

## Documentation on QA

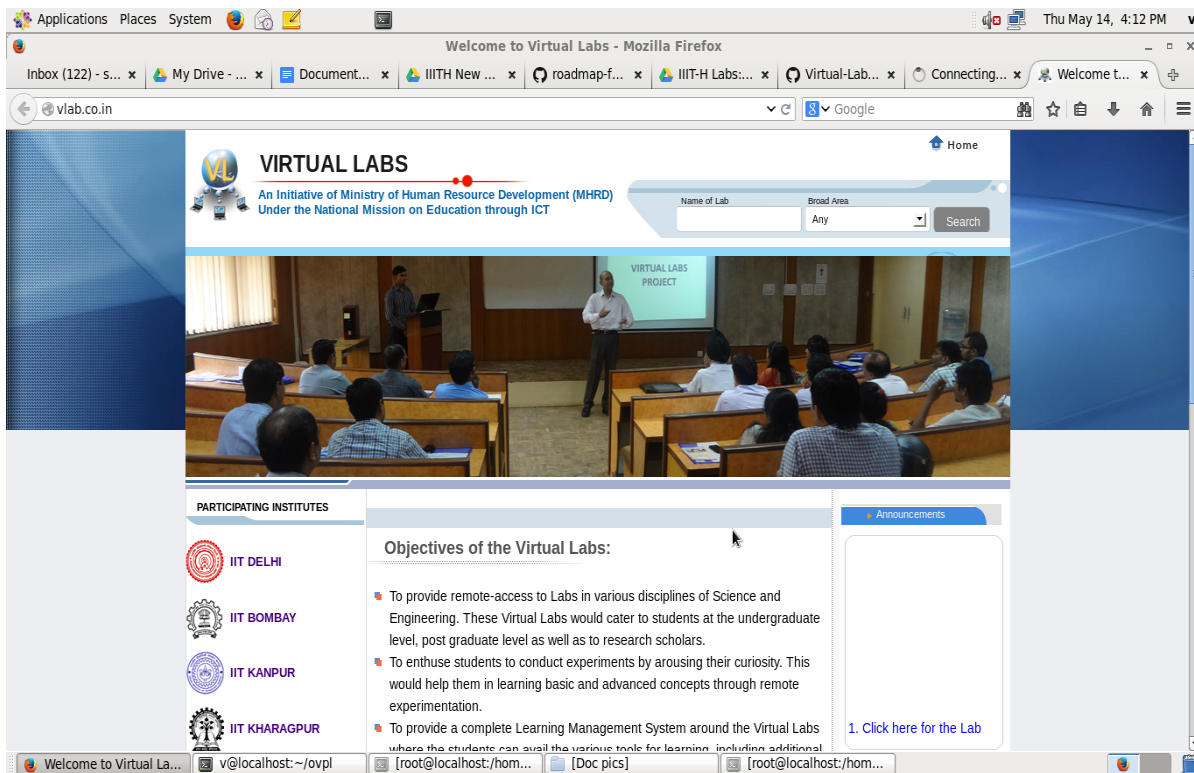
**PURPOSE:** This document outlines the QA process for Virtual Labs.

### **WHAT IS QUALITY ASSURANCE ?**

Quality assurance is a systematic process of checking to see whether a lab being developed meets the specified requirements. It is like setting up the necessary procedures to be sure that something is working correctly.

