Problem Based Learning 1. Rubric

	Level 5	Level 4	Level 3	Level 2	Level 1	Level 0
Q1. What do we know/what do we need to know (5 points) Please include the table you have prepared during the lab.	Both lists are comprehensive and applicable. The "what do we need to know" list is relevant to solving the problem (**5 points**)	Both lists are comprehensive and applicable and "what do we need to know" list is mostly relevant to solving the problem (**4 points**) **OR** One of the lists is lacking some information (4 points)	Both lists are present, but one of the lists is lacking some information and "what do we need to know" list is mostly relevant to solving the problem (**3 points**) **OR** Both lists are lacking information	Both lists are lacking some information and "what do we need to know lists if mostly relevant to solving the problem (**2 points**) **OR** "What do we need to know" list is not very relevant to solving the problem, and "what do we know" is lacking some information (**2 points**)	The "what do we need to know" list is mostly irrelevant to solving the problem and "What do we know" is lacking >50% of information. (**1 point**)	The" what do we need to know" list is irrelevant to solving the problem and "what do we know" lacks more than 80% of information (**0 points**)
Q2. Solution. (5 points)	The proposed solution is concise and	The proposed solution is concise, but it	The proposed solution is applicable	The proposed solution is mostly	The proposed solution is not	The proposal is written by

Provide a 1-2 paragraph outline of a detailed proposed solution (15-25 sentences). The use of generative software is not allowed.	comprehensive, all the necessary details are included. The suggested length is respected. The solution is completely applicable to the problem. (**5 points**)	lacks some details. The suggested length is respected, and the solution is completely applicable. (**4 points**) **OR** The solution is concise and comprehensive, the solution is applicable, but the suggested length is not respected (too long). (**4 points**) **OR** The solution is mostly applicable (**4 points**)	but lacks details. (**3 points**) **OR** The length is not respected but the solution mostly applicable (**3 points**)	applicable, but lacks some details and the suggested length is not respected (**2 points**)	very applicable (**1 point**) **OR** The solution lacks most of the details (**1 points**)	generative AI (**0 points**) **OR** The proposed solution is completely inapplicable (**0 points**)

| Q3. Apparatus and Chemicals. (5 points)

Write down the list of chemicals and apparatus you will require for your experiment in the table below. Please include the quantities for both chemicals and apparatus. | Chemicals and apparatus are both listed. The quantities are included for both chemicals and apparatus.

The list is comprehensive and completely applicable to the experiment. (**5 points**) | Chemicals and apparatus are both listed, the quantities are present, but the list is not comprehensive (**4 points**)

OR

Not completely applicable (**4 points**)

OR

Some quantities are missing (**4 points**) | Chemicals and apparatus are both listed, but 50% of the quantities are missing (**3 points**)

OR

The list is neither comprehensive nor completely applicable (**3 points**) | Chemicals and apparatus are both listed but there are no quantities. (**2 points**)

There is only one list (either chemicals or apparatus), it is comprehensive but not completely applicable or vice versa. The quantities are present (**2 points**)

OR

There is one list, it is comprehensive and applicable, but some | There is only one list (either chemicals or apparatus) present, and it is neither very comprehensive nor completely applicable. (**1 point**)

OR

There is one list, it is comprehensive and applicable, but the quantities are missing (**1 point**) | Either the lists are not present or completely inapplicable to the proposed solution (**0 points**) |

				quantities are missing (**2 points**)		
Q4. Procedure (7 points) Write a detailed procedure you will follow to perform your experiment. Please include a drawing/scheme of the set up and the safety guidelines where applicable.	The procedure is included. It is well written, easy to follow and contains all the necessary steps. There is no ambiguity as to what needs to be done. Included, where applicable: - The schemes/drawing. - The safety considerations (**7 points**)	The procedure is included. It is mostly well written and mostly easy to follow. (**5.5 points**) OR One of the included items from Level 4 is missing (**5.5 points**)	The procedure is included but somewhat difficult to follow. (**4 points**) OR There are no schemes or safety considerations (**4 points**)	The procedure is included, as well as safety and schemes/drawings. Some steps are missing, and it is difficult to follow (**2.5 points**)	The procedure is included, schemes/drawings as well as safety considerations are missing. It is difficult to follow (**1 point**)	There is no procedure (**0 points**) OR The procedure is very poorly written, impossible to follow or completely inapplicable (**0 points**)
Q5. Evidence (5 points) What evidence you are going to use/collect to	All the necessary evidence to be collected is described. It is completely	All the necessary evidence is described. It is mostly	The proposed evidence completely applicable to the proposed	The proposed evidence is mostly applicable but the	The proposed evidence is not very applicable and the possibility of	No evidence is provided (**0 points**) OR

determine whether the experiment is working or not?	applicable to the proposed solution. A possibility of experiment not working is considered and evidence is included as well (where applicable) (**5 points**)	applicable to the proposed solution. A possibility of the experiment not working is considered (where applicable) (**4 points**)	solution, but the possibility of experiment not working is not considered (**3 points**) **OR** The proposed evidence is not very applicable (**3 points**)	possibility of experiment not working is not considered. (**2 points**)	experiment not working is not considered. (**1 point**)	The evidence provided is completely inapplicable (**0 points**)
Q6. References (3 points)	The references are present and formatted according to the ACS style of the formatting required when using generative AI (**3 points**)		The references are present, but the ACS formatting requirements are not always respected (**2 points**) **OR** The use of generative AI is not		Some references are missing, and the ACS formatting requirements are not always respected. **OR** Some references are missing, and the use of	The references are not included (**0 points**) **OR** Some references are missing and ACS formatting is not respected (**0 points**)

			referenced properly. (**2 points**)		generative AI is not referenced properly	
Total # points:	**30 points**					