MULTIPLE CHOICE

1. How many chromosomes are found in the organism that results from the union of a sperm cell and an egg cell?
   a. 22
   b. 23
   c. 44
   d. 46

   ANS: D DIF: Easy REF: In the Beginning: 23 Pairs of Chromosomes
   OBJ: Mechanisms of heredity MSC: Factual

2. Kathleen and Alphonse are expecting their first child, and are having a pleasant conversation about the sex of the baby. Kathleen says, "Well, as long as all of the chromosomes are X, we'll be having a girl!" Which of the following would be the best answer for Alphonse to give?
   a. "That isn't exactly right, since it is an XY chromosomal pattern that produces a female baby."
   b. "Actually, it is only one pair of chromosomes that determines the sex of the baby."
   c. "It is not the chromosomes, but the genes that make up the chromosomes that determine whether we'll have a son or a daughter."
   d. "Since we are only in the second month of the pregnancy, we still have six months to go before the sex of the baby will be determined by the 15th and 16th pairs of chromosomes."

   ANS: B DIF: Moderate REF: In the Beginning: 23 Pairs of Chromosomes
   OBJ: Mechanisms of heredity MSC: Application

3. When looking through a microscope at an entire set of human male chromosomes, how would you be able to differentiate an autosome pair from a sex chromosome pair?
   a. The sex chromosome pair would be about 10 times larger than the autosome pair.
   b. The circular-shaped cells would be the autosomes and the square shapes would be the sex chromosomes.
   c. There would be three cells in the autosome "pair" and two cells in the sex chromosome "pair."
   d. The shape of the sex chromosomes would differ, whereas each autosome pair would look identical.

   ANS: D DIF: Difficult REF: In the Beginning: 23 Pairs of Chromosomes
   OBJ: Mechanisms of heredity MSC: Conceptual

4. How many of the pairs of chromosomes in normal human cells are considered autosomes?
   a. 1
   b. 12
   c. 22
   d. 46

   ANS: C DIF: Moderate REF: In the Beginning: 23 Pairs of Chromosomes
   OBJ: Mechanisms of heredity MSC: Factual

5. Which of the following is NOT one of the chemical compounds that makes up a strand of DNA?
   a. depranine
   b. adenine
   c. thymine
   d. cytocine

   ANS: A DIF: Difficult REF: In the Beginning: 23 Pairs of Chromosomes
   OBJ: Mechanisms of heredity MSC: Factual

6. How is it that DNA "knows" which specific amino acids, proteins, or enzymes to create?
   a. The number of chromosomes that makes up the DNA strand determines this outcome.
   b. The length of the DNA strand, determined by the number of genes on the strand, produces the specific outcome.
   c. The combination of XX and XY chromosomes in the DNA strand determines this outcome.
   d. The order in which the four nucleotide bases occur in the DNA strand results in the specific production outcomes.

   ANS: D DIF: Difficult REF: In the Beginning: 23 Pairs of Chromosomes
   OBJ: Mechanisms of heredity MSC: Conceptual

7. Kimberley is having a discussion with her friend Aasta about the genetic determinants of development. They cannot come to an agreement on what the functional units of heredity are. If they asked you to help them figure this out, what would you say?
   a. The most functional units of heredity are chromosomes.
   b. The most functional units of heredity are genes.
   c. The most functional units of heredity are ribosomes.
   d. The most functional units of heredity are nucleotides.

   ANS: B DIF: Moderate REF: In the Beginning: 23 Pairs of Chromosomes
   OBJ: Mechanisms of heredity MSC: Application

8. When Chester is conceived by his parents, he has the genetic instructions to grow up to be 6'1'' tall. During his childhood, however, he develops a digestive illness that significantly limits the amount of food he can eat, and he regularly fails to get enough vitamins in his diet. As a result, he grows up to be 5'11'' tall. In this example, a height of 6'1'' is Chester's _____ and a height of 5'11'' is Chester's _____.
   a. phenotype; genotype
   b. chromotype; nucleotype
   c. nucleotype; chromotype
   d. genotype; phenotype

   ANS: D DIF: Easy REF: In the Beginning: 23 Pairs of Chromosomes
   OBJ: Mechanisms of heredity MSC: Application

9. Genotype is to phenotype as
   a. homozygous is to heterozygous.
   b. nurture is to nature.
   c. DNA is to RNA.
   d. genetic pattern is to physical, behavioral, and psychological features.