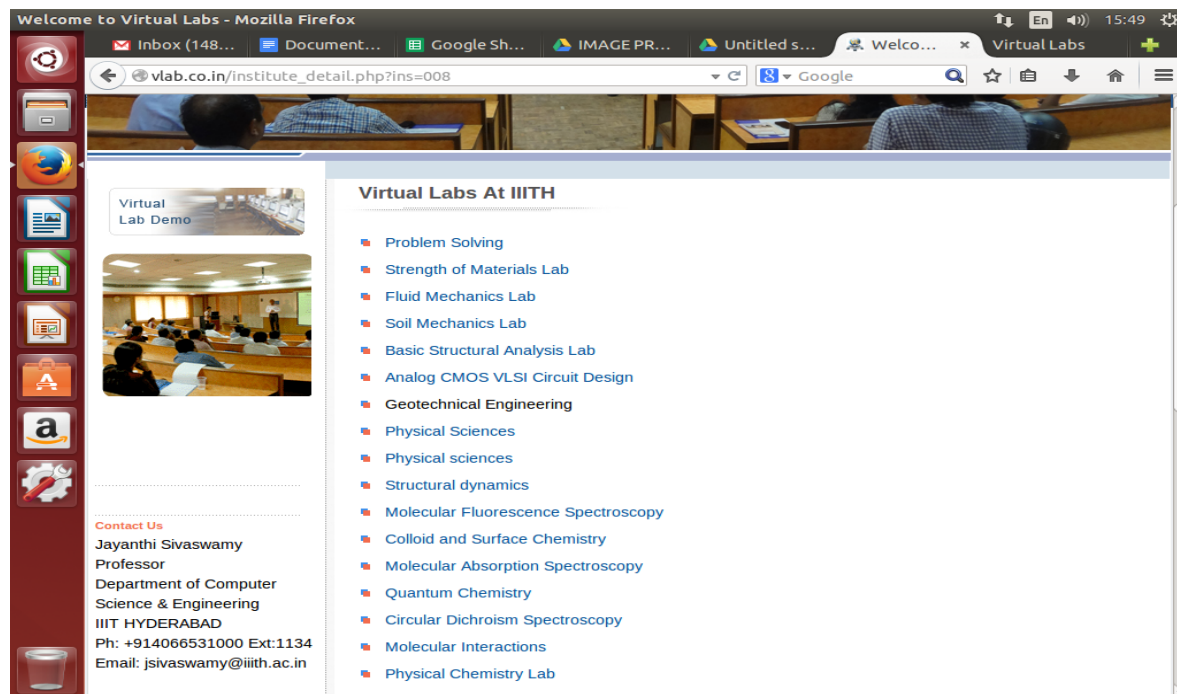
### **STEPS TO BE PERFORMED WHILE DOING QA :**

**Step 1:** Firstly you need to go to [www.vlab.co.in](http://www.vlab.co.in) website, there you can find virtual labs related to all institutes as below :



