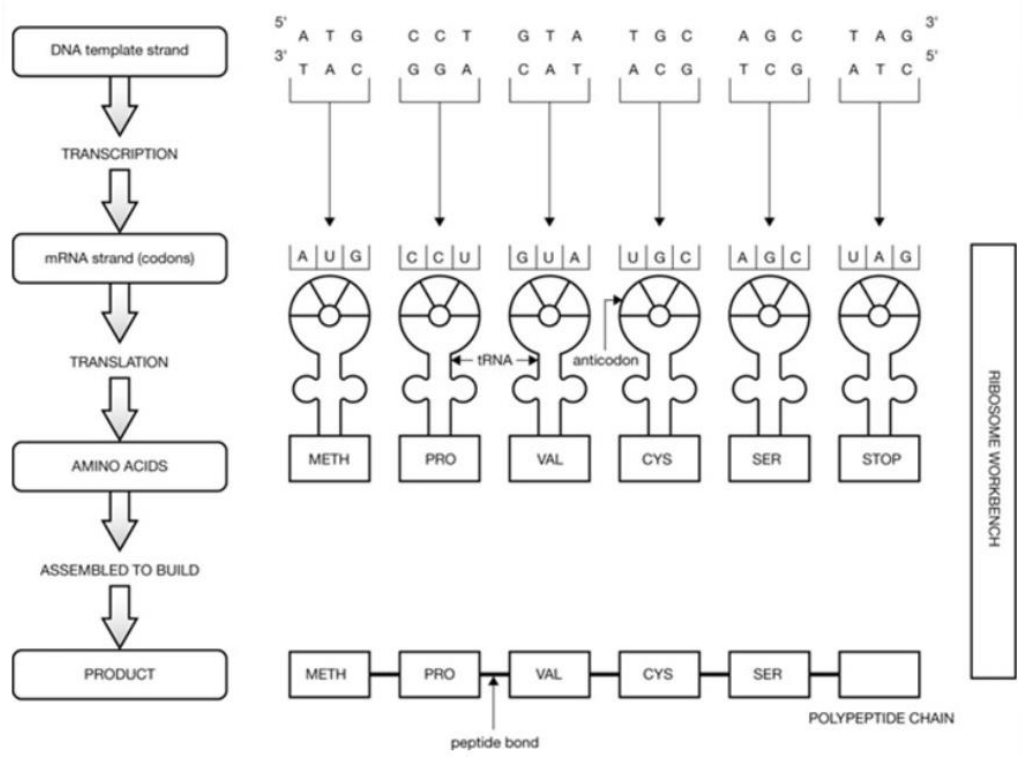
b) By using the genetic code table, write down the possible nucleotide sequence that has encoded for the given peptide!

