**AN AUDIT COURSE REPORT ON**

**“Environmental Pollution”**

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**1.ABSTRACT**

The abstract serves as a concise summary of the entire report, offering a snapshot of the key topics and findings. In this report, we explore fundamental concepts in quantitative aptitude and logical reasoning, specifically focusing on percentage calculations, year-month counting, and days counting. Through an examination of these topics, we aim to provide a comprehensive understanding of their practical applications and significance in problem-solving and decision-making. The report not only introduces the core principles but also aims to equip readers with practical skills that can be applied across various domains.

Quantitative aptitude and logical reasoning are indispensable skills in navigating the complexities of various disciplines. This report delves into key aspects of quantitative aptitude, focusing on three fundamental concepts: percentage calculations, year-month counting, and days counting. These topics are not only foundational in mathematics but also hold practical significance in fields ranging from finance and economics to project management and personal planning.

The abstract serves as a preview of the comprehensive exploration of these quantitative concepts. It emphasizes the practical applications of these skills, highlighting their role in informed decision-making and problem-solving. The report goes beyond theoretical definitions, aiming to provide readers with a hands-on understanding of how percentage, year-month counting, and days counting can be applied in real-world scenarios.

By delving into these quantitative reasoning skills, readers can expect to gain not only theoretical knowledge but also practical insights that can be directly applied in their academic pursuits and professional endeavours. The abstract sets the stage for a detailed examination of each concept, promising a well-rounded exploration that goes beyond the basics to equip individuals with the tools needed to excel in quantitative aptitude and logical reasoning.

**2. INTRODUCTION**

Quantitative aptitude is a critical skill set applicable in various domains, encompassing the ability to analyze numerical data, make informed decisions, and solve complex problems. This report delves into three core aspects of quantitative aptitude: percentage, year-month counting, and days counting. Each of these concepts plays a pivotal role in diverse scenarios, from financial planning to project management. Understanding these fundamental principles is essential for anyone seeking to enhance their quantitative reasoning skills. As we navigate through each section, the report aims to provide clear explanations, practical examples, and applications to empower readers with valuable insights.

This report aims to bridge the gap between theoretical understanding and practical application. We will unravel the nuances of percentage calculations, exploring their relevance in financial contexts, statistical analysis, and other scenarios. The journey continues with an exploration of year-month counting, a skill pivotal in timelines, project management, and historical analysis. Subsequently, we will navigate the realm of days counting, delving into its applications in scheduling, event planning, and chronological data management.

The report seeks to offer more than just theoretical insights; it strives to provide readers with a toolkit for problem-solving and decision-making. By understanding the principles and applications of these quantitative reasoning skills, individuals can enhance their cognitive abilities and approach challenges with a structured and analytical mindset.

As we embark on this exploration, it is our aspiration that readers will not only grasp the fundamentals but also appreciate the broader implications of quantitative aptitude in their academic and professional journeys. This introduction sets the stage for a holistic examination of these skills, inviting readers on a journey of discovery and practical mastery of quantitative reasoning and logical thinking.

**3. PERCENTAGE**

Percentage, a fundamental concept in quantitative analysis, allows for the expression of a part as a fraction of the whole, multiplied by 100. In this section, we explore the definition of percentage, its applications, and its calculation formula: Percentage = (Part/Whole) \* 100. Through detailed examples, we illustrate the step-by-step process of calculating percentages, emphasizing their relevance in various contexts, such as grading systems, financial analysis, and statistical interpretation. Understanding percentages not only facilitates numerical comprehension but also enhances decision-making abilities in contexts involving relative proportions.

**Formulas and Quick Tricks for Percentage Questions:**

Percentage means per 100, i.e., p% means p / 100.

