**Question Bank-6**

**Course- B.Sc. Biotechnology 6th Semester, B.Sc. CBZ 6th Semester, B.Sc. Biotechnology (H) 4th Semester & B.Sc. Botany (H) 4th Semester**

**Subject: Molecular Biology; Topic: Reverse Transcription; Homologous recombination**

1. **Multiple Choice Questions:**
2. Reverse transcription is an important phenomenon for eukaryotic cells.  
   a) True  
   b) False
3. RNA genomes were first discovered in \_\_\_\_\_\_\_\_\_\_\_ viruses.  
   a) Plant  
   b) Animal  
   c) Bacterial  
   d) Fungal
4. The viral genome contains which of the following characteristic sequences?  
   a) LINE  
   b) SINE  
   c) Transposons  
   d) LTRs
5. Which of the following is not a function of reverse transcriptase?  
   a) RNA dependent DNA polymerase  
   b) DNA dependent DNA polymerase  
   c) RNase H  
   d) Exonuclease
6. What will be the transcription product of 3’….AUCCGAGCUAAC….5’ by reverse transcriptase?  
   a) 3’….GTTAGCTCGGAT….5’  
   b) 3’….AUCCGAGGAUUG….5’  
   c) 5’….GTTAGCTCGGAT….3’  
   d) 5’….UAGGCUCGAUUG….3’
7. What is the other name of DSB repair pathway?  
   a) RecBAD pathway  
   b) RecBCD pathway  
   c) RecABD pathway  
   d) RecDCB pathway
8. What is branch migration?  
   a) Break and reformation of identical base pairs  
   b) Formation of lesion  
   c) Formation of heteroduplex DNA  
   d) Dissolution occurs
9. What is resolution?  
   a) Cleavage of holiday junction  
   b) Regeneration of duplex DNA molecule  
   c) Exchange of DNA fragments  
   d) Heterochromatin structure formation
10. Which of the following promotes strand exchange?  
    a) DBS formation  
    b) Heteroduplex formation  
    c) Strand invasion protein  
    d) Branch migration
11. What is a crossover product?  
    a) Mutated DNA  
    b) Reassorted DNA  
    c) Crossover DNA  
    d) Spliced DNA
12. **Short Questions**
13. What is meant by homologous recombination?
14. What are the three types of recombination?
15. What is the outcome of homologous recombination?
16. What phase does homologous recombination occurs?
17. What are the steps of homologous recombination?
18. What is reverse transcription?
19. What is the function of reverse transcriptase in retroviruses?
20. Discuss the applications of reverse transcriptase.
21. What are LTRs? How are these formed?
22. **Long Questions**
23. Discuss the molecular mechanism of reverse transcription.
24. Discuss the Holliday model of homologous recombination.
25. Discuss the Double-strand Break repair model of homologous recombination.