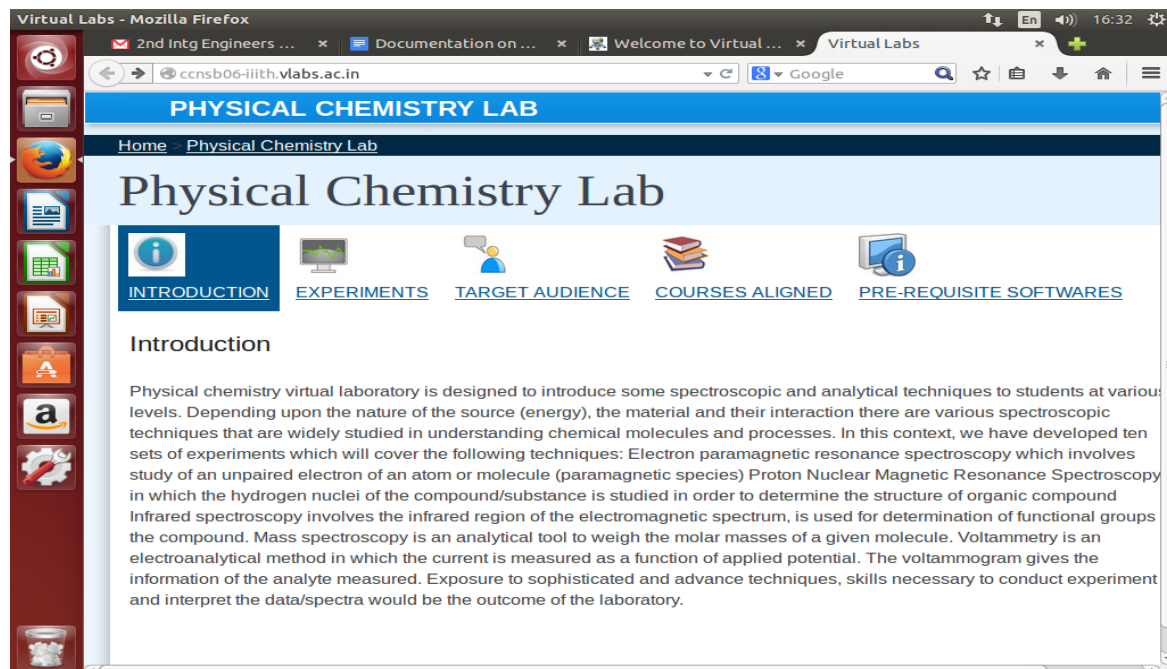
**vlab.co.in Home page**

**Step 2:** Click on the institute then you can see the list of labs. You can see that in the below screenshot.



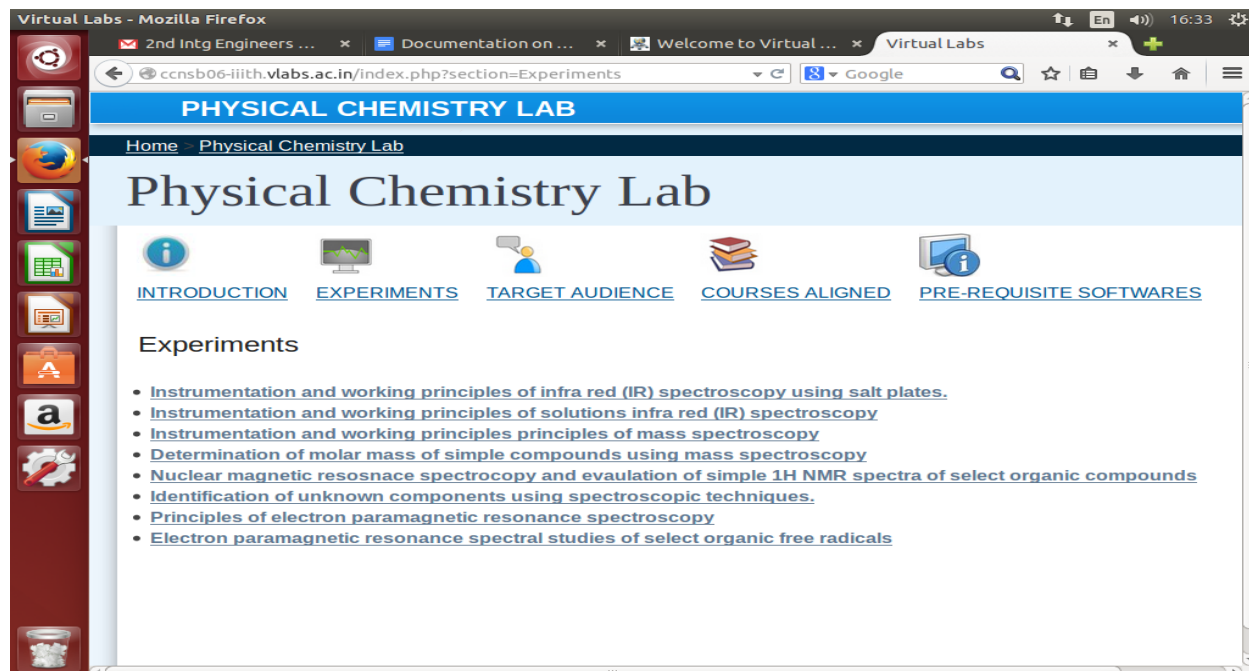
**List of labs in IIIT-Hyderabad**

(i) Click on any of the lab for, example Physical Chemistry Lab:



