

BOARD-PATTERN PRACTICE PAPER · CBSE CLASS 12**Inferential Statistics**

Applied Mathematics · Chapter 5 · Matches current CBSE blueprint · Each question PYQ-sourced where indicated

DATE _____	TOTAL MARKS 28	DURATION 60 min	MARKING As per board	TARGET ≥ 22/28
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GENERAL INSTRUCTIONS

1. All questions are compulsory.
2. Section A contains short-answer questions (2 marks each).
3. Section B contains medium-answer questions (3 marks each).
4. Section C contains long-answer questions (5 marks each).
5. Use of standard statistical tables (z and t) is permitted.
6. Show ALL working for full credit; final answer alone earns at most half the marks.

Section A — Short Answer (2 marks)**8 MARKS · 18 MIN**

- Q1.** Distinguish between a parameter and a statistic with one example each. [PYQ 2022 Delhi] **[2 marks]**
- Q2.** State the Central Limit Theorem. [PYQ 2023 All India] **[2 marks]**
- Q3.** Define Type I and Type II errors in hypothesis testing. [PYQ 2024 Delhi] **[2 marks]**
- Q4.** A factory's quality manager picks 5 chips from each batch every hour off the assembly line. Identify the sampling method and give one limitation. [PYQ 2023 Delhi] **[2 marks]**

Section B — Medium Answer (3 marks)**9 MARKS · 20 MIN**

- Q5.** A sample of 64 bolts produced by a machine has $\sigma = 4$ mm. Find the standard error of the sample mean and explain what it measures. [PYQ 2022 All India] **[3 marks]**
- Q6.** A random sample of 100 students has mean exam score $\bar{x} = 50$ and the population SD is $\sigma = 10$. Construct the 95% confidence interval for the population mean μ . [PYQ 2023 Delhi] **[3 marks]**
- Q7.** Briefly describe stratified random sampling and state one situation where it is preferable to simple random sampling. [PYQ 2024 All India] **[3 marks]**

Section C — Long Answer (5 marks)**11 MARKS · 22 MIN**

- Q8.** A company claims that its light bulbs last 1000 hours on average with population SD $\sigma = 100$ hours. A random sample of $n = 64$ bulbs yields $\bar{x} = 980$ hours. Test the claim at $\alpha = 0.05$ (two-tailed). Show all five steps. [PYQ 2024 Delhi] **[5 marks]**
- Q9.** A sample of 400 households in a city has average monthly spending $\bar{x} = ₹6500$ with population SD $\sigma = ₹800$. (a) Construct a 99% confidence interval for the true mean spending μ . (b) Interpret the interval in context. (c) State what happens to the interval width if the confidence level is reduced to 95%. [PYQ 2023 All India] **[6 marks]**

Marking scheme & model answers — see companion Answer Key PDF · all PYQs traceable to actual CBSE papers ·
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