VPM's ADVANCED STUDY CENTRE

POST GRADUATE DIPLOMA IN APPLIED ANALYTICAL CHEMISTRY

RE- EXAMINATION 2010-2011

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

Write answers of two sections in two different answer sheets.

SECTION - I

Q. 1. Answer in brief. (Any Five) 25

1.Describe infra-red spectroscopy. Explain the different modes of molecular vibrations taking place in IR.

2.Describe the schematic diagram of GC. Explain in brief the different components in GC.

3.Explain reverse phase and normal phase chromatography in HPLC.

4. .Explain the concept of column efficiency. On which factors it is dependent ?

5.Compare packed columns with capillary columns used in GC.

6. Explain different applications of flame photometry.

7. Explain instrumentation of HPLC with the schematic diagram,

Q. 2. Write notes on (Any 4) 20

1. Finger print region in IR & its uses.

2.Limitations of GC.

3. Principle of mass Spectrometry.

4. Flame ionization detector

5 comparison between HPLC and GC.

6. Principles of column chromatography

Q. 3. Choose Correct option. (5)

1) The detectors used in Gas-liquid chromatography are

a) Flame Ionization Detector b) Sulfur Chemiluminiscence Detector

c) Electron Capture Detector d) All of the above

2) Flame Photometry is generally used for analysis of

a) Alkali & alkaline earth metals b) Transition metals

c) Lanthanides d) Actinides

3) The efficiency of the hollow cathode lamp in AAS depends upon

a) Operating potential b) Size

c) Both are correct d) Both are incorrect

4)In Atomic absorption spectrum, a) dark lines against bright background is observed. b) bright lines against a dark background is observed.

5) Electricity in Arc is carried by the motion of

a) Electrons and ions b) Electrons and protons

c) Electrons and neutrons d) Neutrons and protons

Section II

Q. 1. Select the correct option (any ten) .(10)

A) If the transmittance of a solution is 19.4%, what is its absorbance or optical density?
(1) 80.6 (2) 0.712 (3) 1.288 (4) All incorrect

B) NMR machine consist primarily of
(1) Resonance Oscillator (2) Recorder
(3) Powerful magnet (4) Sample holder

C) The symbol ^{1}H stands for
(1) NMR (2) Cosy (3) Coupling (4) Proton NMR

D) The symbol ^{13}C stands for
(1) NMR (2) Carbon NMR (3) Isotope (4) Proton NMR

E) The solvent is Deuterated which allows
(1) Shielding (2) Coupling (3) absence of solvent peaks (4) Anisotropy

F) The signal appearing away from TMS is termed as
(1) Coupled (2) protorated (3) Deshielded (4) shielded

G) Zeeman effect is observed in...
(1) UV-visible spectroscopy (2) IR spectroscopy
(3) AAS (4) None of the above

H) The shielded signal will appear at
(1) Close to solvent signal (2) close to TMS (3) Away from TMS (4) 4 – 6ppm

I)Only those nuclei will be resorted if they have spin quantum no. as
(1) I = O (2) I = O .5 (3) I = O .1 (4) None of the above.

J) The total energy of a molecule is the sum of its
(1) Electronic energy (2) Vibrational energy
(3) Rotational energy (4) All of the above

K) In UV-visible spectroscopy, the smaller the difference in energy,
(1) Same is the wavelength (2) Longer is the wavelength
(3) Shorter is wavelength (4) All of the above

L) A covalently unsaturated group responsible for electronic absorption is called as
(1) Auxochrome (2) Chromophore (3) Monochrome (4) None of the above

M)The shift of absorption to a longer wavelength due to substitution or solvent effect is called as
(1) Bathochromic shift (2) Hypsochromic Shift
(3) Hyperchromic shift (4) Hypochromic shift