



M. Nazer

Chemistry 209
Final Exam.

June 9, 1997
Time: 90 min.

Name (Family First) : _____

Student Number : _____

Section : _____

Grade

Question I Out of 25

Question II Out of 25

Question III Out of 25

Question IV Out of 25

Total Out of 100

I. (25 points) Show how each of the following techniques (experimental operations) can help in identifying unknown compounds. In each case give the chemicals and equipment that are used, and describe what you observe:

a) Mixed melting point

b) Fehling's Test

c) Thin layer chromatography

d) Paper chromatography

e) Osazone formation

II. (25 points) How do you accomplish (perform) each of the following. In each case give the equipment and the chemicals that are needed.

a) Removal of waer from an organic solvent.

b) Recovering a non-volatile solid dissolved in ether.

c) Removing traces of acid from a solution of an organic substance dissolved in carbon tetrachloride (density = 1.6)

d) Determining the R_f value of colorless substances.

e) Separation and purification of benzoic acid as prepared by the haloform reaction.

f) Separation and purification of isoamylacetate from the reaction mixture.

III. (25 points) What information about the structure of the underlined you get from each of the following:

a) An amino acid that has a small R_f value.

b) A disaccharide that does not reduce Benedict's reagent.

c) A solution that has a sharp boiling point.

d) An alcohol that gives a positive iodoform reaction.

e) A substance that dissolves in water but precipitates out when HCl is added to its aqueous solution.

f) A steriod that does not react with bromine but reacts with acetic anhydride. (Steriods are compounds that have rings like those in cholesterol).

IV. (25 points) Make a drawing for each of the following:

a) A diagram that shows plots of vapor pressure versus temperature of two pure substances (A) and (B) where (A) is more volatile than (B).

b) An apparatus that is used for refluxing flammable organic compounds. Label all parts.

c) A fractional distillation apparatus. Label all parts.

d) Structure of each compound which you used in the preparation of aspirin, including reagents you used in isolation and purification.