

OLLSCOIL NA HÉIREANN, GAILLIMH
THE NATIONAL UNIVERSITY OF IRELAND, GALWAY

SUMMER EXAMINATIONS, 2000

Master of Science, (Analytical Biochemistry/Chemistry)

Fifth Paper

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Time Allowed: **Three** hours

(Answer **All five** Questions)

1. A sample of milk is submitted to your laboratory containing small grey particles of a contaminated material. With the aid of a SEM-EDAX system describe how you would obtain information regarding the shape and composition (both qualitative and quantitative) of the particles and thereby deduce their possible source.
2. Write notes on **each** of the following
 - (a) Provide an outline of the mode of operation of the automatic powder diffractometer.
 - (b) Describe the analytical applications of powder diffractometry.
3. Write an essay on the construction of a database for information of biological origin.
4. 'Electrophoresis is a useful tool for the separation and analysis of nucleic acids and proteins.' Discuss.
5. Answer both (a) **and** (b)
 - (a) Describe the steps necessary to validate a new method of analysis.
 - (b) When existing validated methods of analysis are used, it is necessary to introduce a quality assurance program in order to ensure the quality of the analytical data. Comment on the procedures required to implement this.