1. **Define the** Secondary structure Internal hairpin structure
2. **Define the** Reverse transcriptase
3. **Define the** Amplicon
4. **the functions of the** Hot start cycle in PCR.
5. **the functions of the** TE buffer in DNA extraction.
6. **the functions of the** Regulatory protein and Regulatory RNA
7. **the functions of the** Using SDS in DNA extraction.
8. **Give the reasons for the** In agarose gel electrophoresis; we have to load the DNA sample in cathode side. Why?
9. **Give the reasons for the** The major disadvantage of using SRBR Green is the lack of specify. Why?
10. **Give the reasons for the** In PCR: the optimum temperature of extension step must be 68-72 0C, why?
11. **Give the reasons for the** In DNA extraction: why using Tris-HCl?
12. Write the Basic principle of DNA extraction
13. Count the factors effect on the rate of DNA migration though agarose gel.
14. **differences between the** EtBr and BPB
15. **differences between the** Primer and Probe
16. **differences between the** dNTP and ddNTP
17. In DNA Cloning, bacteria cell become competent by using CaCl2 at ----------------- ◦ C.
18. Palindromic sequences are -------------------------------------------------------------------
19. Ligation enzyme can anneal two DNA fragments by forming------------------------------bond.
20. AFLP is defined as --------------------------------------------------------------------------------------.
21. In DNA microarray, the spotted slide is attached with thousands of------------------------------.
22. If the DNA molecules is circular & has two restriction site, then the molecule will be cleaved into--------------------------fragments.
23. Adapter defined as a --------------------------------------------------------------------------------------.
24. RNA is copied into complementary DNA (cDNA) by -----------------------------------------------.
25. Hybridization defined as: --------------------------------------------------------------------------------------------------------------------.
26. DNA microarrays are techniques have been developed to determine -----------------------------------------------------------------------.
27. Labelled antibodies are used to detect the presents of particular DNA molecule in sorthern blotting. **Answer by True and False**
28. RFLP is more reliable than RAPD. **Answer by True and False**
29. Western blotting suitable for identifying protein molecules in a sample. **Answer by True and False**
30. Species specific primers are required for RAPD. **Answer by True and False**
31. The restriction enzyme within the cell doesn’t destroy its own DNA. Why?
32. In DNA cloning; the vector (plasmid DNA) should have antibiotic resistant gene. Why?
33. Why we are using *E. coli* as a host in DNA cloning? why?
34. **Main differences between** Cloning and PCR?
35. **Main differences between** Sticky end and blunt end?
36. **Main differences between** Blastn and plastp?
37. Steps of Northern blotting.
38. Write the Example data bases of sequence information with detail.
39. Count the components of chain termination methods of DNA sequencing.
40. Write the components of Real-time PCR.
41. Count the factors affect on the rate of DNA migration though agarose gel.
42. **Multiple choices:**
43. RNA is copied into complementary DNA (cDNA) by:
	1. *Taq* DNA polymerase c. RNA polymerase II
	2. Reverse transcriptase d. Uracil-N-Glycosylase
44. RAPD is a
	1. DNA sequencing based method c. Restriction digestion based method
	2. PCR based method d. All of these

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| 1. Which of the following techniques suitable for identifying mRNA molecules in a sample
	1. Southern blotting c. Northern blotting
	2. Western blotting d. Eastern blotting
2. Which of the following statements is true
 |

* 1. A vector should have an origin of replication
	2. A vector should have selectable marker
	3. A vector should have unique restriction sites
	4. All of these
1. All the statements are true regarding to RFLP and RAPD except
	1. RAPD is a quick method compare to RFLP
	2. RFLP is more reliable than RAPD
	3. Species specific primer s are required for RAPD
	4. Radioactive probe are not required for RAPD