

Name \_\_\_\_\_ Lab Section (day) \_\_\_\_\_

1. (3 points) What is the main experiment you will perform in lab this week?

We will be doing minipreps to make DNA from the colonies we picked last week.

2. (3 points) Briefly explain why it is important that you gently mix your sample tubes after adding the miniprep solution that contains SDS and NaOH.

Vortexing would shear the bacterial chromosomal DNA into small fragments and then become isolated with the plasmid DNA.

3. (3 points) Name three properties that modern cloning vectors possess that make their use in cloning DNA fragments efficient.

a. selectable marker such as ampicilin

b. polylinker

c. way to screen for inserts such as the  $\beta$ -gal gene

4. (2 points) How do you make 500ml of 1xSDS from a 10x SDS stock solution? Indicate mls of water and of the SDS stock solution.

$$V_1C_1 = V_2C_2 \\ (500\text{ml}) (1x) = (?ml) (10x)$$

x = 50ml SDS stock solution and 450 ml water

5. (3 points) Why is TAQ polymerase commonly used in PCR reactions?

The DNA is denatured at 95C, so most enzymes become denatured. However, TAQ pol is heat stable at 95C, so repetitive reactions can be carried out using it.

6. (3 points). You need to make 100ml of a 0.5M solution of a certain compound. Its molecular weight is 100. How many grams do you need?

$$.1L \times \frac{0.5M}{\text{liter}} \times \frac{100g}{\text{mole}} = 5g \text{ needed}$$

7. (3 points). What chemical is added to bacterial plates to give a blue color after cleavage by  $\beta$ -galactosidase?

x-gal