**Sometimes you assume that you are an effective team member, when in fact you are not. State two ways through which you can measure/ verify your effectiveness and explain why you chose these methods. \*BLUE**

In team working, everyone wants to do his best. Me and everybody try to do our tasks completely and on time. And because we hope to do our best, we think that we do our best. As a member in my team, I try to do my task on time and perfect. To know if our work is done well or not, one of the roles of my team is that every meeting we discuss every task given to every member. For example, after we divide the tasks between us, in the next meeting we give our tasks to each other and everyone revise and take look on the task of another member. Then we discuss the advantages and disadvantages of each task and edit it to be better. If one did not do his task well, we discuss with him how to improve it and help in improving the task. This is a way, I as a member, can measure my effectiveness and work in the team. Another way I could measure my effectiveness is through delivering my task on time. Because if I could not deliver it on time, then I cannot make it and need more time to do it and this refer to my carelessness and inability about my tasks. Another way I found it effective for the whole team is revising the progress of our work or project. Through we revise with our capstone teacher if we are doing well, what should we do further to improve our work and let him give a look on our ideas, portfolio, and give us our progress.

**Design requirements are sometimes called Success indicators as they inform you whether your design is successful. Design requirements must be testable and measurable. A common mistake is to choose a design requirement from research such as Lower cost When it is impossible to test that requirement with your prototype. State one Design requirement You may choose for your prototype and explain how you will test and measure it. \*BLUE**

Design requirements is the indicator if our project is success or not. For our project we decide to test it through some design requirements that are effective in testing it. The first is the efficiency of our prototype. We decide to test the efficiency through we measure the amount of microplastics found in a sample of water before applying our prototype and filtrate it and the amount of it after filtration. This is an effective way to test our prototype as it indicates how much microplastics does it remove. Also, this is related to the size of microplastics that are removed. Such that as their size decrease, our design requirements are achieved, and our project is doing well. Also, we choose the Ph of water after filtration as an indicator, as if after filtration its Ph, which measures the number of protons found in it, ranges from 6.5 and 8.5, then the filtration is doing well. The Ph of pure water, not acidic or basic or alkaline, is 7. If it increases, then its basicity increases and if it decreases then its acidity increase. Both cases are not required for the water we hope to obtain after filtration.

**In earth science, you studied different water reservoirs: natural or human constructed reservoirs, either on the surface or as groundwater. Order these reservoirs (from the highest to the lowest) according to the presence of microplastic particles. Explain why you ordered them in that way. \*BLUE**

Water reservoirs are divided into surface reservoir and underground reservoir bur first what is a reservoir. A reservoir is any place that holds water. Surface reservoirs are such dams, rivers, lakes and so on. They are any place that holds water above earth surface. And they are the most ones that can be polluted in high rates. Groundwater reservoirs such as underground water found in saturated zones, water tables and so on. They have less pollutants. If we want to order these reservoirs according to the amount of microplastics found in it, then we look to the pollutants in it. They are as follows: oceans and seas & gt; dams & gt; ground water in water tables and saturated zones. The oceans and sea water are the most ones that contain microplastics; as we through all our garbage in them containing cans, plastic pipes, plastics containers and so on. Any material that contains plastic results in microplastics. also, factories have pipes connected to the ocean, sea, or any channel near it to through its wastes containing chemicals and microplastics. then dams are less, and the least is underground water. Because they are not facing many pollutants, they contain less microplastics. in addition to that, they are relatively filtered through their movement down against gravity by the sand, gravels and clay that are found in the soil.

**Recently, environmental scientists managed to make microplastics particles in water positively charged by using metal ions like fe2+ or al3+. How we could he benefit out of coulomb’s low to deal with this kind of pollution? \*BLUE**

Scientists could use metal ions like (Fe2+ or Al3+) in water containing microplastics to give the microplastics positive charge. And by knowing the amount of this positive charge we could use rods negatively charged to be inserted in water and the negatively charges in it is attracted to the microplastics positively charges and then we can remove these particles from water. **As coulombs law states: FE = K q1q2/r2 where FE is the electric force between two charged particles equals the charge of the first one multiplied by the charge of the second multiplied by a constant called coulombs constant and equals (8.99 X 10-19) Nm2/ c2 and divided by r the distance between the particles.** So, if we know the amount of charge, we give to microplastics particles through adding the mentioned metal ions, and the charge of the negatively charged rods that would attract the particles and remove it from the water, we can calculate the electrical force between them. Note that in calculating the electrical force we use the absolute value of both negatively and positively charged particles.