**Biotech Final Exam Review Sheet**:

1. What suffix is given to enzymes?—ase
2. Building blocks of proteins = amino acids
3. Building blocks of nucleic blocks of lipids = nucleotides
4. Enzymes are \_\_\_\_\_\_\_protein\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ catalysts.
5. HIV is a retrovirus meaning it contains \_RNA\_\_ as its genetic material.
6. The process by which HIV makes viral DNA is called\_reverse\_\_transcription.
7. A pair of alleles for a particular trait is called a\_\_genotype\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
8. DNA is spliced using \_\_\_restriction \_\_\_\_\_enzymes.
9. List 3 reasons for the use of TRIS BUFFER during electrophoresis:
10. Stabilize the pH
11. Conduct electricity
12. Maintain the shape of molecules

10. If a circular plasmid is cut with a restriction enzyme and 4 bands are visualized after electrophoresis, how many cuts were made in the plasmid? 4

11. If a linear piece of DNA was cut with a restriction enzyme and 5 bands were visualized after electrophoresis, how many cuts were made? 4

12. What is the correct nitrogen base pairing for nucleotides of DNA?

 A—T T—A C—G G—C

13. The process by which DNA is copied = replication

14. DNA 🡪 mRNA = transcription

15. mRNA 🡪 tRNA 🡪Amino Acids 🡪 Protein = translation

16. A \_\_gene\_\_is a piece of DNA which provides instructions for making a protein.

**Proteomics**:

17. Proteins are measured in \_\_kilodaltons\_\_

18. Bases in DNA = ATCG

19. Bases in RNA = AUCG

 20. amino acid = coded for by anticodon of \_RNA\_\_ and typically end in –ine

21. How many different amino acids are known to be in proteins? 20

22. What size proteins travel the fastest and furthest during PAGE? smallest

23. Proteins have a \_\_3D\_\_structure.

24. Define denaturation. Proteins lose their conformation or 3D shape

**ELISA**:

25. Stands for: enzyme linked immunosorbant assay

26. This test is very \_specific & can recognize a \_single\_\_ protein from a mixture.

27. draw and label the antigen / antibody complex:



28. Molecules that cause your body to mount an immune response are called: antigens

29. Antibodies make up 15\_\_% of your total blood serum

30. HIV—Is it a DNA or RNA virus?

31. What type of blot test is used as a confirmatory test for HIV? Western

32. Do immunizations contain live or weakened/dead virus?

33. Are ELISA’s sensitive enough to detect very low levels of disease agent? yes

34. What color did the “positive” ELISA results turn? blue

35. What does ELISA use to detect the presence of a disease agent? enzymes

36. Provide three real world purposes of ELISA: HIV tests, pregnancy tests, influenza detection, drug tests

37. Define immunology. The study of all aspects of the immune system, including its structure and function, disorders of the immune system, blood banking, and immunization.

38. Name three diseases that may be diagnosed with ELISA:

 1) HIV 2) flu 3) H1N1

**PCR**:

39. List 3 reasons PCR is an improvement over DNA fingerprinting:

 1) more reputable data

 2) PCR is faster

 3) requires less starting DNA

40. When replicating DNA in the lab, what is used to indicate the starting place for the synthesis? primer

41. What is a GMO? Organism in which the genetic material has been altered in a way that does not occur naturally.

42. Define each of the following: amplification, denaturation, annealing, extending, template, dNTPs, DNA fingerprinting **GLOSSARY or Google☺**

43. What is the objective of PCR? Multiply a section of DNA

44. Name three sources from which genomic DNA may be extracted.

 1) drop of blood 2) single hair follicle 3) epithelial cheek cell

45. What does it mean to amplify a gene? Ability to target and make millions of copies of a gene

46. How did Taq DNA polymerase acquire its name? heat-stable bacterium *Thermus aquaticus*

47. What piece of equipment is needed for PCR? thermalcycler

48. Explain the difference between an intron—not expressed and an exon—portion of gene EXpressed in to proteins .