Human Prenatal Development – Unit Final Exam
Answer Key

Investigation 1: Foundations of Prenatal Development

1. Why is mitosis essential for early human prenatal development after fertilization has occurred?

Expected answer elements (any 2):
Mitosis produces new cells needed for development
Development requires increasing cell number
Growth occurs by cell division, not cell enlargement

2. How does cell division during early development differ from simple growth in size?

Expected answer elements:
Cell number increases rather than cell size
New cells are formed through division
Enables formation of tissues and structures

3. Why is it important that genetic information remains accurate when cells divide during prenatal development?

Expected answer elements:
All cells need correct instructions
Errors would affect many future cells
Proper development depends on accurate DNA copying

4. Which statement best explains why early prenatal development depends on repeated cell division?

Correct answer: B
Cell division creates new cells needed to form tissues and organs

Investigation 2: Differentiation and Early Organ Formation

5. Why must cells begin to specialize rather than all remain the same during prenatal development?

Expected answer elements
Different functions are required
Specialized cells perform specific roles
Organ formation requires different cell types

6. How does cell specialization contribute to the formation of tissues and organs?

Expected answer elements:
Similar specialized cells group into tissues
Tissues combine to form organs
Structure and function emerge together

7. Why is timing important when cells specialize during early development?

Expected answer elements:
Development follows a specific sequence
Cells must specialize at the correct time
Incorrect timing can disrupt normal development

8. Which statement best describes the relationship between structure and function during early organ development?

Correct answer: C
Structures develop in ways that support their specific functions

Investigation 3: Growth, Coordination, and Increasing Complexity

9. Why does prenatal development involve coordination among multiple body systems rather than isolated growth?

Expected answer elements:
Systems must work together
The body functions as an integrated whole
Coordination supports increasing complexity

10. How does growth during this stage differ from earlier stages of prenatal development?

Expected answer elements:
More coordination and integration
Less formation of new structures
Increased refinement of existing systems

11. Why is development of the nervous system important for coordinating other body systems?

Expected answer elements:
The nervous system controls and coordinates responses
It allows communication between systems
Coordination improves overall function

12. Which statement best explains what increasing complexity during prenatal development indicates?

Correct answer: C
Body systems are beginning to work together

Investigation 4: Preparing for Birth – Late Fetal Development

13. Why does late prenatal development focus more on strengthening and refinement rather than forming new body structures?

Expected answer elements:
Most structures are already formed
Development focuses on improving function
Preparation for life after birth

14. How does increased coordination and responsiveness indicate developmental progress?

Expected answer elements:
Systems are working together more effectively
Responses become more organized
Indicates readiness for independent function

15. Why is continued brain development important even late in prenatal development?

Expected answer elements:
Brain controls coordination and responses
Supports learning and adaptation
Necessary for functioning after birth

16. Which statement best explains how late prenatal development prepares the fetus for life after birth?

Correct answer: B
Systems become more coordinated to support independent function

Lab-Based Questions

17. In several lab activities, students used physical or visual models instead of observing real prenatal development directly. Why was using models appropriate for these investigations?

Correct answer: B
Models allow students to study prenatal development safely and clearly when direct observation is not possible

18. In the labs, students focused on how development changes step by step (Modeling the Miracle, for example), rather than examining only a single stage. Why was this approach important for understanding prenatal development?

Correct answer: B
Observing change over time helps show how structures and functions develop in sequence

19. Some lab activities simplified complex biological processes rather than including every detail of prenatal development. Why was this simplification appropriate?

Correct answer: B
Simplification helps students focus on the main developmental idea being studied

20. In the Preparing for Birth lab, students used models and observations to focus on how the fetus becomes more ready to function at birth, rather than forming new body structures. What was the main reason for this focus in the lab?

Correct answer: A
Most body structures are already formed earlier, and late development prepares the fetus to function after birth