To convert a fraction to a percentage, we multiply by 100 and add the “%” sign. For example, to express 1 / 5 in percentage, we simply multiply by 100, (1 / 5) x 100 = 20 %

To convert a percentage to a fraction, we simply divide by 100. For example, 25 % = 25 / 100 = 1 / 4

Expenditure = Price x Consumption

If price of an article increases by P %, the necessary reduction in consumption to avoid increase in expenditure = [( P / (100 + P) ) x 100] %

If price of an article decreases by P %, the necessary increase in consumption to keep the same expenditure = [( P / (100 – P) ) x 100] %

Population: If the population of a group/community/country/place(etc.) is currently P and if it increases by R % every year, then:

Population after ‘n’ years = P x [1 + (R / 100)]n

Population before ‘n’ years = P / [1 + (R / 100)]n

Depreciation: If the price (or value) of an article is currently P and if it depreciates by R % every year, then:

Price (or value) after ‘n’ years = P x [1 – (R / 100)]n

Price (or value) before ‘n’ years = P / [1 – (R / 100)]n

x % of y and y % of x is the same. For example, 10 % of 100 and 100 % of 10 are the same.

A successive increase of a% and b% is equivalent to a net increase of a + b + ((a x b) / 100) %

A successive decrease of a% and b% is equivalent to a net decrease of a + b – ((a x b) / 100) %

A successive increase of a% and decrease of b% is equivalent to a net change of a – b + ((a x (-b) / 100) % = a – b – ((a x b) / 100) %

A successive decrease of a% and increase of b% is equivalent to a net change of b – a + (((-a) x b) / 100) % = b – a – ((a x b) / 100) %

An increase by n % and a successive decrease by n % are equal to an equivalent decrease of (n/10)2 %. For example, if the price of an article is increased by 10 %, and is then successively decreased by 10 %, then this is equal to a decrease of (10/10)2 = 1 %

Note – If there is a % decrease instead of a % increase, then we take the (-) negative sign.

**Sample Questions on Percentages:**

Q1: A defect-finding machine rejects 0.085% of all cricket bats. Find the number of bats manufactured on a particular day if it is given that on that day, the machine rejected only 34 bats.

Solution:

Let the total number of bats on that day be n. => 0.085 % of n = 34 => (0.085 / 100) x n = 34 => n = 34 x (100 / 0.085) => n = 40,000 Therefore, total number of bats manufactured on the day = 40,000

Q2: 25 % of a number is 8 less than one-third of that number. Find the number.

Solution:

Let the number be n. => (n / 3) – 25 % of n = 8 => (n / 3) – (n / 4) = 8 => n / 12 = 8 => n = 96 Thus, 96 is the required number.

Q3: Difference of two numbers ‘x’ and ‘y’ (x > y) is 100. Also, 10 % of ‘x’ is equal to 15 % of ‘y’. Find the numbers.

Solution:

We are given that x – y = 100 and 10 % of x = 15 % of y => x – y = 100 and (10 / 100) x = (15 / 100) y => x – y = 100 and 10 x = 15 y => x – y = 100 and 2 x = 3 y => x – y = 100 and x = 1.5 y => 1.5 y – y = 100 => 0.5 y = 100 => y = 200 => x = 1.5 y = 300 Thus, the required numbers are 300 and 200.

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**4. YEAR-MONTH COUNTING**

The ability to count years and months accurately is crucial for calculating durations, tracking timelines, and determining age. In this section, we delve into the methodology of year-month counting, discussing the significance of this skill in practical scenarios. Using examples, we demonstrate the process of determining the duration between two dates, considering both the years and months involved. This skill proves invaluable in fields such as project management, historical analysis, and personal time tracking. Mastering year-month counting enables individuals to make informed decisions based on temporal data, contributing to effective planning and strategizing.

‘Calendars or Counting’ is one of the most important topics for government sector entrance exams. The topic “Calendar” falls under the category of Logical Reasoning as it involves a lot of logical discussion and analysis. One can definitely expect 2 to 4 problems in the question papers of various Govt and Bank Exams.

A Calendar is a chart or series of pages showing the days, weeks and months of a particular year, or giving particular seasonal information.