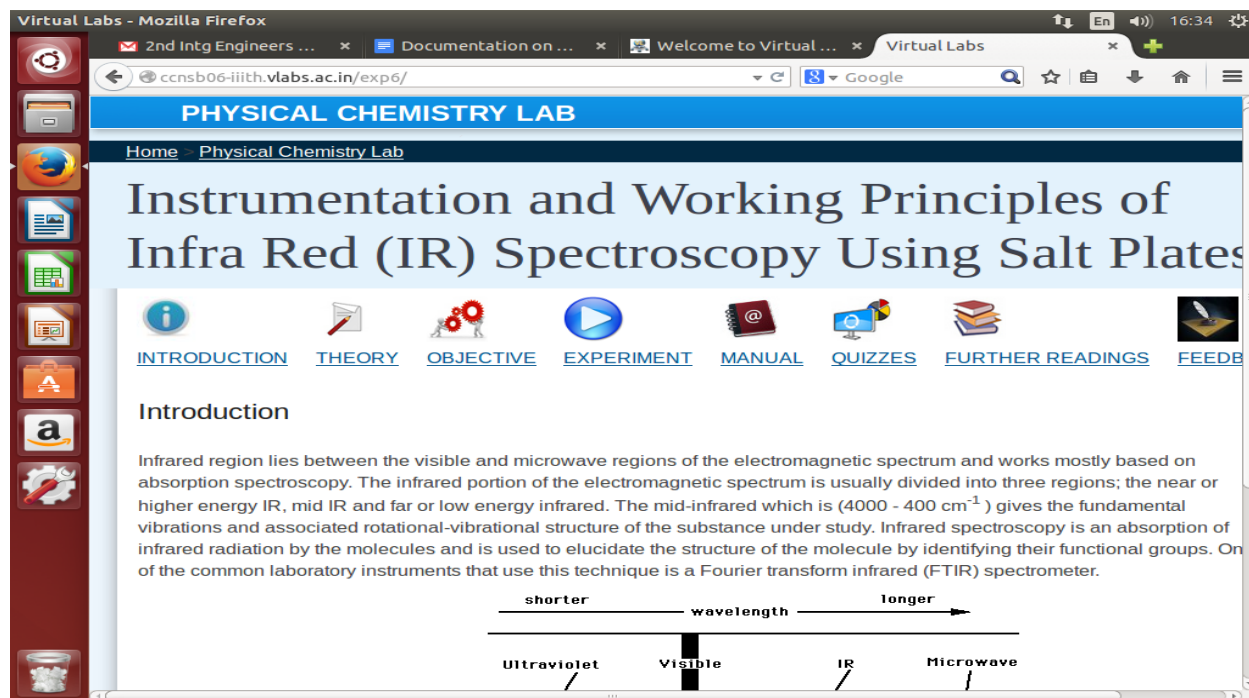
**Physical Chemistry home page**

(ii) Click on the Experiment tab, there you can see the list of experiments:



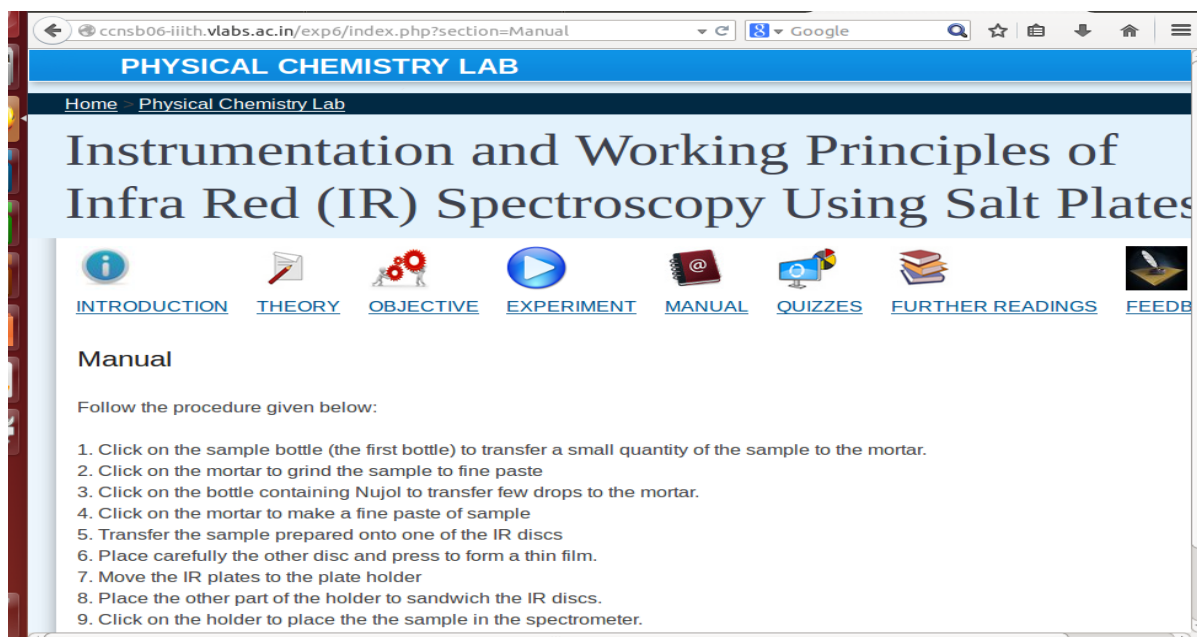
### List of Experiments

(iii) Click on any of the experiment, for example Instrumentation and Working Principles of Infrared (IR) Spectroscopy Using Salt Plates.