   ANS: D DIF: Difficult REF: In the Beginning: 23 Pairs of Chromosomes
   OBJ: Mechanisms of heredity MSC: Conceptual

10. Kendrie suffers from sickle cell anemia. She is not just a carrier of the illness, but she actually has the disease itself. Which of the following best describes Kendrie's red blood cell alleles?
    a. heterozygous
    b. genotypical
    c. homozygous
    d. phenotypical

    ANS: C DIF: Difficult REF: In the Beginning: 23 Pairs of Chromosomes
    OBJ: Mechanisms of heredity MSC: Application

11. When you learned to speak English, you may have learned the following saying: "When two vowels go walking, the first does the talking." If we were to apply this rule to heterozygous genes, we would be most accurate if we said, "When two genes go walking, the _____ one does the talking."
    a. masked
    b. recessive
    c. dominant
    d. typical

    ANS: C DIF: Moderate REF: In the Beginning: 23 Pairs of Chromosomes
    OBJ: Mechanisms of heredity MSC: Application

12. Which type of allele is ignored when found in a heterozygous gene pair?
    a. masked
    b. dominant
    c. typical
    d. recessive

    ANS: D DIF: Moderate REF: In the Beginning: 23 Pairs of Chromosomes
    OBJ: Mechanisms of heredity MSC: Factual

13. Maricella was born several days ago, and her pediatrician has observed that she has almond-shaped eyes and a fold over her eyelids. In addition, her head, neck, and nose are smaller than other babies of her birth weight. With which of the following conditions would Maricella most likely be diagnosed?
    a. Down syndrome
    b. Turner's syndrome
    c. Kleinfelter's syndrome
    d. Phenylketonuria

    ANS: A DIF: Difficult REF: In the Beginning: 23 Pairs of Chromosomes
    OBJ: Mechanisms of heredity MSC: Application

14. Maricella was born several days ago, and her pediatrician has observed that she has almond-shaped eyes and a fold over her eyelids. In addition, her head, neck, and nose are smaller than other babies of her birth weight. It is most likely that Maricella has an extra of the _____ pair of chromosomes.
    a. 4^{th}
    b. 9^{th}
    c. 17^{th}
    d. 21^{st}

    ANS: D DIF: Difficult REF: In the Beginning: 23 Pairs of Chromosomes
    OBJ: Mechanisms of heredity MSC: Application

15. Which maternal characteristic is most strongly associated with giving birth to a baby with Down syndrome?
    a. low levels of intelligence in the mother
    b. consumption of alcohol during pregnancy
    c. higher maternal age
    d. exposure to lead or mercury by the baby immediately after birth

    ANS: C DIF: Moderate REF: In the Beginning: 23 Pairs of Chromosomes
    OBJ: Mechanisms of heredity MSC: Factual

16. Which of the following statements supports the proposition that the presence of an X chromosome appears to be necessary for life?
    a. X-chromosomal genotypes are expressed as consistent phenotypes at a rate of around 85%, while Y-chromosomal genotypes are expressed as consistent phenotypes at a rate of only about 15%.
    b. The X chromosomes are expressed far earlier in the prenatal period than the Y chromosomes.
    c. There are no chromosomal disorders wherein a person has only Y chromosomes.
    d. Most of the lethal chromosomal disorders, including Tay-Sachs disease and cystic fibrosis, are located on the Y chromosome.

    ANS: C DIF: Difficult REF: In the Beginning: 23 Pairs of Chromosomes
    OBJ: Mechanisms of heredity MSC: Conceptual

17. Traits that are "either/or" phenotypes (e.g., being color blind *or* not being color blind, having a blood clotting disorder *or* not having a blood clotting disorder) are usually controlled by _____ genes.
    a. polymorphic
    b. mutated
    c. multiple
    d. single

    ANS: D DIF: Difficult REF: In the Beginning: 23 Pairs of Chromosomes
    OBJ: Heredity, environment, and development MSC: Factual

18. If a physician informed you that your speech disorder was the result of problems on chromosomes 4, 7, and 15, you would rightly conclude that the disorder is always classifiable as
    a. recessive.
    b. polygenic.
    c. dominant.
    d. sex-linked.

    ANS: B DIF: Moderate REF: In the Beginning: 23 Pairs of Chromosomes
    OBJ: Heredity, environment, and development MSC: Application

19. When many genes work together to determine a characteristic, there may be a large range of phenotypes that are expressed. Why is this?
    a. Because each allele of the genes may be differently structured, leaving a large variety of outcomes.
    b. Because there are many combinations of dominant and recessive genes that can lead to various levels of the characteristic being expressed.
    c. Because each gene is contributed to by a different chromosome, bringing more phenotypical variety into the characteristic.
    d. Because the genes all work to "cancel" each other out, leaving only one "odd" gene to express the phenotype.

    ANS: B DIF: Difficult REF: In the Beginning: 23 Pairs of Chromosomes
    OBJ: Heredity, environment, and development MSC: Conceptual

20. David and Katie have always been close. In fact, they are so close that they shared the womb when their mother was pregnant with them. Given the information that you have already been given in this question, which of the following can you state conclusively?
    a. David and Katie are monozygotic twins.
    b. David and Katie are conjoined twins.
    c. David and Katie are dizygotic twins.
    d. David and Katie share 25% of their genotype.

