To answer this question, I need to apply the Central Limit Theorem (CLT) and examine the characteristics of sampling distributions of means.

According to the Central Limit Theorem, when we take random samples of size n from a population and calculate the sample means, the distribution of these sample means will:

1. Have a mean equal to the population mean (μ)

2. Have a standard deviation equal to the population standard deviation divided by the square root of the sample size (σ/√n)

3. Approach a normal distribution as the sample size increases, regardless of the shape of the population distribution

Given information:

- Population mean (μ) = 6.4

- Population standard deviation (σ) = 4.1

- Sample size (n) = 9

- Number of samples = 500

The standard deviation of the sampling distribution should be approximately:

σₓ̄ = σ/√n = 4.1/√9 = 4.1/3 ≈ 1.37

Looking at the three graphs:

Graph A: Shows a multimodal distribution with several peaks and a wide spread. This does not reflect the expected properties of a sampling distribution according to the CLT.

Graph B: Shows a distribution centered around the population mean (approximately 6.4) with a much narrower spread than the original population distribution. The shape appears approximately normal, as expected by the CLT.

Graph C: Shows a right-skewed distribution that doesn't appear to be centered at the population mean and doesn't demonstrate the expected normality.

The correct answer is (B) Graph B. This graph best represents a distribution of 500 sample means from random samples of size 9 because:

1. It appears to be centered at the population mean of 6.4

2. It has a narrower spread than the original population distribution

3. It follows an approximately normal distribution as predicted by the Central Limit Theorem