**NORTH POINT SENIOR SECONDARY BOARDING SCHOOL, RAJARHAT**

**Class - XII Science**

**Subject : Biology**

**Assignment on Chapter 6**

**Answer the following questions:**

**1. Mention any four reasons of DNA being the genetic material of all the organisms (except retrovirus) and not RNA.**

**2. Calculate the percentage of Purine in a genome, where Cytosine is of 30%.**

**3. What would have been the observation of Hershey and Chase experiment, if the pallets would have shown radioactivity of the side where sulphur was radioactivated?**

**4. What is the difference between RNAs and RNAase?**

**5. Name other two scientists who gave X-ray diffraction data of DNA.**

**6. What do you mean by "beads-on-string" ?**

**7. Name the amino acids by which histones are made up of and why?**

**8. Calculate the number of base pairs in E.coli, if the length of its DNA is 1.36mm.**

**9. Name the bond present in between Guanine and Ribose sugar in DNA.**

**10. What do you mean by "Transforming Principle"?**

**11. Differentiate between the transcription in Prokaryotes and in Eukaryotes. (five differences)**

**12. Describe the steps of Post transcriptional processing.**

**13. Write the significance of each of the enzymes involved in DNA replication.**

**14. How continuous synthesis differs from dis-continuous synthesis in DNA replication?**

**15. What would happen to the band formation, if the third test tube in Meselson and Stahl's experiment, if:**

**(a) kept in N14 cultural medium**

**(b) kept in N15 cultural medium**

**16. What is the function of:**

**(a) RNA Polymerase I**

**(b) RNA Polymerase II**

**(c) RNA Polymerase III**

**17. At which end of tRNA, amino acid gets attached while activation?**

**18. Differentiate between(Two differences each):**

**(i) Codon and Anticodon**

**(ii) Monocistron and Polycistron.**

**19. How tRNA looks from front and from lateral side?**

**20. Expand UTR.**

**21. What are the components of "transcription unit" (functional segment of DNA or gene)?**

**22. Name the Indian scientist who among others also contributed in Genetic Code.**

**23. How many possible codons(three nucleosides together) form from 4 nucleotides i.e., A,U,G,C?**

**24. How many amino acids are there which is involved in genetic code table?**

**25. Write all the salient features of Genetic Code.**

**26. An mRNA strand has a series of codons out of which three are given below:**

**(i) AUG (ii) UUU (iii) UAG**

**(a) What will these DNA codons be translated into?**

**(b) What are the DNA codons that would have transcribed these RNA codons?**

**27. A tRNA is charged with the amino acid phenylalanine.**

**(i) At what end of the tRNA is the amino acid attached?**

**(ii) What is the mRNA codon that codes for phenylalanine?**

**28. The base sequence of one of DNA strand of DNA is TACTAGGAT**

**(i) Give the base sequence of its complementary strand.**

**(ii) What is the distance maintained between the two consecutive pairs of bases in the DNA molecule?**

**(iii) Who contributed the base complementarity rule?**

**(iv) What holds these bps(base pairs) together?**

**29. 5'-ACGAAUGCCCGAGGAAAAA-3'**

**Above is the base sequence of mRNA.**

**(i) How many amino acid will form from this strand?**

**(ii) Name these amino acids.**

**(iii) Name the bond which holds these amino acid together.**

**30. 5'-AUGUUUUUCCUAUAG-3'**

**This mRNA sequence codes for "Met-Phe-Phe-Pro"**

**Determine any three salient features of Genetic Code which is expressed from the above statements.**

**31. What is the translation step "Charging of tRNA" also know as?**

**32. What do you mean by the "Release factor" in Translation?**

**33. What are the four levels of the Regulation of Gene Expression?**

**34. Write the literal meaning of "constitutive" with reference to Genetics.**

**35. Expand HGP.**

**36. Write the six goals of HGP, EST, YAC, BAC, SNP, VNTR.**

**37. Write any three points that justifies HGP is known as "mega-project".**

**38. What are the two methodologies used in HGP?**

**39. Name the person who gave the principle of a method of sequencing gene.**

**49. Name any 6 non-human organisms in which gene sequencing is done.**

**41. Name the countries who who contributed in HGP beside NIH.**

**42. What do you know about Bioinformatics?**

**43. Who developed the technique of DNA fingerprinting and on what basis?**

**44. Mention all the seven steps of DNA fingerprinting.**

**45. Write any three applications of DNA fingerprinting.**