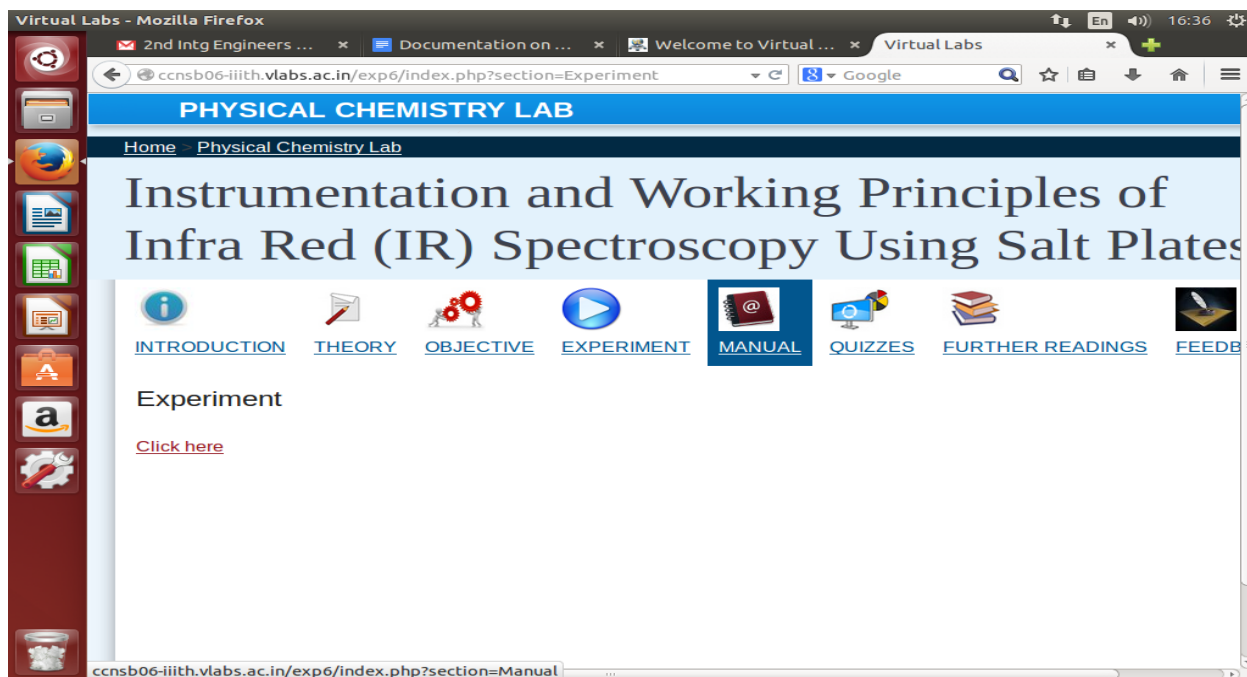
### Experiment Home Page

(iv) Click on the Manual tab to read the given instructions to perform the experiment:



