**Summary of Required Practicals for Separate Biology**

**Biology Paper 1**

**Required practical activity 1**: use a light microscope to observe, draw and label a selection of plant and animal cells.   
A magnification scale must be included.[Click here](https://www.youtube.com/watch?v=SX6mow1AExI&list=PLAd0MSIZBSsHv1pioWRdg-pZCWTo84cdP)

**Required practical activity 2**: investigate the effect of antiseptics or antibiotics on bacterial growth using agar plates and measuring zones of inhibition.  
[Click here](https://www.youtube.com/watch?v=Fd44VxSH2O8&list=PLQwOgESlQFSenuU6Gf9rSQGNr2OFsOo3u&index=16)

**Required practical activity 3:** investigate the effect of a range of concentrations of salt or sugar solutions on the mass of plant tissue. [Click here](https://www.youtube.com/watch?v=oieXYuQm_xE&list=PLAd0MSIZBSsHv1pioWRdg-pZCWTo84cdP&index=2)

**Required practical 4:** use qualitative reagents to test for a range of carbohydrates, lipids and proteins.   
To include: Benedict’s test for sugars; iodine test for starch; and Biuret reagent for protein. [Click here.](https://www.youtube.com/watch?v=mLAwvMLjmAs&list=PLQwOgESlQFSenuU6Gf9rSQGNr2OFsOo3u&index=2)

**Required practical activity 5:** investigate the effect of pH on the rate of reaction of amylase enzyme. [Click here](https://www.youtube.com/watch?v=8Yqbu56ImXk)

**Required practical activity 6:** investigate the effect of light intensity on the rate of photosynthesis using an aquatic organism such as pondweed. [Click here](https://www.youtube.com/watch?v=id0aO_OdFwA&list=PLAd0MSIZBSsHv1pioWRdg-pZCWTo84cdP&index=4)

**Biology Paper 2**

**Required practical activity 9:** measure the population size of a common species in a habitat. Use sampling techniques to investigate the effect of a factor on the distribution of this species. [Click here](https://www.youtube.com/watch?v=RhMOCxXcDrQ&list=PLAd0MSIZBSsHv1pioWRdg-pZCWTo84cdP&index=3)

**Required practical activity 10:** investigate the effect of temperature on the rate of decay of fresh milk by measuring pH change. [Click here](https://www.youtube.com/watch?v=zSx83-D-LYE)

**Required practical activity 7**: plan and carry out an investigation into the effect of a factor on human reaction time. [Click here for a video demonstration.](https://www.youtube.com/watch?v=81lPJtAp5Sc&list=PLQwOgESlQFSenuU6Gf9rSQGNr2OFsOo3u)

**Required practical activity 8**: investigate the effect of light or gravity on the growth of newly germinated seedlings. [Click here](https://www.youtube.com/watch?v=wsP45z8884E)

**For practicals 2 to 10:** being able to complete a table similar to the one below would be very sensible preparation:

Keep the words in bold for each practical.

|  |  |
| --- | --- |
| **Practical No.***2 Effect of Solution Concentration on Mass of Plant Tissue* | |
| **Independent variable and how to change it (include apparatus, even if obvious, esp. if shown in the question)** | Use (at least 5) solutions of different salt/sugar concentrations in boiling tubes/beakers. |
| **Dependent variable and how to measure it (include apparatus, even if obvious, esp. if shown in the question)** | Dry potato cylinders, measure mass, soak for set time, remove, dry again and measure mass again. |
| **Key control variables (to keep the same) (include apparatus, even if obvious, esp. if shown in the question)** | Same starting size (cork borer), same time left soaking, same drying before and after. |
| **Repeats etc** | Repeat each concentration (at least) three times, identify and remove any anomalies before calculating an average for each concentration. |
| **How the results should be interpreted/used** | Find difference in mass.  gained mass = water taken up by the cells  lost mass = water lost by the cells  plot a graph of concentration vs mass change, where the line of best fit crosses the x axis is the equivalent concentration of the original cells. |