

1st

European Union Science Olympiad

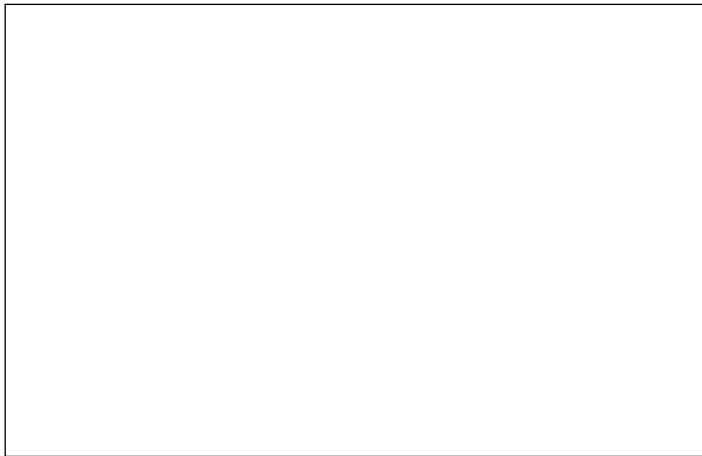
in Dublin, Ireland

TASK **B** ANSWER SHEET



Task B**The Properties of Proteins – Answer sheet****Task B.1: Introduction to the Beer-Lambert law***5 Marks*

1. Optimum wavelength chosen for the detection of p-nitrophenol: .
Indicate in Graph 1 how you chose this value.



Graph 1: Spectrum for determination of optimum wavelength.

2. Fill out table 1 with data you used to prepare a standard curve for p-nitrophenol formation. Calculate the p-nitrophenol concentration in the last column.

Tube #	Amount of NaOH	Amount of 60 μM nitrophenol	Amount of 300 μM nitrophenol	p-nitrophenol concentration	Absorption



3. Attach Graph 2 showing a plot of absorbance against p-nitrophenol concentration.



Graph 2: Absorbance against p-nitrophenol concentration.

4. Determine as accurately as you can for what concentrations of p-nitrophenol the Beer-Lambert law holds. If you wish to supply a new graph, label it "Graph 2A".
Concentration range:

Value of α : .



Task B.2: Renaturing casein*20 Marks*

5. The pH of the unknown sample is .

6. How many cycles did you achieve? .

Get your supervisor to sign off!

7. At what pH values was the protein soluble?

and insoluble?

8. Estimate the isoelectric point of casein (where there is no net charge on casein):

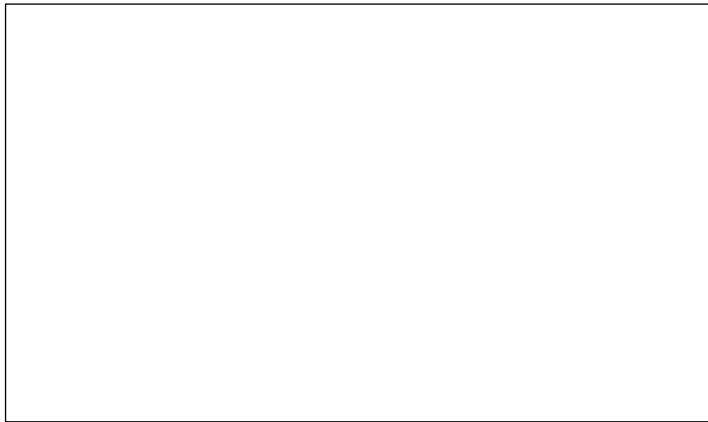
Task B.3: Enzyme activity*25 Marks*

9. Write down what you used as a control:

Table 3: Determination of pH optimum.

pH	Absorbance





Graph 6: Absorbance against pH value.

10. Optimum pH for phosphatase activity: .

11. Are there any other values of the pH for which the enzyme works well? If Yes, indicate the pH-values:

