QUANTITATIVE BUSINESS ANALYSIS (QBA) EXAM 2 PRACTICE TEST (SAMPLE)

STUDY GUIDE

SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

1. Which test is used to test for equal variances across groups in ANOVA?

A. Levene's test for equal variances.

B. Shapiro-Wilk test for equal variances.

C. Durbin-Watson test for equal variances.

D. Mann-Whitney test for equal variances.

2. The _____ of a random variable X, denoted σX, is simply the square root of the variance

A. Variance

B. Standard deviation

C. Mean

D. Skewness

3. Which statement is true about confidence intervals when the population standard deviation is unknown?

A. Always use the z-distribution regardless of sigma.

B. Use the t-distribution only when the population is known.

C. Use the t-distribution when the population standard deviation is unknown.

D. Use the t-distribution when the sample size is extremely large.

4. Which of the following defines the power of a statistical test?

A. Probability of Type I error

B. Probability of not rejecting a true null

C. Probability of failing to reject a false null

D. Probability of rejecting a false null

5. What does an R-squared value close to 1 typically warn about in regression analysis, especially with a small sample or many predictors?

A. It indicates a perfect predictive power.

B. It indicates potential overfitting.

C. It indicates multicollinearity.

D. It indicates heteroscedasticity.

6. How is a forecast interval around a time series point forecast constructed?

A. Use the mean squared error alone.

B. Use the standard error of forecast times a critical t or z for desired confidence; also account for model-specific forecast error.

C. Use the p-value of the forecast.

D. Use the sample size only.

7. The standard error of the mean decreases as sample size increases because it is proportional to 1/√n.

A. True

B. False

C. Sometimes

D. Cannot determine

8. Which statement best describes the central limit theorem?

A. The sampling distribution of the sample mean becomes normal only if the population is normal.

B. The central limit theorem guarantees the population distribution will become normal with larger samples.

C. With large samples, the sampling distribution of the mean tends to normal regardless of population distribution.

D. The CLT implies the population distribution must be normal for the mean to be normal.

9. Which function is used to describe the distribution of probabilities for continuous random variables?

A. Probability Mass Function

B. Probability Density Function

C. Cumulative Distribution Function

D. Moment Generating Function

10. A firm's daily revenue (in thousands of dollars) has an expected value of 40. This means:

A. Revenue is always equal to 40

B. The maximum revenue is equal to 40

C. The long-run average daily revenue is equal to 40

D. The probability of earning 40 is 1

Answers

1. A
2. B
3. C
4. D
5. B
6. B
7. A
8. C
9. B
10. C

Explanations

1. Which test is used to test for equal variances across groups in ANOVA?

A. Levene's test for equal variances.

B. Shapiro-Wilk test for equal variances.

C. Durbin-Watson test for equal variances.

D. Mann-Whitney test for equal variances.

In ANOVA, one key assumption is that the variances across groups are equal. Levene's test is designed to check that assumption. It looks at how far each observation is from its group center (using deviations from the mean or median) and then tests whether those deviations have the same variance across groups. If the test yields a small p-value, the variances are not equal, suggesting the equal-variances assumption may be violated and you might switch to a method that doesn't require it, like Welch's ANOVA, or transform the data. Other tests mentioned don't assess variance equality: Shapiro-Wilk checks normality, Durbin-Watson checks independence of residuals, and Mann-Whitney compares groups nonparametrically without assuming equal variances. Levene's test specifically targets the equality of variances.

2. The _____ of a random variable X, denoted σX, is simply the square root of the variance

A. Variance

B. Standard deviation

C. Mean

D. Skewness

Standard deviation is the measure of how spread out a random variable is around its mean. It is defined as the square root of the variance: σX = sqrt(Var(X)). The variance captures the average squared deviation from the mean, which ends up in squared units, making interpretation harder. Taking the square root brings it back to the same units as X, giving a intuitive sense of typical deviation. The variance itself is Var(X), the mean is the expected value, and skewness describes asymmetry in the distribution. So the square root of the variance is the standard deviation, denoted σX.

3. Which statement is true about confidence intervals when the population standard deviation is unknown?

A. Always use the z-distribution regardless of sigma.

B. Use the t-distribution only when the population is known.

C. Use the t-distribution when the population standard deviation is unknown.

D. Use the t-distribution when the sample size is extremely large.

When the population standard deviation is unknown, confidence intervals for the mean are built using the t-distribution because the variability is estimated from the sample data. Instead of dividing by the true sigma, you use the sample standard deviation s, which adds extra uncertainty. The resulting t-statistic has heavier tails and uses n−1 degrees of freedom, so the interval width reflects that extra variability: $X \pm t_{\alpha/2, n-1} \cdot (s/\sqrt{n})$. As n grows large, the t-distribution looks more like the standard normal, but the standard practice remains to use the t distribution whenever sigma is unknown, especially for smaller samples. This is why the statement about using the t-distribution when sigma is unknown is true.

4. Which of the following defines the power of a statistical test?

A. Probability of Type I error

B. Probability of not rejecting a true null

C. Probability of failing to reject a false null

D. Probability of rejecting a false null

Power is the probability that a statistical test will correctly reject a false null hypothesis, i.e., it detects an effect when one truly exists. This is why the correct description is the probability of rejecting a false null. Power is equal to 1 minus the probability of a Type II error (failing to reject a false null). The other concepts refer to different error rates: rejecting a true null is a Type I error; not rejecting a true null is the complement of the significance level; and failing to reject a false null is the Type II error. Power increases with larger sample size, larger true effect size, less variability, and, depending on the context, may be affected by the chosen significance level (higher alpha can raise power but also increases the risk of a Type I error).

