Alberta Biology 30 Cell Division Practice Test (Sample)

Study Guide

Everything you need from our exam experts!

Sample study guide. For the full version with hundreds of questions, visit: https://albertabio30celldivision.examzify.com

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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.

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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!

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Questions

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1. Down syndrome is caused by

A. Monosomy X

B. Trisomy 21

C. Trisomy 18

D. Polyploidy

2. Diploid describes...

A. Having four complete sets of chromosomes.

B. Containing one complete set of chromosomes.

C. Containing two complete sets of chromosomes, one from each parent.

D. Having no chromosomes.

3. How many chromosomes does a human cell have?

A. 23

B. 92

C. 46 (23 pairs from each parent)

D. 46 (23 pairs total)

4. Which best describes the purposes of cellular division in multicellular organisms?

A. To increase energy efficiency

B. To shrink cells

C. To produce genetic variation

D. Growth, tissue repair, and reproduction

5. Which combination of sex chromosomes is typical for human females?

A. XY

B. XX

C. YY

D. XO

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6. What is a zygote?

A. A mature egg

B. A cell produced by mitosis

C. An unfertilized egg

D. The first cell formed after fertilization

7. Identical twins, and how does it happen?

A. Twins who develop from separate fertilized eggs

B. Twins who develop from a single fertilized egg; one cell splits after fertilization

C. A clone created in a lab

D. Two eggs fertilized by two sperm at same time

8. Hydra-budding

A. A method of sexual reproduction in Hydra

B. In Hydra, a bud develops as an outgrowth due to repeated cell division at one specific site.

C. Two hydra forming a zygote

D. A mutation event during mitosis

9. Which feature is specific to cytokinesis in plant cells?

A. No centrosomes, cell plate forms and becomes wider to form a new cell wall

B. Cleavage furrow forms and the cell membrane pinches in

C. The cytoplasm divides but without a clear cell plate

D. The nucleus divides during cytokinesis

10. Which statement describes anaphase?

A. Division of the cytoplasm during cell division

B. The chromosomes become longer, thinner, and less distinct; the nuclear membrane forms

C. Chromosomes line up in the middle of the cell

D. Phase of mitosis in which the chromosomes separate and move to opposite ends of the cell

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Answers

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

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Explanations

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1. Down syndrome is caused by

A. Monosomy X

B. Trisomy 21

C. Trisomy 18

D. Polyploidy

Down syndrome results from having three copies of chromosome 21, called trisomy 21. This extra copy disrupts normal development and is usually due to nondisjunction during meiosis, so the fertilized egg ends up with three copies of chromosome 21. Other scenarios described by the other options involve different chromosomal changes: missing a sex chromosome (monosomy X) is Turner syndrome; an extra chromosome 18 (trisomy 18) is Edwards syndrome with its own distinct features; and polyploidy means having whole extra sets of all chromosomes, which is not compatible with typical human development. The three copies of chromosome 21 specifically explain Down syndrome.

2. Diploid describes...

A. Having four complete sets of chromosomes.

B. Containing one complete set of chromosomes.

C. Containing two complete sets of chromosomes, one from each parent.

D. Having no chromosomes.

Diploid describes having two complete sets of chromosomes, with one set inherited from each parent, so the chromosomes come in homologous pairs. In humans, most body (somatic) cells are diploid (2n = 46). This two-set arrangement is maintained during mitosis, ensuring each daughter cell stays diploid, while meiosis reduces the chromosome number to haploid gametes (n) for sexual reproduction. So the idea of diploid is exactly two complete chromosome sets, one from each parent. Having four sets would be tetraploid, a single set would be haploid, and having no chromosomes isn't a diploid state.

3. How many chromosomes does a human cell have?

A. 23

B. 92

C. 46 (23 pairs from each parent)

D. 46 (23 pairs total)

Humans have two complete sets of chromosomes in each body cell, making a total of 46 chromosomes. These are arranged as 23 pairs. In every pair, one chromosome comes from the mother and the other from the father, so half the chromosomes in the cell come from each parent. When a cell is about to divide, its DNA is replicated, and each chromosome forms two sister chromatids, giving 92 chromatids temporarily, but the chromosome count stays 46 until the chromatids separate during division. Gametes, like sperm and egg, carry 23 chromosomes, and when fertilization occurs the zygote ends up with 46 again. So describing the cell as having 46 chromosomes organized into 23 pairs, with each pair containing one chromosome from each parent, is the most complete way to express the number and origin.

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4. Which best describes the purposes of cellular division in multicellular organisms?

