**Assignment 1**

**Deadline for submission: 22nd March 2023**

1. Based on his observations during his voyage across Galapagos islands, what concluions did Charles Darwin make about evolution?
2. Which type of biopolymer is likely to have evolved first: (i) DNA, (ii) RNA, (iii) Proteins? Give reasons to support your answer.
3. What does our microbiome do?
4. (i) Referring to the genetic code (the codon usage table), what would be the amino acid sequence of the polypeptide encoded by the following mRNA sequence?

5’ AUGGUGGCCUAUCAUUAGGGGCUU 3’

(ii) What would be the effect on translation of the above sequence of a single base mutation which gave rise to an A instead of a U at the twelfth base?

(iii) What would be the effect on translation of the sequence in (i) above, if an extra C were inserted between the third and fourth bases, i.e., between the two Gs at position 3 and 4?

1. Find out if BamHI is a good restriction endonuclease for cutting the SARS-COV-2 genome? Give reasons.
2. The enzymes BamH I and Bal II recognise different sequences but leave the same sticky ends:

BamH I: ----------G|G A T C C ------

BgIII: ----------A|G A T C T ------

(i)Will the two enzymes result in the same number of fragments in a random DNA sequence? Give reasons.

(ii)What’s the advantage of having such a pair of REs? Explain with example.

1. Both cloning and PCR can be used for making copies of DNA. Give the advantage and limitation of cloning over PCR?