

2. Differentiate between **any three** of the following : (5×3=15)
- (a) Co-dominance & Incomplete Dominance
 - (b) Inversion & Translocation
 - (c) Missense Mutation & Nonsense Mutation
 - (d) Ionising & non-ionising radiation
3. Write a short note on **any three** of the following : (5×3=15)
- (a) Lyon's hypothesis
 - (b) Pleiotropism in Cystic Fibrosis
 - (c) Morgan's experiment on Eye Colour in *Drosophila*
 - (d) Frameshift mutation
4. Describe the following in detail : (7½×2=15)
- (a) Causes & symptoms of Down's Syndrome
 - (b) Genetic cross in synthesis of *Raphanobrassica*
5. (a) What are the expected phenotypes, genotypes and their ratios from the following matings : (5)
- (i) $I^A i \times I^B i$
 - (ii) $I^A I^B \times ii$
- (b) In Summer squash, White fruit colour is determined by dominant allele (W) and coloured fruit on the recessive allele (w). In the presence of ww and a dominant gene (G), the colour is yellow, but when the G is absent (i.e. gg), the colour is green. Give phenotypes and genotypes of parents, F₁, F₂; and genetic basis of interaction from a cross between white-fruit pureline plant with green-fruit pureline plant. (10)
6. Explain the following : (5×3=15)
- (a) Sex Determination in *Melandrium*
 - (b) Crossing-over never exceeds 50%
 - (c) Mendel's success in his experiments
7. (a) What is Comparative Genomics ? Explain with examples. (7½)
- (b) What are the advantages of polyploidy in plant improvement ? (7½)