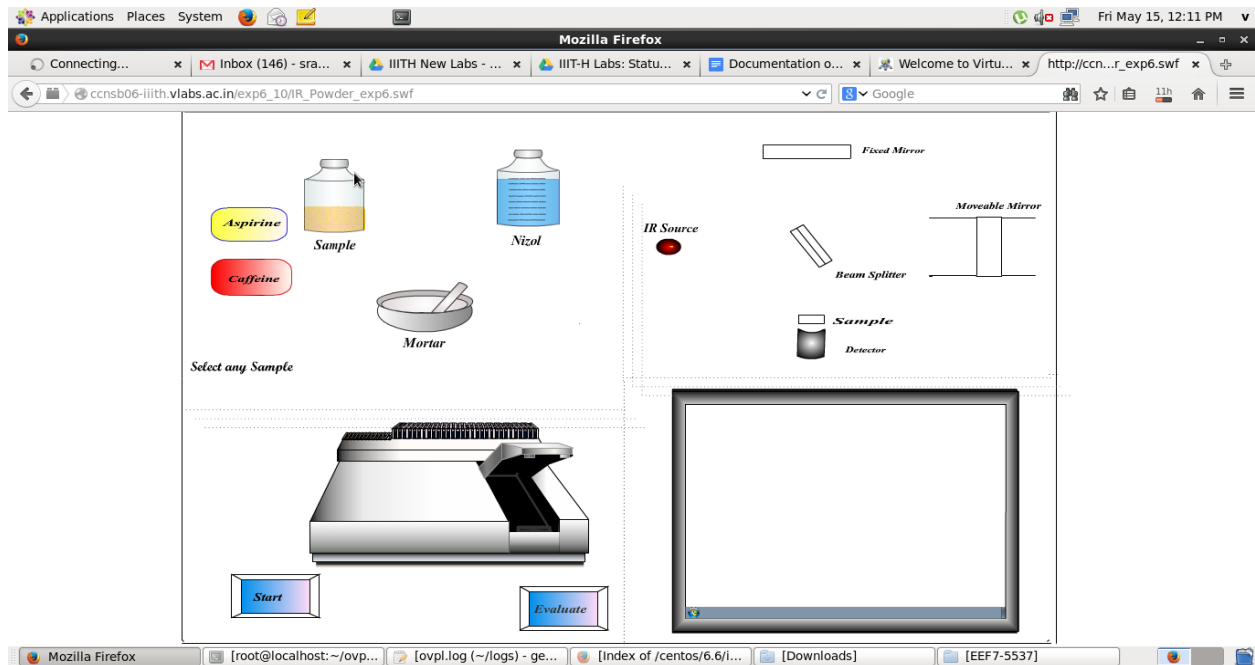
Manual page of the Experiment

(v) Click on the Experiment tab to perform the experiment, then click on **click here** option to get the simulation.



Simulator page of the Experiment

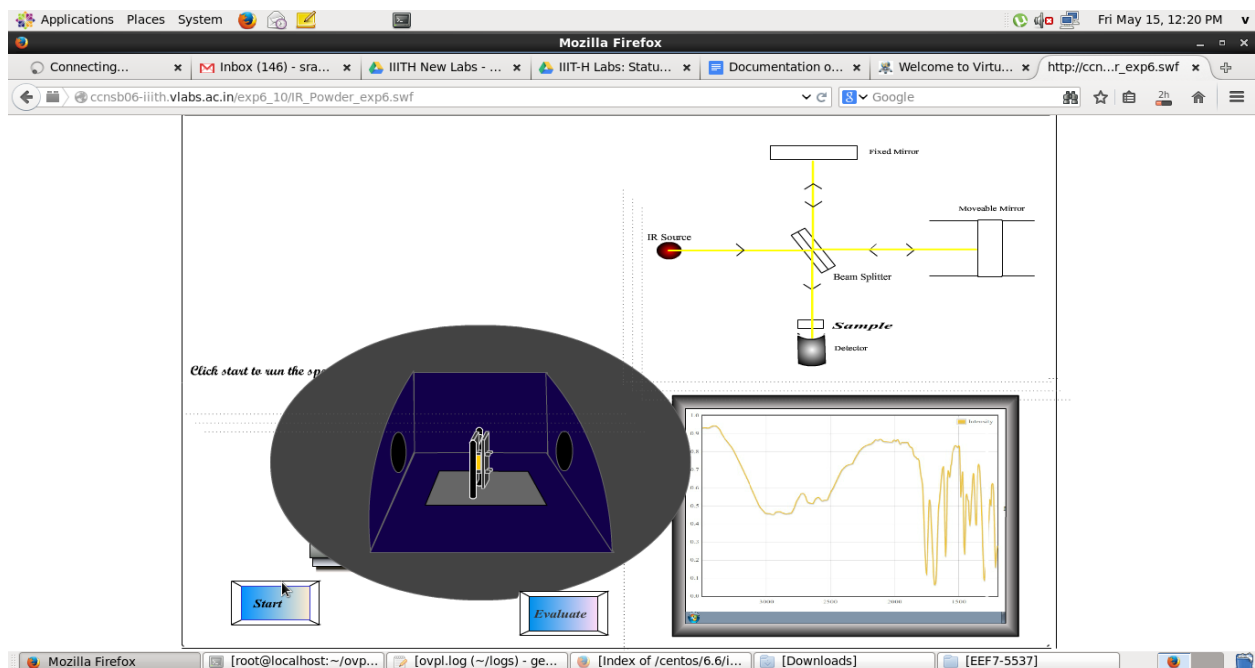
(vi) The following screen shows the starting page of the experiment.



**Experiment Page**

(vii) Then follow the instructions which are displayed on the experiment page

(viii) After performing the experiment the experiment's result page can be seen as below



**Result page of the Experiment**

## Step 4: What do you expect from a lab ?

4.1 Check for the instructions given to perform the experiment is clear or ambiguous.

4.2 See whether the description about the experiment is clear and meets the expectations of the users.

4.3 Click on any lab. Make sure to have the content and simulations of the lab been added.

4.4 In simulations, if there are any client side dependencies to perform the experiment, firstly you need to install the required packages/software on your machine and then perform the experiment, if not directly go ahead with the process.

