VPM's ADVANCED STUDY CENTRE

POST GRADUATE DIPLOMA IN APPLIED ANALYTICAL CHEMISTRY

FINAL EXAMINATION 2008-2009

Date: 06.05.2009 (5-8 pm) **PAPER – II** Marks: 100

SECTION - I

Write answers of two sections in two different answer sheets.

Q.1] Write brief answers **(any 4)** **20**

1. Draw schematic diagram of Gas Chromatograph. Explain role of column briefly.
2. What are the advantages of HPLC over GC?
3. Write a note on various types of columns used in HPLC?
4. What are the advantages and limitations of GC?
5. Outline various applications of ion exchange chromatography.

Q2.] Answer **any 6** briefly. **30**

1. Write a note on mass analyzer
2. Define Infra-red spectroscopy. Explain various modes of vibrations for a linear molecule.
3. Draw schematic diagram of HPLC and explain function of pump, column and detector.
4. Name the various detectors used for GC and explain any 1 in brief.
5. Write a note on various types of columns used in GC
6. What is meant by reverse phase chromatography? What are its applications?
7. What are the applications of IR spectroscopy?
8. Define ion exchange capacity of ion exchange resin. How will you find it out?

SECTION - II *(use another answer sheet)*

NOTE: Attempt Any Five Questions

Q.1) Answer **Any Two** Briefly: **10**

a) Describe theory of Spectrophotometry / colorimetry
b) Describe chemical shift in NMR spectra.
c) What information do we get from TG curve?

Q.2) Discuss Principle & working of AAS with schematic diagram. **10**

Q.3) What is DSC and TGA? Explain working of DSC with neat diagram. **10**

Q.4) Attempt **Any Two:** **10**

a) Write principal and series of events taking place in flame.
b) Hollow cathode lamp.
c) Burners in AAS

Q.5) Write Notes on **(Any 2)** : **10**

a) Interferences in flame photometry.
b) Beer Lambert Law
c) Green chemistry

Q.6) Write in short about spin-spin coupling in NMR and give the position of peaks of a) Ethyl bromide b) Acetaldehyde **10**

Q.7) Answer **any 5** of the following: **10**

1. What is the difference between colorimeter and spectrophotometer?
2. What is the source of light used in visible and UV spectrophotometer?
3. What is the difference between single and double beam spectrophotometer?
4. What is lambda max value?
5. Whether blank reading changes with the change in wavelength?
6. What is absorbtivity or extinction coefficient? Does it depend upon concentration?
7. What is the difference between extinction coefficient and molar extinction coefficient?
8. Whether is it possible to determine concentration of an unknown analyte using spectrophotometer?
9. Whether UV visible spectroscopy can be used for solid samples?