--Question Starting--  
In the context of textile fiber production, which process is crucial for transitioning from raw cellulose to viscose rayon, involving the treatment with sodium hydroxide followed by carbon disulfide?  
(1) Mercerization  
(2) Ammoniation  
(3) Xanthation  
(4) Esterification  
Answer Key: (3)  
Solution:  
Option (3) is correct. Xanthation is a critical step in the production of viscose rayon where cellulose fibers are treated with sodium hydroxide and then carbon disulfide to form cellulose xanthate, which is dissolved and spun into fibers, crucial for fabric production.  
Option (1) is incorrect. Mercerization involves treating cotton with sodium hydroxide to improve dye uptake and fabric strength but does not involve carbon disulfide.  
Option (2) is incorrect. Ammoniation is used in the treatment of fibers for effects like flame retardancy and is not involved in the conversion of cellulose to viscose.  
Option (4) is incorrect. Esterification typically involves converting cellulose into a derivative like cellulose acetate, not viscose rayon.  
Hence, the correct answer is Option (3).  
  
--Question Starting--  
Which element of research methodology is primarily concerned with establishing causality through manipulation and control of variables?  
(1) Experimental design  
(2) Case study  
(3) Ethnography  
(4) Content analysis  
Answer Key: (1)  
Solution:  
Option (1) is correct. Experimental design is a core element of research methodology that involves the manipulation of an independent variable to observe the effect on a dependent variable, thereby allowing researchers to establish causality.  
Option (2) is incorrect. Case studies are used to get an in-depth understanding of a particular case or settings, often not involving manipulation of variables.  
Option (3) is incorrect. Ethnography involves the systematic study of people and cultures from the insider's perspective, focusing on participant observation and not experimental manipulation.  
Option (4) is incorrect. Content analysis is a research tool used to determine the presence of certain words, themes, or concepts within some given qualitative data.  
Hence, the correct answer is Option (1).  
  
--Question Starting--  
In the developmental psychology of children, which factor exerts a significant influence on personality development through modeling and observational learning?  
(1) Genetic predisposition  
(2) Peer interactions  
(3) Parental discipline  
(4) Media exposure  
Answer Key: (2)  
Solution:  
Option (2) is correct. Peer interactions are crucial in the development of personality as children often engage in modeling and observational learning from their peers, which shapes their social skills and personal identities.  
Option (1) is incorrect. Genetic predisposition influences personality but through biological rather than social mechanisms.  
Option (3) is incorrect. Parental discipline influences personality development but is more related to behavioral adjustments rather than modeling and observational learning.  
Option (4) is incorrect. Media exposure does influence personality but not primarily through direct observational learning from peers.  
Hence, the correct answer is Option (2).  
  
--Question Starting--  
Which strategy is most effective in preventing disabilities in children, focusing on early intervention and prenatal care?  
(1) Genetic counseling  
(2) Dietary supplements  
(3) Accessibility in education  
(4) Vaccination programs  
Answer Key: (1)  
Solution:  
Option (1) is correct. Genetic counseling is effective in preventing disabilities by providing parents with information about risks, conditions, and interventions early on, especially during the prenatal phase.  
Option (2) is incorrect. Dietary supplements can support general health but are not the primary preventive measure for disabilities.  
Option (3) is incorrect. Accessibility in education is crucial for accommodating children with disabilities rather than preventing disabilities.  
Option (4) is incorrect. Vaccination programs prevent certain diseases but are not directly focused on preventing a broad range of disabilities.  
Hence, the correct answer is Option (1).  
  
--Question Starting--  
Which principle of prenatal development primarily concerns the order in which basic physical structures appear and become functional during gestation?  
(1) Cephalocaudal development  
(2) Proximodistal development  
(3) Hierarchical integration  
(4) Sequential differentiation  
Answer Key: (4)  
Solution:  
Option (4) is correct. Sequential differentiation refers to the principle where structures and functions develop in a specific sequence, with each stage setting the foundation for the next, critical in prenatal development.  
Option (1) is incorrect. Cephalocaudal development describes the pattern that structures develop from head to tail, but it does not specifically address the functional aspect.  
Option (2) is incorrect. Proximodistal development describes the pattern from the central axis outward to extremities, again not focusing on the sequence of functional development.  
Option (3) is incorrect. Hierarchical integration involves the development of complex systems from simpler ones but does not focus on the sequence of developmental stages.  
Hence, the correct answer is Option (4).