1. Solution: B.

The t-statistic for the given information (normally distributed populations, population variances assumed equal) is calculated as:

$$t = \frac{\left(\overline{X}_1 - \overline{X}_2\right) - \left(\overline{\mu}_1 - \overline{\mu}_2\right)}{\left(\frac{s_p^2}{n_1} + \frac{s_p^2}{n_2}\right)^{0.5}}$$

In this case, we have:

$$s_p^2 = 2678.05$$

$$t = \frac{(200-185)-(0)}{\left(\frac{2678.05}{25} + \frac{2678.05}{18}\right)^{0.5}} = 0.93768$$

2. Solution: B.

This is a two-tailed hypothesis testing because it concerns whether the population mean is zero.

$H_0: \mu = 0$ versus $H_a: \mu \neq 0$

With degrees of freedom (df) = n – 1 = 24 – 1 = 23, the rejection points are as follows:

Significance level	Rejection points for t-test
0.10	t < –1.714 and t > 1.714
0.05	t < –2.069 and t > 2.069
0.01	t < –2.807 and t > 2.807

Because the calculated test statistic is 2.41, the null hypothesis is thus rejected at the 0.05 and 0.10 levels of significance but not at 0.01.

3. Solution: A.

The p-value is the smallest level of significance at which the null hypothesis can be rejected. The smaller the p-value, the stronger the evidence against the null hypothesis. P-values close to zero strongly suggest that the null hypothesis should be rejected.

4. Solution: B.

Decrease the significance level can increase type II error and decrease type I error.

5. Solution: C.

C has an incorrect description. When the ROC oscillator crosses zero in the same direction as the direction of the trend, this movement is considered a buy or sell signal. For example, if the ROC oscillator crosses into positive territory during an uptrend, it is a buy signal. If it enters into negative territory during a downtrend, it is considered a sell signal.