SSC GD Constable Exam: Percentages Syllabus Summary

Overview:
The Percentages topic is a vital part of the Mathematics section in the SSC GD Constable Exam, contributing approximately 3–5 questions (6–10 marks out of 160 total marks) in the Computer-Based Examination (CBE). The syllabus focuses on understanding and applying percentage concepts, including conversions between percentages, fractions, and decimals, as well as solving real-world problems involving percentages. Questions test computational accuracy, quick calculations, and practical applications at a 10th-grade level. The exam includes 80 questions (2 marks each, 0.50 negative marking per wrong answer) to be completed in 60 minutes.

Key Topics in Percentages:
1. Understanding Percentages: Definition and meaning of percentage as a fraction of 100.
2. Conversions: Converting percentages to fractions and decimals, and vice versa.
3. Percentage Calculations: Finding percentage of a number, percentage increase/decrease, and successive percentage changes.
4. Applications: Solving problems related to profit and loss, discounts, simple interest, and population growth.
5. Comparison: Comparing quantities using percentages.
6. Word Problems: Real-world scenarios involving percentages (e.g., price changes, marks, voting percentages).
7. Simplification: Simplifying expressions involving percentages using arithmetic operations.
8. Successive Percentage Changes: Calculating net effect of multiple percentage changes.

Important Formula and Techniques:
1. Basic Percentage Formula:
   - Percentage (%) = (Part / Whole) × 100.

- Example: If 20 out of 50 students pass, percentage = (20 / 50) × 100 = 40%.

2. Finding Percentage of a Number:
   - Value = (Percentage / 100) × Total.
   - Example: 25% of 200 = (25 / 100) × 200 = 50.

3. Finding the Whole from a Percentage:
   - Whole = (Part / Percentage) × 100.
   - Example: If 20% of a number is 40, number = (40 / 20) × 100 = 200.

4. Conversions:
   - Percentage to Fraction: Divide by 100, simplify.
     - Example: 75% = 75 / 100 = 3/4.
   - Percentage to Decimal: Divide by 100.
     - Example: 25% = 25 / 100 = 0.25.
   - Fraction to Percentage: (Numerator / Denominator) × 100.
     - Example: 3/5 = (3 / 5) × 100 = 60%.
   - Decimal to Percentage: Multiply by 100.
     - Example: 0.4 = 0.4 × 100 = 40%.

5. Percentage Increase/Decrease:
   - Percentage Increase = [(New Value − Original Value) / Original Value] × 100.
     - Example: Price increases from ₹100 to ₹120, increase = [(120 − 100) / 100] × 100 = 20%.
   - Percentage Decrease = [(Original Value − New Value) / Original Value] × 100.
     - Example: Price decreases from ₹100 to ₹80, decrease = [(100 − 80) / 100] × 100 = 20%.
   - New Value after Increase: Original × (1 + Percentage/100).
     - Example: ₹100 after 20% increase = 100 × (1 + 20/100) = 100 × 1.2 = ₹120.
   - New Value after Decrease: Original × (1 − Percentage/100).

- Example: ₹100 after 20% decrease = 100 × (1 − 20/100) = 100 × 0.8 = ₹80.

6. Successive Percentage Changes:
   - For two successive percentage changes (a% and b%), net percentage change:
     - Net % = a + b + (a × b) / 100.
     - Example: Successive increases of 10% and 20%:
       - Net % = 10 + 20 + (10 × 20) / 100 = 30 + 2 = 32%.
       - For ₹100: 100 × (1 + 10/100) × (1 + 20/100) = 100 × 1.1 × 1.2 = ₹132 (32% increase).

7. Percentage in Word Problems:
   - Profit/Loss: Profit % = [(Selling Price − Cost Price) / Cost Price] × 100.
     - Example: CP = ₹80, SP = ₹100, Profit % = [(100 − 80) / 80] × 100 = 25%.
   - Discount: Discount % = [(Marked Price − Selling Price) / Marked Price] × 100.
     - Example: MP = ₹200, SP = ₹160, Discount % = [(200 − 160) / 200] × 100 = 20%.
   - Simple Interest: SI = (Principal × Rate × Time) / 100.
     - Example: ₹1000 at 5% for 2 years, SI = (1000 × 5 × 2) / 100 = ₹100.

8. Comparing Percentages:
   - Convert percentages to fractions or decimals for comparison.
   - Example: Compare 25% and 1/3: 25% = 0.25, 1/3 ≈ 0.333, so 25% < 1/3.

Key Points for SSC GD Preparation:
- Focus Areas: Percentage calculations, conversions, percentage increase/decrease, and word problems (e.g., profit/loss, discounts) are frequently tested.
- Question Types: Direct calculations (e.g., 20% of 150), conversions (e.g., 0.75 to percentage), successive percentage changes, and word problems (e.g., price after discount).

- Difficulty Level: 10th-grade level, requiring quick and accurate calculations with percentages.
- Practice Tips: Master percentage conversions, memorize key formulas, practice successive percentage change problems, and solve word problems from past SSC GD papers.

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