5. What does an R-squared value close to 1 typically warn about in regression analysis, especially with a small sample or many predictors?

A. It indicates a perfect predictive power.

B. It indicates potential overfitting.

C. It indicates multicollinearity.

D. It indicates heteroscedasticity.

A value of R-squared near 1 can signal overfitting when the data set is small or there are many predictors. R-squared measures how much of the variation in the observed outcome is explained by the model, but it is an in-sample, training metric. Adding predictors tends to raise R-squared regardless of whether those predictors truly capture real, generalizable relationships, so with limited data you can end up fitting random noise rather than a true signal. This makes the model look almost perfectly predictive on the data you used, while its performance on new data may be poor. To guard against this, look at adjusted R-squared, which penalizes extra predictors and often lowers the value if those predictors don't add real explanatory power. Cross-validation or a separate test set provides a better check of generalization. In short, an R-squared near 1 in small samples or with many predictors is a warning sign of overfitting rather than a guarantee of real predictive strength.

6. How is a forecast interval around a time series point forecast constructed?

A. Use the mean squared error alone.

B. Use the standard error of forecast times a critical t or z for desired confidence; also account for model-specific forecast error.

C. Use the p-value of the forecast.

D. Use the sample size only.

Forecast intervals quantify uncertainty around a point forecast. Build them by taking the point forecast and attaching an error bound that reflects how much the forecast could vary. This bound comes from the forecast's standard error, which captures both the model's estimation uncertainty and the inherent future variability, and is then scaled by a critical value from the appropriate distribution (t if you're estimating variance with limited data, or z if the variance is treated as known) for the desired confidence level. You then add and subtract that scaled standard error from the point forecast to form the interval. It's important to also include the model-specific forecast error, since different models imply different future uncertainty and this can grow with the forecast horizon. Using just the mean squared error measures in-sample average error, not future forecast uncertainty. A p-value relates to hypothesis testing, not interval construction. Relying on sample size alone doesn't determine the interval width.

7. The standard error of the mean decreases as sample size increases because it is proportional to 1/√n.

A. True

B. False

C. Sometimes

D. Cannot determine

The standard error of the mean reflects how far the sample mean is expected to vary from the true population mean due to random sampling. When observations are independent and the population standard deviation is σ, the sampling distribution of the mean has standard deviation σ/√n. This 1/√n relationship means that as you increase the sample size, the variability of the sample mean decreases, making the estimate more precise. If you don't know σ and use the sample standard deviation s instead, the standard error becomes s/√n (with small-sample nuances like the t-distribution). But the key idea—the standard error shrinks with n proportional to 1/√n—remains. So the statement is true.

8. Which statement best describes the central limit theorem?

A. The sampling distribution of the sample mean becomes normal only if the population is normal.

B. The central limit theorem guarantees the population distribution will become normal with larger samples.

C. With large samples, the sampling distribution of the mean tends to normal regardless of population distribution.

D. The CLT implies the population distribution must be normal for the mean to be normal.

The central idea being tested is that the distribution of the sample mean becomes approximately normal as the sample size grows, even if the underlying population distribution is not normal (assuming independent observations with finite variance). This means that with large samples, the average of the data tends to follow a bell-shaped curve, making inference about the mean easier using normal-based methods. The other statements miss this point: the CLT does not require the population to be normal, it does not make the population distribution normal, and it does not guarantee the population distribution will change. It applies to the sampling distribution of the mean, not to the population itself.

9. Which function is used to describe the distribution of probabilities for continuous random variables?

A. Probability Mass Function

B. Probability Density Function

C. Cumulative Distribution Function

D. Moment Generating Function

For continuous random variables, the distribution of probabilities is described by the probability density function. The key idea is that probabilities aren't assigned to individual points (since the chance of hitting an exact value is zero); instead, the density tells you how the probability is spread over values. The probability that X falls in an interval [a, b] is found by integrating the density over that interval. The density must be nonnegative and, when integrated over the entire support, must equal 1. A cumulative distribution function, while related, gives $P(X \leq x)$ and can describe the distribution in a different form, but it's not the direct density that assigns probability to tiny intervals. The moment generating function encodes moments like the mean and variance, not the distribution itself. The probability mass function applies to discrete variables, where probabilities are assigned to individual values. So the function that directly describes how probability is distributed across values for a continuous variable is the probability density function.

10. A firm's daily revenue (in thousands of dollars) has an expected value of 40. This means:

A. Revenue is always equal to 40

B. The maximum revenue is equal to 40

C. The long-run average daily revenue is equal to 40

D. The probability of earning 40 is 1

Expected value is the long-run average outcome you would expect if you could repeat the same situation many times. For daily revenue measured in thousands of dollars, an expected value of 40 means that, over a long run, the average daily revenue will be 40 thousand dollars. It does not imply you earn 40 every day, nor that 40 is the maximum possible revenue, and it doesn't mean you're certain to get 40 on any particular day (the probability of hitting exactly 40 can be less than 1). For example, if daily revenue can be 30 or 50 thousand with appropriate chances, the average across many days would be 40 thousand.

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

https://qba2.examzify.com

We wish you the very best on your exam journey. You've got this!