1. List in order and explain each of the five basic steps of the scientific method.

2. Define nature and nurture and give an example of each. Also describe the nature–nurture debate.

3. Describe the perspective most modern developmentalists take on the nature–nurture debate and explain epigenetics.

4. Define a critical period and a sensitive period. Explain the difference between the two periods, and give an example of each.

5. Explain Bronfenbrenner's ecological-systems theory and describe his five systems.

6. Define cohort, explain its effects, and give an example of one.

7. Describe culture and explain why researchers interested in human development study different cultures.

8. List at least six factors that have been linked to depression.

9. Define and discuss the term plasticity as it relates to human development. What factors influence plasticity in development? Offer at least one example of plasticity that has operated or is operating in your own life.

10. Imagine you are interested in the relationship between age and reading ability for children at 8 and 12 years old. Briefly define cross-sectional design and summarize how you could test this relationship using that design.

11. What practices must be built into a research study to protect participants?

12. Define correlation and give an example. Can one determine cause and effect from correlations? Explain why or why not.

13. What are ethics and why are ethical standards so important to scientific research?

Answer Key

1. Step 1: Begin with curiosity. Pose a question based on a theory, prior research, or personal observation. Step 2: Develop a hypothesis, which is a specific research question that can be tested through research. Step 3: Test the hypothesis. Design and conduct research to gather empirical evidence (data). Step 4: Draw conclusions. Using the evidence gathered in the research, conclude whether the hypothesis is supported or refuted. Step 5: Report the results by sharing the data, conclusions, and alternative explanations with other scientists.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
List steps of scientific method in order	States five of the steps in order	States three of the steps in order	States less than three steps or does not state the steps in order
Explain each step	Describes the five steps	Describes three steps	Describes less than three steps or does not describe steps accurately

2. Nature refers to the influence of genes on a person, and nurture refers to environmental influences on a person. Environmental influences include the health and diet of the embryo's mother and continuing lifelong, including family, school, community, and society. An example of nature would be having a gene that predisposes one to addiction. An example of nurture would be having that gene but avoiding addictions as a result of not being exposed to abuse or parental addictions. The debate concerns how much of any person's characteristics, behaviors, or emotions is the result of genes and how much is the result of the person's experiences.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Define nature and nurture	Accurately defines both terms and gives an example of both	Accurately defines one term and gives at least one accurate example	Does not accurately define both terms or supply accurate examples
Describe the debate	Accurately describes both sides of the debate	Accurately describes one side of the debate	Does not accurately describe the debate

3. Modern researchers have learned that neither nature alone nor nurture alone can provide a complete way to understand development. Both nature and nurture matter, as both genes and environment affect nearly every characteristic. Epigenetics refers to the factors that surround the genes and actually affect which genes get expressed. This means that one's environment influences the expression of some genes.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Researcher's viewpoint	States modern researchers' stance that both matter	Is vague about modern researchers' stance	Incorrectly states modern researchers' stance

Epigenetics	Defines the term and clearly explains what it means	Defines the term without explaining its meaning	Does not describe the term or give an explanation

4. A critical period is a time when something must occur to ensure normal development, and a sensitive period is a time when a specific developmental task occurs most easily. An example of a critical period would be the fetus growing arms and legs and hands and feet—this can occur only at a specific time in utero. Language development is an example of a sensitive period. It occurs most easily at a young age but can occur at a later age as well.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Define and differentiate	Defines both periods; differentiates between them	Defines just one period or is vague about differentiation	Fails to define both periods or fails to differentiate
Examples	Gives a correct example for both periods	Gives a correct example of either period	Does not give any examples

5. Bronfenbrenner believed that each person is affected by his or her social context. Over the course of his career, he identified five systems. The first is the microsystem (e.g., one's family and peer group), the second is the exosystem (school, clubs, and church), and the third is the macrosystem (larger social setting such as cultural values and economic policies). The fourth system, called the chronosystem, is the role of historical context, and the fifth system, the mesosystem, is the interaction that occurs between all of the other systems.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Explain ecological systems theory	Clearly states what the theory is	Gives a vague explanation of the theory	Is unable to describe the theory
Identify the systems	Identifies the five systems and gives an example of microsystem, exosystem, and macrosystem	Identifies three of the systems or gives examples for three of the systems	Identifies less than three of the systems or gives less than three examples

6. A cohort is a group of people born within a few years of each other who move through time together. Cohorts travel through life affected by the interaction of their chronological age with the values, events, technologies, and culture of the era. Cohort examples will vary but should show an understanding of a cohort; the baby boom generation is the example given in the text. Other common examples include the Greatest Generation (people who lived through the Depression and WWII) and the Millennials (Generation Y, born between the early 1980s and the early 2000s). Another example would be Generation X, born between the early 1960s to the early 1980s.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)

Explain cohort	Correctly defines cohort and explains its importance on members	Defines cohort without explaining its affect on members	Does not define cohort correctly
Give an example	Gives an example of a cohort	Gives a vague example of cohort	Gives an incorrect example or doesn't give an example

