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Registration no:

Total Number of Pages: 02 **M.Sc**

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4th Semester Regular / Back Examination 2016-17
APPLICATION OF ADVANCED INSTRUMENTAL METHODS
BRANCH(S): Applied Chemistry
Time: 3 Hour
Max marks: 70
Q Code : Z750
Question No.1 which is compulsory and any five from the rest
The figures in the right hand margin indicate marks.

Q1 Answer the following questions: (2 x 10)

a) Discuss the principle of thermogravimetric analysis.

b) Name the spectroscopic technique used for the functional group analysis of an organic compound.

c) What are the factors that influence the R_f (Retention factor) value of the substance?

d) What is chromatography? Discuss its basic concepts.

e) For what type of applications, HPLC technique is employed?

f) Discuss the principle of Differential Scanning Calorimetry (DSC).

g) What is Reversed phase chromatography?

h) Explain the term Gradient elution.

i) What is lattice water and coordinated water? Give one example each.

j) Discuss the principle of Ion-Exchange chromatography.

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Q2 (a) Describe classification of chromatography. What do you mean by retention factor in chromatography? Can its value be more than one? (4)

(b) Briefly explain the instrumentation of Gas chromatography and principle of separation of a compound from the mixture. (6)

Q3 (a) Give an account of Thermal mechanical analysis and is application. (7)

(b) What does the TGA of a complex indicate? (3)

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Q4	(a)	Explain the principle and applications of TLC, giving the preparation of TLC plates and determination of R_f values.	(8)
	(b)	What are the basis for the selection of solvents and adsorbent for TLC?	(2)
Q5		Write notes on any two.	(2x5)
	(a)	Characterization of organic compounds and their structures by using IR & NMR.	
	(b)	Ion- pair chromatography.	
	(c)	Principle and measurements of DSC.	
Q6	a)	Draw the TGA apparatus and discuss the function of its different parts.	(6)
	b)	Discuss the factors that affect the thermogram in TGA.	(4)
Q7		Write notes on:	(2x5)
	(a)	SFC	
	(b)	Fast scanning DSC and its application to polymers.	
Q8		Give an account of HPLC with a neat diagram and the function of its various components.	(10)

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