

Polymerase Chain Reaction (PCR) Name: _____

1-Answer the following question:

1. What is the purpose of the polymerase chain reaction?
.....
2. What are the main molecules necessary for PCR? And the function of each?
.....
3. What kind of bond forms between the primers and the DNA?.....
4. What is the optimal temperature for *Taq* polymerase?.....
5. What are some applications of PCR?.....
6. If you want to do PCR, What you could do if you have low concentration of template to get a good band?.....
7. How you will choose the concentration of agarose to see your PCR product?.....

**2- The following questions are about the primer that have the sequence:
Imagine that you have the following primers:**

- Forward:
5'-CTGAACCCCATGTGGAACGA-3' GC:..... Tm:.....
- Reverse:
5'-GGCATCCATCACCTAGCTACA-3' GC:..... Tm:.....
- Is the Tm of the two primers are similar? Why it is important to be similar?
.....
- What is the range of annealing temperature that you will do optimization on?.....

Go to the instrument (thermocycler) and enter the following:

Step	Temperature	Time	Cycles
Initial Denaturation	95°C	2 minutes	1
Denaturation	94°C	30 seconds	30
Annealing	<input type="text"/>	30 seconds	
Extension	72°C	1.5 minutes	
Final Extension	72°C	10 minutes	1

TABLE 1

3-Choose the correct answer:

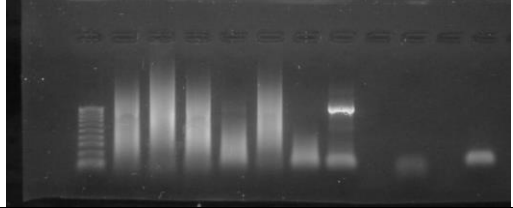

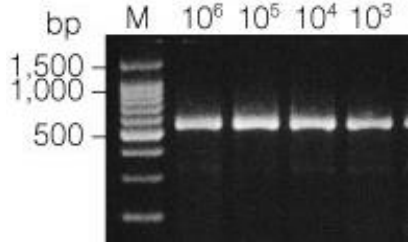
1. Taq polymerase is a commonly used enzyme in PCR because this enzyme is ____.

- a faster polymerase
- More accurate in amplification
- Can resist high temperatures

2. Which end of the primer is **extended** by the Taq polymerase?

- 1'
- 5'
- 4'
- 3'
- 2'

4-For each gel picture, identify the possible causes and how to solve them:

Gel Picture	Problem	Suggestion to solve the problem
		
		
 <p data-bbox="186 1575 495 1608">Size product is 200 bp</p>		
