PCR Technique Quiz PDF

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During which PCR step are the DNA strands separated?

- ◯ Annealing
- ◯ Denaturation
- ◯ Extension
- ◯ Ligation

Describe how PCR can be used in forensic science.

Which enzyme is commonly used in PCR to synthesize new DNA strands?

- ◯ RNA polymerase
- ◯ DNA ligase
- ◯ Taq polymerase
- ◯ Reverse transcriptase

What is the primary purpose of PCR?

- ◯ To sequence DNA
- ◯ To amplify DNA
- ◯ To degrade DNA
- ◯ To synthesize RNA

What is the significance of the annealing temperature in a PCR reaction?

How does real-time PCR differ from traditional PCR in terms of data output?

Discuss the importance of primer design in ensuring PCR specificity.

What steps would you take to troubleshoot a PCR reaction that is not yielding the expected results?

What is a common problem that can occur if primers are not designed correctly?

- ◯ DNA degradation
- ◯ Non-specific amplification

- ◯ Increased DNA synthesis
- ◯ Enhanced primer binding

Explain the role of Taq polymerase in the PCR process.

What are the main steps of a PCR cycle? (Select all that apply)

- ☐ Denaturation
- ☐ Annealing
- ☐ Extension
- ☐ Transcription

Which of the following are applications of PCR? (Select all that apply)

- ☐ Gene cloning
- ☐ Protein synthesis
- ☐ Forensic analysis
- ☐ Medical diagnostics

What are common issues encountered in PCR? (Select all that apply)

- ☐ Primer-dimer formation
- ☐ Contamination
- ☐ Excess DNA synthesis
- ☐ Non-specific amplification

Which of the following is NOT a component of a typical PCR reaction?

- ◯ Template DNA
- ◯ RNA polymerase
- ◯ Primers
- ◯ Nucleotides (dNTPs)

Which of the following are essential components of a PCR reaction? (Select all that apply)

- [ ] Template DNA
- [ ] Primers
- [ ] DNA polymerase
- [ ] Restriction enzymes

What is the main advantage of using a thermocycler in PCR?

- ◯ It cools the reaction rapidly
- ◯ It automates temperature changes
- ◯ It increases DNA degradation
- ◯ It synthesizes primers

Which type of PCR is used to quantify DNA in a sample?

- ◯ Traditional PCR
- ◯ Real-time PCR (qPCR)
- ◯ Reverse Transcription PCR (RT-PCR)
- ◯ Nested PCR

What factors can influence the specificity of PCR? (Select all that apply)

- [ ] Primer design
- [ ] Annealing temperature
- [ ] DNA concentration
- [ ] Cycle number

Which types of PCR are used for RNA analysis? (Select all that apply)

- [ ] Traditional PCR
- [ ] Real-time PCR (qPCR)
- [ ] Reverse Transcription PCR (RT-PCR)
- [ ] Nested PCR

What is the role of primers in PCR?

- ◯ To degrade DNA
- ◯ To synthesize nucleotides
- ◯ To initiate DNA synthesis

◯ To separate DNA strands