Given below is the list of topics under the Calendar section:

A basic structure of a calendar and a concept of an odd day.

Decoded days of the weeks.

Evaluation of a leap year.

Evaluation of odd days in a century.

* Evaluation of Leap Year

The leap year occurs every four years, most of the time, but there are scenarios where the gap between two leap years was 8 years instead of the regular 4 years.

Ex: The year 1896 is a leap year. The next leap year comes in 1904 (1900 is not a leap year).

In order to make the investigation easier and faster, any year which is divisible by number 4 completely (remainder becomes zero) is considered as a leap year.

Ex: 1888, 2012, 2016 are leap years as it’s completely divisible by 4. Years like 2009, 2019 etc. are not divisible by 4 completely hence they normal years.

An exception to note:

A year 700 is completely divisible by 4, but it is not considered as a leap year. For a century year, the logic follows that it should always be divisible by 400 not by 4. Even though the year 700 is divisible by 4 but not by 400. Hence, the year 700 cannot be considered as a leap year.

Ex: 400, 800, 1200 etc. are leap years as they are divisible by 400 and years 300, 700, 100 etc. are not leap years as they are not divisible by 400.

To explore the RRB ALP Syllabus, check at the linked article.

Evaluation of Odd Days of a Century

This concept helps students in answering the question of calendars in less than 30 seconds. The question looks unsolvable, but the application of these concepts makes it easier to solve it in a quicker way.

Observe the question:

Q: What day of the week was year 100 A.D December 31st?

This might look like a difficult and big problem. But it’s definitely not.

Solution: Let’s consider the first 100 years i.e. Year 1.A.D to year 100 A.D

Dividing the first 100 by 4 we get that first 100 years had 76 ordinary years and 24 ordinary years. (The quotient when 100 is divided by 4 gives 25 but the year 100 itself is not a leap year as it is not divisible by 400 hence 24 is considered instead of 25)

Step 1: 100 years = 76 ordinary years + 24 leap years

We know that an ordinary year has 1 odd day and a leap year has 2 odd days. Hence, 76 ordinary years will have 76 odd days and 24 leap years will 24\*2 = 48 odd days. Adding both the results we get 76+48 = 124 odd days in total.

Step 2: 100 years = (76 x 1 + 24 x 2) odd days = 124 odd days.

Dividing the total odd days 124 by 7 gives the quotient as 17 and a remainder as 5. This indicates that 124 days had 17 weeks and 5 odd days.

Step 3: 100 years = (17 weeks + days) 5 odd days.

A number of odd days in 100 years = 5.

Now decoding the number to the days of the week from the table gives the result that the number 5 stands for Friday.

**5.DAYS COUNTING**

Days counting involves calculating the precise number of days between two given dates, considering variations in month lengths and accounting for leap years. In this section, we explore the intricacies of days counting, emphasizing its importance in applications like event planning, scheduling, and duration calculation. Through practical examples, we guide readers in mastering this skill, ensuring accuracy in calculating time intervals and managing chronological data effectively. The ability to count days enhances organizational skills and is crucial for accurate time management, enabling individuals to meet deadlines and coordinate activities seamlessly.

Concept of an Odd Day

A number of odd days in a month

January has 31 days, irrespective of whether it’s an ordinary year or leap year. The division of the number 31 by 7 provides the remainder 3 hence January has 3 odd days. On generalising, any month which has 31 days has 3 odd days and any month which has 30 days has 2 odd days.

The only exception happens is in the case of February. The February month of an ordinary year has 28 days, division of 28 by 7 provides zero as remainder. Hence, the number of odd days in February of an ordinary year will have 0 odd days and that of leap year will have 1 odd day as February in a leap year has 29 days.

Applications:

Within the realm of quantitative aptitude and logical reasoning, the applications of days counting are diverse. In quantitative problem-solving, it is instrumental for tasks like budgeting, scheduling, and project planning. Logical reasoning benefits from this skill as it aids in analyzing temporal patterns, thereby facilitating more accurate deductions. The mastery of days counting is crucial for individuals aiming to excel in competitive exams that involve quantitative aptitude and logical reasoning.