7. Culture is a strong social construction, a concept created by a society. Such social constructions affect how people think and act—what they value, praise, ignore, and punish. Different cultures may view the same behaviors or phenomenon as either an asset or a deficit. Therefore, by studying different cultures, researchers can identify which patterns are universal among humans and which occur only in certain cultures. This provides insights into the effects of different environments.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Describe culture	Clearly describes culture	Gives a definition of culture without describing it	Does not define culture
Explain why researchers study different cultures	Clearly explains why researchers study different cultures	Is vague about why researchers study different cultures	Does not explain why researchers study different cultures

8. Students should list any six of these 12 factors:
   - low serotonin level in the brain
   - low exposure to sunlight, especially in winter
   - being taken care of by a mother with postpartum depression
   - malnutrition (low hemoglobin)
   - a lack of close friends
   - serious diseases such as Parkinson's or AIDS or drugs to treat diseases
   - a life crisis (disruptive event)
   - death of a mother before age 10
   - absence of a father during childhood, especially due to divorce
   - siblings with eating disorders
   - poverty, especially in places with great disparity between the rich and poor
   - low cognitive skills

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
List factors related to depression	Gives six factors from list above	Gives four factors from list above	Gives less than four factors from list above

9. Plasticity is the molding of human traits while simultaneously maintaining some durability of identity. The idea of plasticity is that human development is an ongoing, ever-changing interaction between the body and mind and between the individual and every aspect of his or her environment. Influences that affect plasticity include culture, upbringing, and genes. The example should relate to some aspect of growth in one's life, such as how a high-functioning person on the autism spectrum can eventually earn a college degree. (The autism remains (durability), but with school and other societal interventions, the person can still achieve traditional milestones.)

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Define and discuss plasticity	Defines and discusses plasticity	Defines *or* discusses plasticity	Cannot define or discuss plasticity
List factors that influence plasticity	Lists three factors that influence plasticity	Lists two factors that influence plasticity	Lists one or no factors that influence plasticity
Give plasticity example	Gives an example of plasticity	Gives an example of plasticity	Does not give an example of plasticity

10. A cross-sectional design compares groups of people of one age with at least one other group of people of another age at a specific point in time. It is faster than a longitudinal study because all of the data is immediately available. Ideally the participants should be matched at the same socioeconomic level.

    To implement a cross-sectional design to test reading, first identify a group of children aged 8 and another group aged 12. Second, evaluate each individual child's reading ability. Finally, compare the children of various ages and look for differences.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Define cross-sectional design	Describes cross-sectional design and identifies that participants should be of a similar socioeconomic status	Describes cross-section design but doesn't elaborate about having similar socioeconomic status for participants	Gives a vague or incorrect description of cross-sectional design
Summarize how to do the research	Identifies the three parts of the research design	Identifies two parts of the research design	Identifies one part or cannot identify the research design

11. Researchers must ensure that people's participation is 1) voluntary, 2) confidential, and 3) harmless. They must obtain the informed consent of all the participants. Informed consent means that participants must understand and agree to the procedures after being told of any risks involved. If children are involved, consent must be obtained from the children as well as their parents. Participants must also be allowed to end their participation at any time.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Summarize practices to protect participants	States all three conditions; describes informed consent and that participants can end participation	States two conditions; explains informed consent *or* that participants can end participation	States one condition; fails to explain informed consent

12. A correlation exists between two variables when one variable changes (increases or decreases) as the other variable changes. Examples will vary but should illustrate this concept, such as the number of people who drown increases as the number of ice cream sales increases. It is impossible to determine cause and effect from correlations because even though correlations indicate a connection between two variables, they cannot

determine the reason for the connection since no other variables are controlled. In the example above, people drowning and ice cream sales both increase during hot weather, so the correlation is caused by neither variable.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Define correlation	Gives a strong definition for correlation	Gives an adequate definition for correlation	Gives inaccurate or no definition of correlation
Give example of a correlation	Offers a good example of a correlation	Offers a vague or weak example of a correlation	Offers an incorrect or no example of a correlation
Explain relationship between causation and correlation	States that causation cannot be determined from a correlation	Implies that causation can be determined from a correlation	States that causation can be determined from a correlation

13. Ethics are a set of moral principles and specific practices that protect both participants and the integrity of research. Ethical standards provide study participants with the assurance of informed consent and knowing that their participation is voluntary, confidential, and that they will not be harmed.

    Ethics are also a vital part of the reporting process after the research has been conducted. Reports of findings should be accurate, and the study should be able to be replicated under the same conditions. Collaboration, replication, and transparency are essential ethical safeguards for all scientists.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Define ethics	Defines ethics	Defines ethics only as they apply to participants *or* the reporting process	Does not define ethics
Explain the importance of ethics	States several ways in which ethics protect participants and how ethics protect findings and replication	Identifies only how ethics are important for participants *or* their importance on the reporting process and replication	Does not explain why ethical standards are important