Z-Test & P-Value Practice Questions

Q1. A sample of 36 items has a mean of 85. The population mean is 88, and the standard deviation is 9.

Test at the 0.05 significance level whether the sample provides sufficient evidence to conclude that the mean is different.

Q2. A factory claims its bottles hold 500 ml of juice. A sample of 49 bottles has a mean of 497 ml with a standard deviation of 7 ml.

Test the claim at the 0.01 significance level (two-tailed test).

Q3. You conduct a left-tailed test and get a z-value of -1.96. What is the P-value? Should you reject the null hypothesis at alpha = 0.05?

Q4. You find z = 2.33 in a right-tailed test. What is the P-value? Is the result significant at alpha = 0.01?

Q5. A quality inspector suspects a machine is producing too many defective items. The historical defect rate is 5%.

In a sample of 100 items, 8 are defective. Use a right-tailed test at the 0.05 level to test the inspectors suspicion.

Q6. In a two-tailed test, the z-statistic is -2.58. What is the P-value? Is the result significant at the 0.01 level?

Q7. A company claims the average delivery time is 3 days. A sample of 64 deliveries has a mean time of 3.2 days,

with a population standard deviation of 0.8 days. Test the claim at = 0.05 (right-tailed).

Q8. Interpret a P-value of 0.12 in the context of a hypothesis test with = 0.10. What decision should be made?

Q9. A standardized test has a population mean of 500. A prep course claims it improves scores.

A random sample of 25 students who took the course had a mean score of 510. The population standard deviation is 20.

Test at = 0.01 whether the course is effective (right-tailed).

Q10. If the P-value is 0.048 and the significance level is 0.05, what is your decision? Explain.