Name

TITLE OF EXPERIMENT

THE PHOTOELECTRIC EFFECT:
EXPERIMENT No 3

MODERN PHYSICS LAB

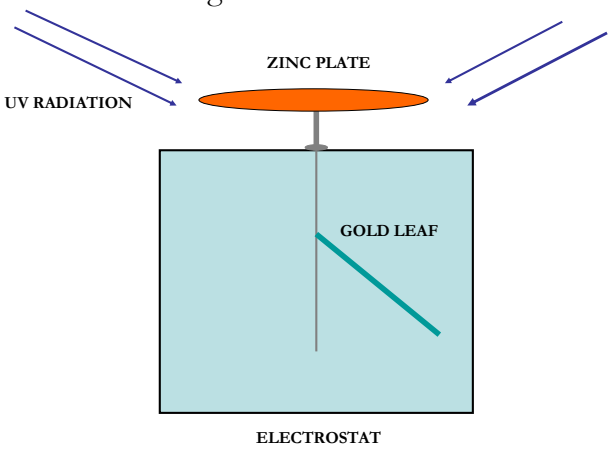
PHYS 393 COURSEWORK

REPORTING SHEET

PART A: SCIENTIFIC KNOWLEDGE AND PLANNING [30 MARKS]	
Aim:	
Methodology - Draw your set up, explaining the use of the different components you will use to achieve your aim	4

What is meant by photoelectric emission? What is a photon? Discuss it's rest mass.	3
The photoelectric effect supports a particle theory of light, but not a wave theory of light. State (3) features of the photoelectric effect, which support the particle theory of light, but not support the wave theory of light. For each feature explain why it supports the particle theory and not the wave theory.	7

(i) State Einstein's photoelectric equation and explain the meaning of each term. (ii) Plot the maximum kinetic energy against frequency	4
(i) What would happen to the stopping voltage and the current if the intensity of light a) decreased and b) increased for a specific wavelength and why? (ii) If the intensity of incident light is fixed, what would happen to the stopping voltage if its wavelength changed? In each case provide a graph corresponding to your answer.	4

A freshly cleaned zinc plate is connected to a charged gold-leaf electroscope. Describe and explain what happens to the leaf of the electroscope when the plate is exposed to ultraviolet radiation if the initial charge on the electroscope is a) positive b) negative UV light and the electrostat  	4
Which factors you suggest should be controlled in order to make sure that your results are accurate and reliable?	4

PART B: OBTAINING EVIDENCE	
Your data. Use the correct units and convert appropriately.	

PART C: ANALYSING AND CONSIDERING YOUR EVIDENCE	
Graph **(use graph paper)**	
Calculations	
My evidence leads to the following result.	
Compare your results with theoretical values.	

PART D: EVALUATION [10 MARKS]	
What was good or bad about the experiment you did was …	2
Some ways you could improve the experiment were…	2
You had the following anomalies.	2
The explanation for your anomalies was	2
You believe my evidence is reliable/unreliable for the following reasons.	2