4.5 Its QA engineer's responsibility to test whether the simulations are running or not in different environments. (Different environments means on which operating systems and browsers the lab is been tested.) If you are a domain expert you can also verify the output of the simulations.

**Step 5:** If u come across any issue regarding the lab or experiments you need to report the issue in the spreadsheet as shown below. The issues can be of two types:

5.1 Errors that can be modified by a lab developer

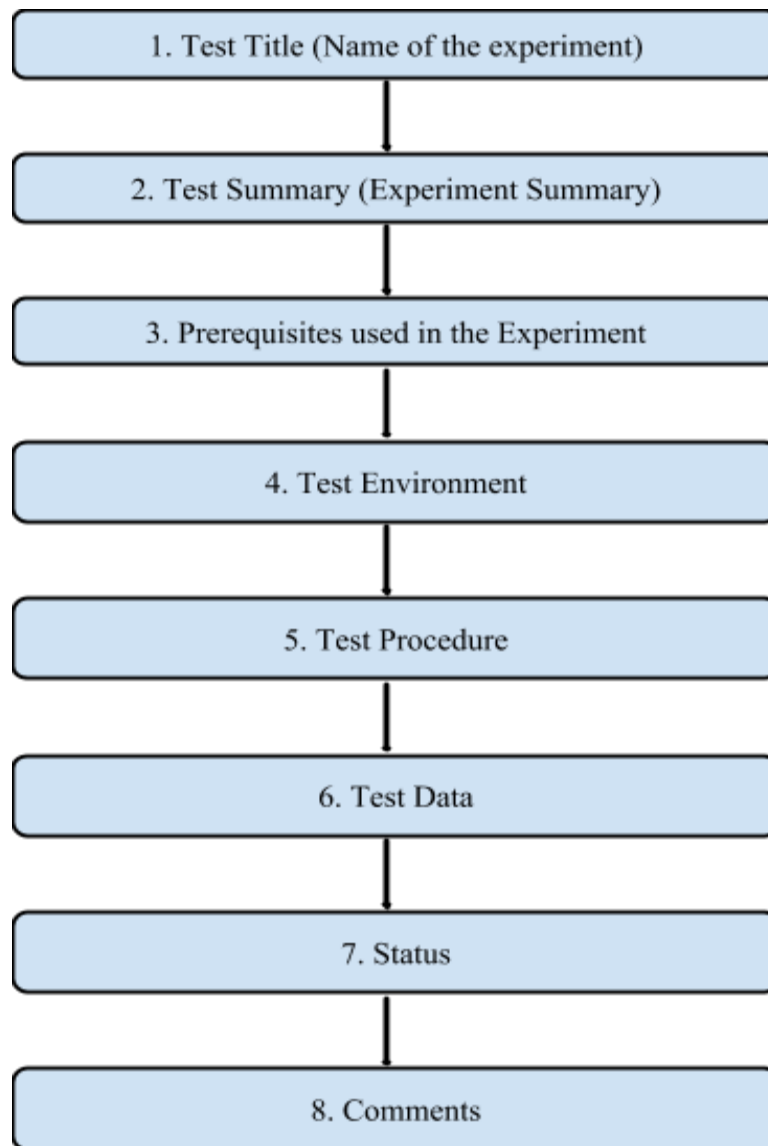
5.2 Errors that can be rectified by an integration engineer.

