

PRE-LAB: BACTERIOLOGICAL ANALYSIS OF WATER LAB

We will be using three new media this week (lactose broth, LB; brilliant green lactose bile, BGLB; differential coliform, DC). See the specification sheets and links posted on FOL under the content section for this week's lab.

Please fill out the following table using the protocols posted on FOL. You will need to know this information to correctly interpret the test results.

Medium	Reagent(s)	Purpose of reagent in detecting coliforms	Appearance of test result	
			Positive	Negative
LB	Lactose + Durham tube			
BGLB	Brilliant green + bile Lactose + durham tube			
DC	Bile BCIG Lactose+ neutral red			

Worksheet Water lab

Your sample name (1 bonus mark):

Most Probable Number Results (9 marks)

Make a figure that shows a positive tube from the LB dilution series, and the BGLB and EMB media (if applicable). Include a descriptive figure legend to label the images. **2 marks.**

Table 1: Most probable number results of a water sample **3 marks**

Sample volume	Number of positive tubes
10 ml	
1 ml	
0.1 ml	

- a) Most probable number: _____
 CFU/ml: _____

Show your work to calculate CFU/ml on another page.

Table 2: Confirmation tests for MPN **2 marks**

Sample type	BGLB	EMB
Water sample		

Use '+' to indicate a positive test result and '-' to indicate a negative test result.

- b) Did the tests confirm that sample has coliforms? Explain. **1 mark**
- c) Did the tests confirm that your sample had *E. coli*? Explain. **1 mark**

Membrane Filtration Results (8 marks total)

Make a figure of the membrane filtration plates. Include a descriptive legend to label the images. **2 marks**

Table 3: Membrane filtration results of a water sample **2 marks**

Plate	Contaminated water plated (ml)	Total coliform CFU/plate	Vigorous lactose fermenters CFU/plate	Total coliforms: CFU/ml	Vigorous lactose fermenters CFU/ml
1					
2					

Note: TFTC <20; TNTC > 150

Note: *Vigorous lactose fermenters have colonies with a metallic sheen*

Show your work to calculate CFU/ml below. **1 mark**

d) Compare your results between the MPN and membrane filtration methods in terms of CFU/ml of coliforms and *E. coli*. **1 mark**

e) **Discuss your results related to the sample source (e.g. well, run-off, field, etc.).**
2 marks