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Reg. No. : .....

Name : .....

Fourth Semester M.Sc. Degree Examination, May 2020

Analytical Chemistry

CL 242 – APPLIED ANALYTICAL CHEMISTRY

(2016 Admission Onwards)

Time : 3 Hours Max. Marks : 75

SECTION – A

Answer **any two** among (a, b, c) from each question. Each sub question carries **2** marks.

1. (a) Explain the term 'column resolution'.

   (b) Outline a method for eliminating the interference of Fe^{3+} during gravimetric estimation of sulphate as $BaSO_4$.

   (c) Give the advantages and disadvantages of FID detector.

2. (a) What is the experimental parameter measured in (i) TG (ii) DTA.

   (b) Outline the principle of neutron activation analysis.

   (c) Briefly explain the principle of radiometric titration.

3. (a) Distinguish between adulteration and contamination of food.

   (b) Distinguish between LD-50 and LC-50.

   (c) Define peroxide number and mention its significance.

4. (a) Mention the oxidants which can be used for flames in atomic spectroscopy mentioning the temperature range which can be achieved.

(b) Correlate the structural features with fluorescence emission.

(c) Distinguish between the direct and indirect methods involved in fluorescence analysis.

5. (a) Describe Brix and outline its determination.

(b) Explain the principle of estimation of cholesterol in blood.

(c) Explain the term enzyme assay.

(10 × 2 = 20 Marks)

SECTION – B

Answer either (a) or (b) of each question. Each question carries **5** marks.

6. (a) Write short note on detectors employed for HPLC.

(b) Discuss the working principle and significance of electron capture detectors in gas chromatography.

7. (a) Give short note on thermo mechanical analysis.

(b) Discuss the theory and applications of thermometric titrations.

8. (a) Outline the general process for the determination of chlorinated organic pesticide residues in food.

(b) Explain the estimation of lead and mercury in biological samples.

9. (a) Describe an Inductively Coupled Plasma (ICP) source with a schematic diagram.

(b) Briefly account for the broadening of atomic spectral lines.

10. (a) Describe the procedure for the estimation of blood sugar.

(b) Discuss the biological significance and analysis of pepsin.

(5 × 5 = 25 Marks)

SECTION – C

Answer **any three** questions. Each question carries **10** marks.

11. (a) Briefly explain solid phase extraction.

    (b) Explain the utility of ion exchange chromatography in water softening.

12. Give a detailed account on the use of radioisotopes in various fields.

13. Discuss the significance of Iodine value, saponification value and iodine bromine value as criteria deciding the quality of oils and fats and outline one method each for their determination.

14. Discuss the basic instrumentation for AAS.

15. Describe the quality evaluation parameters and their determination for alcoholic beverages.

(3 × 10 = 30 Marks)

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