5.3 Ensure that the issues are reported clearly with screenshots if needed.

S.NO	LAB ID	Lab Name	Link for the lab	Client Side Dependencies	No of experiments	List of experiments (R)	1. Test Title	2. Test summary	3. Test Cases	4. Test Environment	5. Test Procedure	6. Test Data	7. Backup(PASS/FAIL)	8. Comments
1	12	CCN5808	Physical Chemistry	Java(JDK 5.2) for test 2 experiments and Flash	1	Instrumentation and working principles of IR and (IR) spectroscopy using suit plates.	Instrumentation and working principles of IR and (IR) spectroscopy using suit plates.	To learn sample preparation and handling procedures to measure an IR spectrum using suit plates.	Java(JDK 5.2) for test 2 experiments and Flash	Operating Systems: Windows 7, CentOS, Ubuntu with Chrome and Mozilla Firefox.	Click on manual tab -> Follow the instructions to perform the experiment.	<a href="#">http://display.virtual-lab.in</a>	PASS/its working	It would be better if we could have video guides for visitors in IR
2					2	Instrumentation and working principles of solution IR and (IR) spectroscopy	Instrumentation and working principles of solution IR and (IR) spectroscopy	To learn solution sample preparation and handling procedures to measure an IR spectrum.	Java(JDK 5.2) for test 2 experiments and Flash	Operating Systems: Windows 7, CentOS, Ubuntu with Chrome and Mozilla Firefox.	Click on manual tab -> Follow the instructions to perform the experiment.	<a href="#">http://display.virtual-lab.in</a>	PASS/its working	
3					3	Instrumentation and working principles of mass spectrometry	Instrumentation and working principles of mass spectrometry	Introduction to mass spectrometry instrument	Java(JDK 5.2) for test 2 experiments and Flash	Operating Systems: Windows 7, CentOS, Ubuntu with Chrome and Mozilla Firefox.	Click on manual tab -> Follow the instructions to perform the experiment.	<a href="#">http://display.virtual-lab.in</a>	PASS/its working	
4					4	Determination of molar mass of sample compounds using mass spectrometry	Determination of molar mass of sample compounds using mass spectrometry	To understand the working principle of mass spectrometry.	Java(JDK 5.2) for test 2 experiments and Flash	Operating Systems: Windows 7, CentOS, Ubuntu with Chrome and Mozilla Firefox.	Click on manual tab -> Follow the instructions to perform the experiment.	<a href="#">http://display.virtual-lab.in</a>	PASS/its working	
5					5	Nuclear magnetic resonance spectroscopy and evaluation of simple 2H NMR spectra of select organic compounds	Nuclear magnetic resonance spectroscopy and evaluation of simple 2H NMR spectra of select organic compounds	Systematically evaluate three sets of compounds with a equivalent number of protons.	Java(JDK 5.2) for test 2 experiments and Flash	Operating Systems: Windows 7, CentOS, Ubuntu with Chrome and Mozilla Firefox.	Click on manual tab -> Follow the instructions to perform the experiment.	<a href="#">http://display.virtual-lab.in</a>	PASS/its working	
6					6	Identification of unknown components using spectroscopic techniques	Identification of unknown components using spectroscopic techniques	Identification of unknown compounds through combination of spectroscopic methods. Used here are infrared spectroscopy, Nuclear magnetic Resonance and Mass spectrometry.	Java(JDK 5.2) for test 2 experiments and Flash	Operating Systems: Windows 7, CentOS, Ubuntu with Chrome and Mozilla Firefox.	Click on manual tab -> Follow the instructions to perform the experiment.	<a href="#">http://display.virtual-lab.in</a>	PASS/its working	
7					7	Principles of electron paramagnetic resonance spectroscopy	Principles of electron paramagnetic resonance spectroscopy	To understand the basic principle of Electron Paramagnetic Resonance Spectroscopy	Java(JDK 5.2) for test 2 experiments and Flash	Operating Systems: Windows 7, CentOS, Ubuntu with Chrome and Mozilla Firefox.	Click on manual tab -> Follow the instructions to perform the experiment.	<a href="#">http://display.virtual-lab.in</a>	PASS/its working	
8					8	Electron paramagnetic resonance spectral studies of select organic free radicals	Electron paramagnetic resonance spectral studies of select organic free radicals	To interpret simple experimental first order spectra and calculate some of the EPR parameters (g, A and v (magnetic field)).	Java(JDK 5.2) for test 2 experiments and Flash	Operating Systems: Windows 7, CentOS, Ubuntu with Chrome and Mozilla Firefox.	Click on manual tab -> Follow the instructions to perform the experiment.	<a href="#">http://display.virtual-lab.in</a>	PASS/its working	
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Spreadsheet used to report during the QA

**5.4** The following diagram shows how the test cases are done while performing QA



**Steps to be followed while doing the Test cases**

**Step 6:** Share, discuss and implement the changes required:

**6.1** Nobody likes to be told that their work is incorrect or incomplete. So keep in mind the following guidelines when you are providing negative feedback.

**6.2** Provide constructive criticism – Remember not to be critical of the person but point out flaws in the experiment.

**6.3** Give reasons to back your comments.