Exam Seat No:_____ **Enrollment No:**_____

C.U.SHAH UNIVERSITY

WADHWAN CITY

University (Winter) Examination -2013

Course Name : M.Pharm Sem-I **Subject Name: -** Modern Analytical Technique **Marks :70**

Duration :- 3:00 Hours **Date : 06/1/2014**

Instructions:-

(1) Attempt all Questions of both sections in same answer book / Supplementary.
(2) Use of Programmable calculator & any other electronic instrument is prohibited.
(3) Instructions written on main answer Book are strictly to be obeyed.
(4) Draw neat diagrams & figures (If necessary) at right places.
(5) Assume suitable & Perfect data if needed.

SECTION – I

Q.1 Explain the following statement **07**

I. How do the IR spectra of acetone and ethanol differ?

II. Why do ^{12}C, ^{16}O,^{32}S not show NMR Spectra?

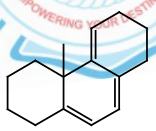
III. Why do amines absorb at higher wavelength in comparison to alcohols?

IV. Why is TMS used as a reference in NMR spectroscopy?

V. What is M-18 peak in case of alcohols?

VI. Why do homonuclear species such as N_2, O_2, Cl_2 not absorb in the infrared?

VII. The observed value of λmax of the following compound is 324 nm. Explain



Q.2 (a) Calculate concentration in µg/ml of drug (Mol. Wt. 204.2) in 1m HCl, giving absorption of 0.613 in 4 cm cell at λmax of 277 nm. The molar absorbtivity value is 5432 at 277nm **05**

(b) Write down the differences between FTIR and Dispersive IR. **05**

(c) Give chemical shift value and spin-spin splitting for the following compounds **04**

a) Cinnamaldehyde

b) Butanol

OR

Q.2 (a) Explain the Principle of NMR Spectroscopy. Why are 13C NMR spectra more difficult to record compared to 1H NMR spectra? **05**

(b) Write Short note on Mc-Lafferty rearrangement. **05**

(c) Give advantages & disadvantages Electron impact ionization techniques in MS. **04**

Q.3 (a) How does ionization carry out in MS? .Discuss MALDI & chemical ionization techniques in details. **07**

(b) Identify the following compounds on the basis of the spectral data presented here. Show your reasoning for the conclusion arrived at **07**

UV: Not more than 210

IR: 2980,2800,2170,1745,1200 cm^{-1}

NMR: 1.3 t (3H)

3.5 s (2H)

4.3 q (2H)

MS: 113(M^+),86,68,67

OR

Q.3 (a) What do you mean by complex spectra? Enlist the method used for Simplification of complex NMR spectra? Describe shift reagent technique in detail. **07**

(b) What is chemical shift? Discuss factor affecting chemical shift. **07**

SECTION – II

Q.4 Explain the following statements **07**

I. Aldehyde proton appears at high delta value.

II. In EMIT step washing are not required.

III. Value of capacity factor k should be between 1-10.

IV. Open tubular column has 4-5 times greater efficiency than the packed column.

V. "Spacer arm" is used in affinity of chromatography.

VI. DTA helps in preformulation study.

VII. HETP is more meaningful measure of the column efficiency than the plate no**.**

Q.5 (a) Discuss moving boundary electrophoresis and zone electrophoresis. **05**

(b) Compare RIA & ELISA .Describe antigen competitive inhibition ELISA. **05**

(c) Explain the principle of DTA .Describe in brief application of DSC. **04**

OR

Q.5 (a) What is ion exchange chromatography? Discuss factors affecting the separation in ion exchange chromatography. **05**

(b) Enumerate factor responsible for band broadening in chromatography. Discuss eddy diffusion & longitudinal diffusion in details. **05**

(c) Write short note on sized exclusion chromatography. **04**

Q.6 (a) Give different modes of HPLC method**.** Explain ion pair. Chromatography .Describe mechanism & factor effects in it. **07**

(b) Discuss Principle and Instrumentation of SFC. **07**

OR

Q.6 Write notes on

(a) Isoelectric focusing **07**

(b) HPTLC **07**

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