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

**Class - XII Science**

**Subject : Biology**

**Assignment on Chapter 5**

**Answer the following questions:**

**1. Define the term Dihybrid cross.**

**2. Calculate the Dihybrid phenotypic ratio and genotypic ratio of F2 by crossingng pureline smooth pod, green pod female with constricted pod, yellow pod male in Pisum sativum.**

**3. Determine the phenotypic ratio in F1 of homozygous violet flower male with recessive female in garden pea plant .**

**4. Define the following terms:**

**(i) Homozygous gene**

**(ii) Heterozygous gene**

**(iii) Recessive trait**

**(iv) Dominant trait**

**(v) Gene/factor by Mendel**

**(vi) Alleles or allelomorph**

**(vii) Phenotype**

**(viii) Genotype**

**(ix) Locus/locci**

**5. Show the phenotypic ratio and genotypic ratio of F1 in garden pea plant by crossing heterozygous height, heterozygous seed shape male with homozygous dominant height, heterozygous seed shape female.**

**6. How will you find out that the gifted plant to you is "RrYy" and not "rryy"? Justify your answer through flow chart.**

**7. How many types of gamete will form from the following genotypes and write the types:**

**(i) TT**

**(ii) Tt**

**(iii) TTRR**

**(iv) TtRR**

**(v) TtRTYY**

**(vi) TtRrYY**

**(vii) TtRrYy**

**(viii) AABBCCDD**

**(ix) AaBBCCDD**

**(x) AaBBCCDd**

**(xi) TtRr**

**(xii) TTRRYY**

**8. Determine the Phenotypic ratio and genotypic ratio of F1 in garden pea plant when :**

**(i) Heterozygous flower colour, homozygous dominant height male is crossed with heterozygous flower colour, recessive height female.**

**(ii) Heterozygous flower position female is crossed with recessive male.**

**9. Mention the scientific name of the plant where genotypic ratio and phenotypic ratio are same. Which type of variation is shown by this plant and why?**

**10. Find out any five reasons of Mendelian work remained unrecognised for so long.**

**11. Name three Scientists who rediscovered Mendelian work in 1900.**

**12. Describe each of the three Mendelian Laws of Geneticd with suitable example.**

**13. How can you prove that Monohybrid genotypic ratio follows factorisation?**

**14. Show the cross where a couple with blood group "A" (mother) and "B"(father) is having a daughter with blood group "O".**

**15. How many alleles are observed in the following characters:**

**(i) Blood group in human population**

**(ii) Blood group in an individual human.**

**In which, variation is observed from Mendelian Law?**

**[Hint: Mendelian Law states that, "one character is expressed by one gene(factor) and a gene(factor) consist of two alleles(units)"].**

**16. Name the Scientist who simplified the work of determining Mendelian ratios by making checker board.**

**17. Write any five reasons of selecting \_Drosophila\_ \_melanogaster\_ (fruit fly) by T.H. Morgan.**

**18. Name two scientists who did gene mapping in fruit fly. On which concept this mapping was done.**

**19. Determine the phenotypic ratio and genotypic ratio of F1 in \_Drosophila\_ when:**

**i) heterozygous eyed female is crossed with mutant male.**

**ii) Heterozygous body colour, heterozygous wing size female is crossed with wild male.**

**iii) Heterozygous eye colour, mutant body colour female crossed with wild eye colour, mutant body colour male.**

**iii) Homozygous wild wing size, mutant eye colour female crossed with wild male.**

**iv) homozygous wild body colour female crossed with recessive male.**

**20. Make a gene map of gene A, B, C ,D which are located in sequence and their recombinant percentage are:**

**A & B = 6%**

**A & D = 20%**

**B & D = 9%**

**Also find most "tightly linked" gene and most "loosely linked" gene.**

**21. Write any four symptoms each of the three diseases that you know of Chromosomal abbreviations with its chromosomal representation.**

**22. Write any two symptoms of phenylketonuria (PKU).**

**23. Write three differences between Sickle cell anaemia and thalessemia.**

**24. How polypeptide beta-chain of Hb(A) differs from Hb(S)? Show with the full sequence.**

**25. What sickle cell anaemia is called point mutation?**

**26. What thalessemia is known as quantitative genetic disease?**

**27. What do you mean by Barr body? Who indicated this this first?**

**28. Name three scientists who again recovered Mendelian Laws.**

**29. Write any five reasons that T.H.Morgan choose \_Drosophila\_ \_malanogester\_ ?**

**30. What is the cause of the chromosomal disease which occurs generally when a woman give birth to a child in older age?**