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SEAT No. :

P3966

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[5246]-101

M. Pharmacy (Semester - I)

ADVANCED ANALYTICAL TECHNIQUES

(2013 Pattern)

Time : 3 Hours]

[Max. Marks : 50

Instructions to the candidate :

- 1) *Questions number 1 is compulsory.*
- 2) *Figures to the right indicate full marks.*
- 3) *Draw well labelled diagrams wherever necessary.*

Q1) What is 'spin-spin' coupling in NMR? [10]

Q2) Attempt any three questions from following [15]

- a) Discuss factors affecting the λ max in UV spectrum.
- b) What are handling techniques for solid samples in IR?
- c) Discuss in detail about any two pumps used in HPLC.
- d) Explain the principle of HPTLC and distinguish between HPLC and HPTLC.

Q3) Write short notes on (any three) [15]

- a) Hooke's Law
- b) Magnetic Anisotropy
- c) Principle and instrumentation of thermogravimetric analysis.
- d) Michelson's interferometer

P.T.O.

Q4) What are the methods used for simplification of complex NMR spectra.[10]

OR

Elucidate the structure of compound from the following data.

An organic compound with molecular mass 104 gave the following spectral information.

i) UV : Transparent below 210 nm.

ii) IR : The medium bands formed are :

3125-2857 cm^{-1} and 1449 cm^{-1}

The strong band is formed at 1718 cm^{-1}

The weak bands are formed at 2695 cm^{-1} and 2625 cm^{-1}

iii) NMR :- 0.95 τ singlet (5.4 squares)

5.87 τ singlet (11.2 squares)

6.34 τ quartet (J = 7.1 cps. 10.6 squares)

8.73 τ Triplet (J = 7.1 cps. 16.2 squares)