A. To increase energy efficiency

B. To shrink cells

C. To produce genetic variation

D. Growth, tissue repair, and reproduction

Cell division in multicellular organisms mainly serves to increase the number of cells for growth, to replace cells that are worn out or damaged for tissue repair, and to support reproduction by forming gametes and enabling development of offspring. Growth happens as new cells are produced to expand an organism's size and mass. When tissues are injured, divisions replace broken or dead cells to restore function. Reproduction relies on cell division to produce gametes and to drive the developmental processes that lead to a new individual. While genetic variation can arise during meiosis, that variation is a byproduct of a specific type of division rather than the primary purpose of cell division for growth and maintenance. The other options don't describe the main reasons cells divide in multicellular life.

5. Which combination of sex chromosomes is typical for human females?

A. XY

B. XX

C. YY

D. XO

In humans, sex is determined by the presence of X and Y chromosomes. The typical female chromosome set is two X chromosomes (XX). The Y chromosome carries genes (like SRY) that direct male development, so having a Y leads to male development. A YY configuration isn't viable in humans, and an XO pattern occurs in Turner syndrome—individuals are female but not the typical chromosomal pattern. Therefore, XX is the standard for human females.

6. What is a zygote?

A. A mature egg

B. A cell produced by mitosis

C. An unfertilized egg

D. The first cell formed after fertilization

A zygote is the fertilized egg—the first cell of a new individual formed when a sperm merges with an egg. It carries a complete set of chromosomes, with genetic material from both parents, making it diploid. It's different from the mature or unfertilized egg, which are the female gametes before fertilization, and from a cell produced by mitosis, which happens after fertilization to build more cells. After fertilization, the zygote immediately begins mitotic divisions (cleavage) to become a multicellular embryo.

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7. Identical twins, and how does it happen?

A. Twins who develop from separate fertilized eggs

B. Twins who develop from a single fertilized egg; one cell splits after fertilization

C. A clone created in a lab

D. Two eggs fertilized by two sperm at same time

Identical twins form when a single fertilized egg splits into two embryos early in development. Because they come from the same zygote, they share the same DNA and are usually the same sex. The timing of the split can affect whether they have separate placentas or share a placenta and membranes. Other scenarios describe two separate eggs being fertilized or artificial cloning in a lab, which produce twins with different DNA or are not how natural twins occur.

8. Hydra-budding

A. A method of sexual reproduction in Hydra

B. In Hydra, a bud develops as an outgrowth due to repeated cell division at one specific site.

C. Two hydra forming a zygote

D. A mutation event during mitosis

Hydra budding is a form of asexual reproduction where a new individual grows as an outgrowth from the parent's body column. This bud arises because cells divide repeatedly at a single site, producing a miniature Hydra that eventually pinches off to live independently. This explains why the correct choice describes a bud developing as an outgrowth from one specific location. It's not sexual reproduction, which would involve gametes and a zygote, nor is it a mutation event during mitosis. It's a normal developmental process that allows Hydra to proliferate without mating, yielding genetically identical offspring.

9. Which feature is specific to cytokinesis in plant cells?

A. No centrosomes, cell plate forms and becomes wider to form a new cell wall

B. Cleavage furrow forms and the cell membrane pinches in

C. The cytoplasm divides but without a clear cell plate

D. The nucleus divides during cytokinesis

In plant cells, cytokinesis is accomplished by building a cell plate that forms in the center and then expands outward to separate the two new daughter cells. This plate starts as vesicles derived from the Golgi that fuse together to create a membrane-bound disk, which eventually fuses with the existing cell membranes and matures into a separating cell wall. This mechanism is tied to the absence of centrosomes with centrioles in plant cells, so they don't use a contractile ring to pinch the membrane inward (the cleavage furrow seen in many animal cells). Instead, the cell plate is the distinctive feature that completes cytokinesis in plants, ensuring the cytoplasm is divided and a new cell wall forms between the daughters. The nucleus division happens during mitosis, not cytokinesis, so that is not the plant-specific feature here.

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10. Which statement describes anaphase?

A. Division of the cytoplasm during cell division

B. The chromosomes become longer, thinner, and less distinct; the nuclear membrane forms

C. Chromosomes line up in the middle of the cell

D. Phase of mitosis in which the chromosomes separate and move to opposite ends of the cell

Anaphase is the stage when the sister chromatids separate and move to opposite ends of the cell. This happens as the centromeres split and motor proteins along the kinetochores pull each chromatid toward a pole, aided by shortening microtubules that shorten the distance between poles. This movement marks the active segregation of genetic material into the two future daughter cells. That idea fits the described option best because it emphasizes the separation and movement of chromosomes. In metaphase, chromosomes line up in the middle; in cytokinesis, the cytoplasm divides; and in telophase the chromosomes arrive at the poles, de-condense, and the nuclear envelope reforms.

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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://albertabio30celldivision.examzify.com

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

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