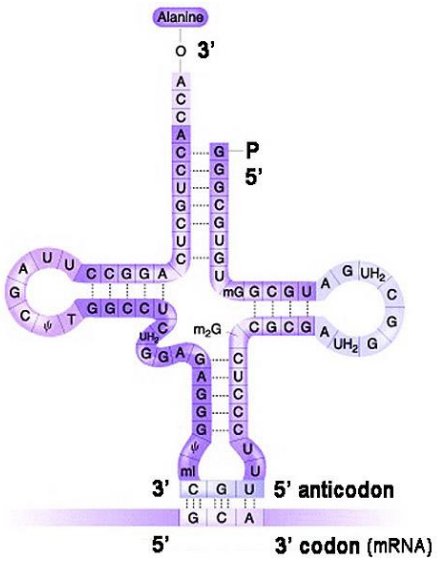
1. Met-Val-Ile-Leu-Ser-Ser-Ala-Trp-Stop

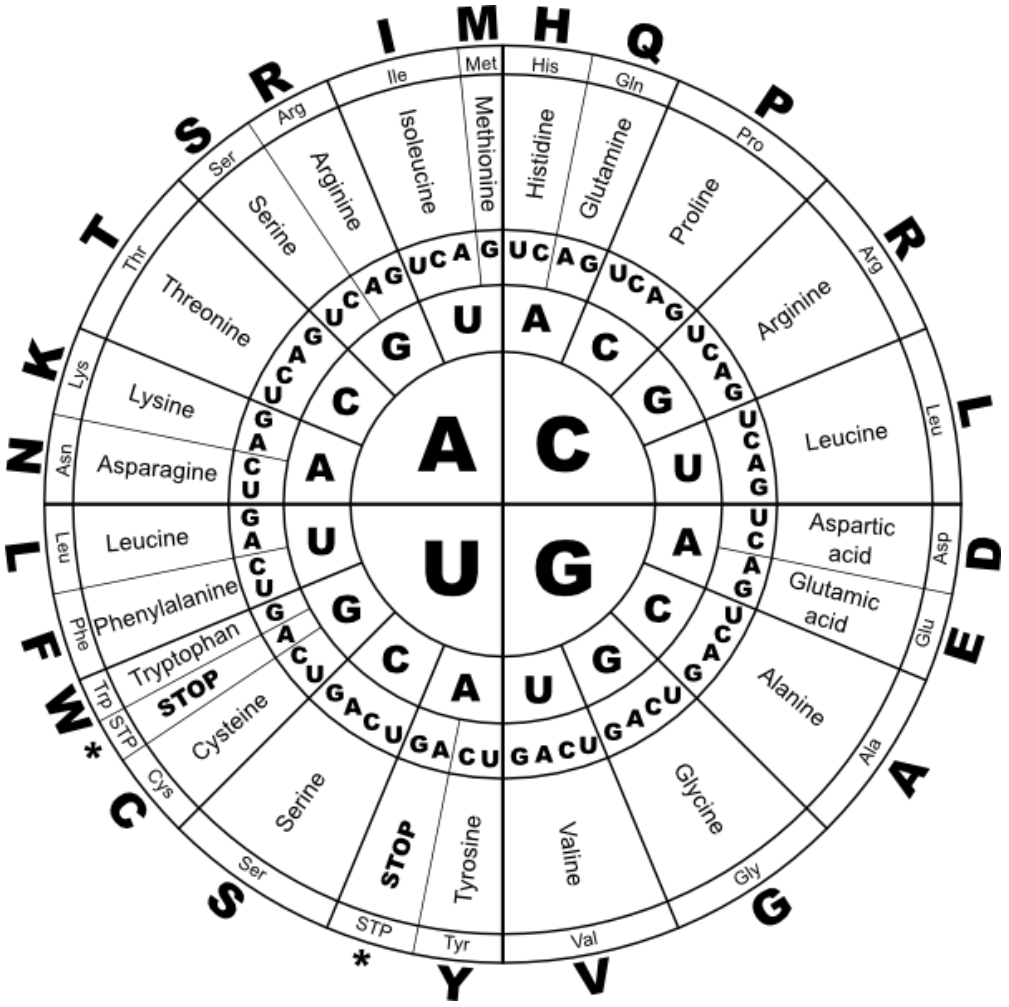
2. M-W-G-E-P-R-L-L-*

Task 3. The codon/anticodon issue. Fill in the anticodons based on the given codons. Name the second amino acid. (Hint: use the genetic code tables and the example of first anticodon given in the table).

Amino acid	Possible codon (5'-3')	Corresponding Possible Anticodon (3'-5')
Threonine	**ACU** **ACC** **ACA** **ACG**	**UGA**
?	**GCU** **GCC** **GCG**	
Proline	**CCU** **CCC** **CCA** **CCG**	







First letter	U	C	A	G	Third letter
U	UUU Phe UUC Phe UUA Leu UUG Leu	UCU Ser UCC Ser UCA Ser UCG Ser	UAU Tyr UAC Tyr UAA Stop UAG Stop	UGU Cys UGC Cys UGA Stop UGG Trp	U C A G
C	CUU Leu CUC Leu CUA Leu CUG Leu	CCU Pro CCC Pro CCA Pro CCG Pro	CAU His CAC His CAA Gln CAG Gln	CGU Arg CGC Arg CGA Arg CGG Arg	U C A G
A	AUU Ile AUC Ile AUA Ile AUG Met	ACU Thr ACC Thr ACA Thr ACG Thr	AAU Asn AAC Asn AAA Lys AAG Lys	AGU Ser AGC Ser AGA Arg AGG Arg	U C A G
G	GUU Val GUC Val GUA Val GUG Val	GCU Ala GCC Ala GCA Ala GCG Ala	GAU Asp GAC Asp GAA Glu GAG Glu	GGU Gly GGC Gly GGA Gly GGG Gly	U C A G