

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

CLASS: MSC
BRANCH: CHEMISTRY

SEMESTER : II
SESSION : SP/19

SUBJECT: CH412 ANALYTICAL 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) Draw a lopsided control chart. Indicate clearly the inner and outer control limits. What does a lopsided control chart indicate on the nature of error? [5]
- Q.1(b) What are indeterminate errors? With the help of schematic, indicate how this type of error can be statistically eliminated. [5]
- Q.2(a) Explain why a solid phase microextraction (SPME) - Gas chromatography (GC) coupled system of analysis is far more superior to a Headspace - Gas chromatography system of analysis? [5]
- Q.2(b) Describe with a neat schematic the instrumentation and working of a Photo Ionization Detector (PID). Why a PID is among the best of GC detectors? [5]
- Q.3(a) Discuss briefly the chemistry and methodology of Argentometric estimation of chloride ions through chemical, conductometric and potentiometric titration. What are the advantages and disadvantages of each method? [5]
- Q.3(b) What is Solubility Product? How it forms a basis for group separation in element analysis in inorganic chemistry? [5]
- Q.4(a) Classify the different methods of thermal analysis and write significance of each of them. [5]
- Q.4(b) Discuss the principle and applications of Thermal Gravimetric analysis. [5]
- Q.5(a) What is Conductometry? Differentiate between resistivity, conductivity and specific Conductivity? [5]
- Q.5(b) What is Kohlrausch law? How it is applied for conductometric measurements? [5]

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