

Sample Paper of MPhil Biotechnology

1. **Transcription of a part of a DNA molecule with a nucleotide sequence of A-A-A-C-A-A-C-T-T results in a mRNA molecule with the complementary sequence of**
 - a) G-G-G-A-G-A-A-C-C
 - b) U-U-U-G-U-U-G-A-A
 - c) T-T-T-G-A-A-G-C-C
 - d) C-C-C-A-C-C-T-C-C
 - e) None of the above.
2. **Which is NOT a necessary component of a PCR reaction?**
 - a) dsDNA template
 - b) DNA polymerase
 - c) cRibosomal subunits
 - d) Short ssDNA oligos for primer
3. **Breathing heavily after running a race is your body's way of**
 - a) Making more citric acid
 - b) Repaying an oxygen debt
 - c) Restarting glycolysis
 - d) Recharging the electron transport chain
4. **Genetic engineering manipulates gene products at the level of the**
 - a) protein
 - b) amino acid
 - c) DNA.
 - d) RNA.
5. **Cells can detect signal molecules, like estrogen, from outside the cell because they have _____ which bind to the estrogen molecules.**
 - a) Ribosomes
 - b) RNA coding regions of genes
 - c) Restriction enzymes
 - d) Hormone receptor proteins
 - e) Transfer rna molecules
6. **A woman with type A blood and a man with type B blood could potentially have offspring with which of the following blood types?**
 - a) type A
 - b) type B
 - c) type AB
 - d) type O
 - e) E. all of the above
7. **Green house gases trap**
 - a) U.V. radiation
 - b) Visible spectrum radiation
 - c) Infrared radiation
 - d) Carbon dioxide

8. **In what phase of the typical bacterial growth curve does the cell decay rate exceed the cell multiplication rate?**
- a) Lag phase
 - b) Log phase
 - c) Stationary phase
 - d) Idle phase
 - e) Decline phase
9. **The active site of an enzyme**
- a) Do not undergo changes
 - b) Forms no chemical bond with substrate
 - c) Determines, by its structure, the specificity of the enzyme
 - d) Appears like a projected structure having an oval shape
10. **Energy is said to flow through the ecosystem rather than cycle because it:**
- a) Is passed from one trophic level to the next.
 - b) Is destroyed by each organism as it is used.
 - c) Never returns to be re-used by the autotrophs.
 - d) Increases in supply as it moves up the food chain.
 - e) Is returned to the soil to be absorbed by plants.