THE AMERICAN COLLEGE, MADURAI

(An Autonomous Institution Affiliated to Madurai Kamaraj University)

Re-accredited (2nd Cycle) by NAAC with Grade "A", CGPA – 3.46 on a 4-point scale

Backlog Arrear Examination, March 2021

PGC 5427/5407 **ANALYTICAL CHEMISTRY** **Max: 75marks**

Time: 3hrs

Answer any FIVE questions: **(5×15 = 75)**

1. a) Differentiate between accuracy and precision.

b) Bring out the significance of Q test in error analysis.

c) In a set of measurements, the following concentration of Fe(ppm) were reported: 20.2,20.4 ,20.3,20.1.19.9,20.5,19.8. Calculate average deviation from mean and standard deviation. (6+6+3)

2. a) Define basic concept of Craig extraction. Derive the binominal distribution in the Craig extraction.

b) Explain the factors influence the results of DSC/DTA methods. (10+5)

3. a) Give an account on various detectors used in chromatography analysis.

b) Discuss the principle and types of Electrophoresis. (7+8)

4. a) Briefly explain the important steps and methods of stripping analysis. How do you determine cadmium and copper in an aqueous solution with help of stripping voltammogram.

b) Distinguish between differential pulse polarography and square-wave polarography. (10+5)

5. a) What are determinate and indeterminate errors? Describe the various methods used for minimising determinate errors.

b) Differentiate distribution coefficient and distribution ratio.

c) Point out the factors on which the choice of solvent for extraction. (8+4+3)

6. a) Derive the equilibrium constant for complex equilibria and redox equilibria.

b) Discuss the principle and outline the instrumentation of HPLC. (8+7)

7. a) Explain the principle, advantages and limitations of cyclic voltammetry.

b) What is principle of thermogravimetry technique? Explain the curves of calcium oxalate monohydrate by this technique. (8+7)

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