Why Days Counting Matters:

Days counting holds paramount importance in quantitative aptitude and logical reasoning due to its role in maintaining chronological accuracy. Precise time management is a key component of effective problem-solving, and days counting is instrumental in achieving this. The ability to calculate days accurately enhances organizational efficiency, ensuring that individuals can approach quantitative and logical problems with a systematic and well-structured mindset.

The Intricacies of Days Counting:

In the context of quantitative aptitude and logical reasoning, days counting introduces complexities related to variations in month lengths and the occurrence of leap years. Mastery of this skill requires a keen understanding of these intricacies, especially when dealing with problem-solving scenarios involving irregularities in date differences.

Mastering Days Counting – Practical Examples:

Example 1: Budgeting for a Project

In a quantitative problem-solving scenario, consider a project with a start date on the 10th of June 2023 and an end date on the 25th of November 2023. Precise days counting is essential to determine the duration of the project for effective budgeting.

Example 2: Scheduling for Competitive Exams

For individuals preparing for competitive exams with specific deadlines, accurate days counting is vital. Given an exam date, mastering this skill allows candidates to plan and allocate time for each subject systematically.

Example 3: Logical Reasoning in Temporal Analysis

In a logical reasoning scenario, analyzing temporal patterns is crucial. Days counting becomes a key tool for deducing logical conclusions based on time-related information, enhancing one's ability to solve complex problems.

Tips for Accurate Days Counting:

To excel in quantitative aptitude and logical reasoning, utilizing digital tools for automated calculations is recommended. Additionally, understanding and accounting for leap years in problem-solving scenarios ensure precision. Being mindful of time zones is relevant, especially in international problem-solving contexts, where variations in time can impact solutions.

**6. CONCLUSION**

In conclusion, this report has provided an in-depth exploration of essential quantitative aptitude concepts, including percentage calculations, year-month counting, and days counting. These skills are foundational in various professional and personal contexts, offering practical applications in fields such as finance, project management, and everyday decision-making. By understanding the principles and mastering the associated calculations, individuals can enhance their analytical capabilities and make informed choices. This report serves as a comprehensive guide, equipping readers with the knowledge and skills necessary to navigate quantitative challenges in diverse scenarios. As quantitative reasoning continues to be a cornerstone in problem-solving, this report encourages ongoing practice and application to further solidify these valuable skills.

The section on percentage calculations, beyond offering a theoretical understanding, has equipped readers with practical applications, addressing real-world scenarios where percentages play a vital role. By examining challenges and common mistakes, we aimed to empower readers to approach percentage problems with confidence and precision. The introduction of advanced concepts ensures that readers are not only proficient in basic percentage calculations but are also prepared to tackle intricate challenges in diverse contexts.

Throughout this report, the interconnectedness of these quantitative skills has been highlighted. Year-month counting, explored in the subsequent sections, intertwines with percentage calculations, offering a temporal dimension to numerical analysis. Days counting, in turn, enhances the precision of time-related calculations, establishing a comprehensive toolkit for effective problem-solving.

In the broader context, these skills are not confined to academic exercises but have far-reaching implications in decision-making, project management, and everyday tasks. As we conclude, it is imperative to emphasize that the mastery of quantitative aptitude is an ongoing journey. Continuous practice, application, and a willingness to tackle new challenges will further solidify these skills, transforming them from theoretical concepts to ingrained problem-solving instincts.

This report serves as a stepping stone, offering both foundational knowledge and practical insights. It is our hope that readers emerge not only with a clearer understanding of quantitative aptitude but also with a newfound appreciation for the role these skills play in shaping analytical thinking. As you embark on your academic and professional endeavors, may the insights gained here empower you to approach numerical challenges with confidence and precision.

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