

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: IMSC
BRANCH: CHEMISTRY

SEMESTER : V
SESSION : MO/2022

SUBJECT: CH303 ANALYTICAL METHODS IN CHEMISTRY

TIME: 3:00 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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- Q.1(a) What do you mean by 'Proximate' and 'Ultimate' analysis? Explain briefly. [2]
Q.1(b) What do you mean by 'Sample matrix'? Discuss its significance in selection of right analytical procedure. [3]
Q.1(c) Describe with suitable examples: (i) Determinate errors (ii) Indeterminate errors. [5]
- Q.2(a) Outline the working principle of Flame photometry. [2]
Q.2(b) Discuss the Thiocyanate based spectrophotometric method of estimation of iron in a sample of water. [3]
Q.2(c) Outline the flameless AAS technique for estimation of Hg. [5]
- Q.3(a) Differentiate between TGA and DSC. [2]
Q.3(b) Draw and explain the thermogram of the following: [3]
i) DTA of Calcium oxalate Monohydrate ii) DTA of Sulphur iii) TGA of Silver chromate
Q.3(c) Explain the principle and the instrumentation of DTA with the help of block diagram. Give the factors affecting DTA curve. [5]
- Q.4(a) Why does the conductivity of the solution rise quickly after the equivalence point? [2]
Q.4(b) Explain the conductometric titration for weak acid Vs strong base with the help of graph. [3]
Q.4(c) Give the principle & advantages of potentiometric titration. Explain the types of electrodes used and their working with diagram. [5]
- Q.5(a) Compare and contrast 'Normal phase' and 'Reverse phase' chromatography. [2]
Q.5(b) Compare and contrast 'Tubular' and 'Capillary' column in GC. [3]
Q.5(c) Outline the working of '2D TLC'. Elaborate its advantages over normal TLC. [5]

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