

- 14.7 Principles of Organic Chemistry Experiments: Preparation of iodoform, acetanilide, p-nitro acetanilide, di-benzoyl acetone, aniline yellow, beta-naphthol; Preparation of acetylene and study of its acidic character.
- 14.8 Basic Laboratory Technique:
Cutting glass tube and glass rod, bending a glass tube, drawing out a glass jet, boring of cork.

Part III: (a) English Proficiency and (b) Logical Reasoning

(a) English Proficiency

This test is designed to assess the test takers' general proficiency in the use of English language as a means of self-expression in real life situations and specifically to test the test takers' knowledge of basic grammar, their vocabulary, their ability to read fast and comprehend, and also their ability to apply the elements of effective writing.

1. Grammar

- 1.1 Agreement, Time and Tense, Parallel construction, Relative pronouns
- 1.2 Determiners, Prepositions, Modals, Adjectives
- 1.3 Voice, Transformation
- 1.4 Question tags, Phrasal verbs

2. Vocabulary

- 2.1 Synonyms, Antonyms, Odd Word, One Word, Jumbled letters, Homophones, Spelling
- 2.2 Contextual meaning.
- 2.3 Analogy

3. Reading Comprehension

- 3.1 Content/ideas
- 3.2 Vocabulary
- 3.3 Referents
- 3.4 Idioms/Phrases
- 3.5 Reconstruction (rewording)

4. Composition

- 4.1 Rearrangement
- 4.2 Paragraph Unity
- 4.3 Linkers/Connectives

(b) Logical Reasoning

The test is given to the candidates to judge their power of reasoning spread in verbal and nonverbal areas. The candidates should be able to think logically so that they perceive the data accurately, understand the relationships correctly, figure out the missing numbers or words, and to apply rules to new and different contexts. These indicators are measured through performance on such tasks as detecting missing links, following directions, classifying words, establishing sequences, and completing analogies.

5. Verbal Reasoning

- 5.1 Analogy
Analogy means correspondence. In the questions based on analogy, a particular

relationship is given and another similar relationship has to be identified from the alternatives provided.

5.2 Classification

Classification means to assort the items of a given group on the basis of certain common quality they possess and then spot the odd option out.

5.3 Series Completion

Here series of numbers or letters are given and one is asked to either complete the series or find out the wrong part in the series.

5.4 Logical Deduction – Reading Passage

Here a brief passage is given and based on the passage the candidate is required to identify the correct or incorrect logical conclusions.

5.5 Chart Logic

Here a chart or a table is given that is partially filled in and asks to complete it in accordance with the information given either in the chart / table or in the question.

6. Nonverbal Reasoning

6.1 Pattern Perception

Here a certain pattern is given and generally a quarter is left blank. The candidate is required to identify the correct quarter from the given four alternatives.

6.2 Figure Formation and Analysis

The candidate is required to analyze and form a figure from various given parts.

6.3 Paper Cutting

It involves the analysis of a pattern that is formed when a folded piece of paper is cut into a definite design.

6.4 Figure Matrix

In this more than one set of figures is given in the form of a matrix, all of them following the same rule. The candidate is required to follow the rule and identify the missing figure.

6.5 Rule Detection

Here a particular rule is given and it is required to select from the given sets of figures, a set of figures, which obeys the rule and forms the correct series.

Part IV: Mathematics

1. Algebra

1.1 Complex numbers, addition, multiplication, conjugation, polar representation, properties of modulus and principal argument, triangle inequality, roots of complex numbers, geometric interpretations; Fundamental theorem of algebra.

1.2 Theory of Quadratic equations, quadratic equations in real and complex number system and their solutions.

1.3 Arithmetic and geometric progressions, arithmetic, geometric and arithmetico-geometric series, sums of finite arithmetic and geometric progressions, infinite geometric series, sums of squares and cubes of the first n natural numbers.

1.4 Logarithms and their properties.

1.5 Exponential series.

1.6 Permutations and combinations, Permutations as an arrangement and combination as selection, simple applications.