    ANS: C DIF: Difficult REF: In the Beginning: 23 Pairs of Chromosomes
    OBJ: Heredity, environment, and development MSC: Application

21. Monozygotic is to _____ as dizygotic is to _____.
    a. heterozygous; homozygous
    b. identical; fraternal
    c. homozygous; heterozygous
    d. fraternal; identical

    ANS: B DIF: Easy REF: In the Beginning: 23 Pairs of Chromosomes
    OBJ: Heredity, environment, and development MSC: Conceptual

22. Which of the following circumstances would indicate the greatest level of heritability of a trait?
    a. Francois performs as well in school as the siblings with whom he was raised, even though he was adopted and is not genetically related to them.
    b. D'artagnan prefers to watch movies on television, while his parents prefer to watch movies at a movie theater.
    c. Luigi and his siblings are all about the same height.
    d. Mario's results on a personality test are far more similar to his biological parents than they are to his adopted parents.

    ANS: D DIF: Moderate REF: In the Beginning: 23 Pairs of Chromosomes
    OBJ: Heredity, environment, and development MSC: Application

23. Which of the following properties is widely accepted with regard to the relationship between genes and behaviors?
    a. Genes actually change and break down as we age, which is why our actions change so dramatically as we get older.
    b. Environmental influences typically make children within the family very similar to each other.
    c. Genes cannot influence the kind of environment to which a person is exposed.
    d. Heredity and environment interact dynamically throughout development.

    ANS: D DIF: Moderate REF: In the Beginning: 23 Pairs of Chromosomes
    OBJ: Heredity, environment, and development MSC: Factual

24. The concept that genotypes are not the only things that control traits involves the fact that
    a. dizygotic twins are virtually genetically identical while fraternal twins are not.
    b. each genotype can produce a variety of phenotypes, depending on the environment in which a person lives.
    c. recessive genes are more commonly expressed than dominant genes, especially in cases of polygenic inheritance.
    d. the environment has little impact on behavior, as has been demonstrated in the results of the nature-nurture question.

    ANS: B DIF: Difficult REF: In the Beginning: 23 Pairs of Chromosomes
    OBJ: Heredity, environment, and development MSC: Conceptual

25. The fact that a person with phenylketonuria can essentially mute the effects of their disease by controlling their dietary intake of a specific amino acid is an example of which of the following principles?
    a. Heredity and the environment interact dynamically throughout development.
    b. Genes can influence the environment to which a person is exposed.
    c. Development is multidirectional in its nature.
    d. Environmental influences typically make children within a family different.

    ANS: A DIF: Difficult REF: In the Beginning: 23 Pairs of Chromosomes
    OBJ: Heredity, environment, and development MSC: Conceptual

26. Marvin has an exceptional amount of skill in athletics. Specifically, he is an extraordinary hockey player. Throughout his life he has chosen circumstances where he would be exposed to peers who also enjoyed hockey, and this has helped him develop opportunities to develop his talent. Marvin has been engaging in
    a. genotyping.
    b. phenotyping.
    c. niche-picking.
    d. heritizing.

    ANS: C DIF: Easy REF: In the Beginning: 23 Pairs of Chromosomes
    OBJ: Heredity, environment, and development MSC: Application

27. _____ refers to the process of deliberately seeking environments that fit one's heredity.
    a. Niche-picking
    b. Context-selection
    c. Base-rating
    d. Polygenic inheritance

    ANS: A DIF: Easy REF: In the Beginning: 23 Pairs of Chromosomes
    OBJ: Heredity, environment, and development MSC: Factual

28. Jack and Jill are twins. Because he is a boy, Jack's parents encourage him to run. However, they discourage Jill from engaging in athletic activity. As a result, Jack is much faster at running up a hill than Jill. The difference in Jack and Jill's behavior is best explained by
    a. nonshared environmental influences.
    b. active gene-environment relations.
    c. polygenetic effects.
    d. niche-picking.

    ANS: A DIF: Moderate REF: In the Beginning: 23 Pairs of Chromosomes
    OBJ: Heredity, environment, and development MSC: Application

29. Although identical twins share 100% of their genetic code and are often similar, they are never truly "identical." Which of the following explains these differences?
    a. heterozygous chromosomal deviations
    b. active gene-environment relationships
    c. post-natal genetic mutations
    d. nonshared environmental influences

    ANS: D DIF: Moderate REF: In the Beginning: 23 Pairs of Chromosomes
    OBJ: Heredity, environment, and development MSC: Conceptual

30. Larry and Ira are brothers who are two years apart in age. Larry went to one public school for his grade school years, but before Ira could go to that school the district underwent a rezoning. Ira, therefore, ended up going to a different school with less-qualified teachers and fewer resources. As a result, Larry tended to perform much better in school than Ira did. This example demonstrates the influence of
    a. active gene-environment relationships
    b. niche-picking
    c. nonshared environmental influences
    d. asynchronous environmental genotypes

    ANS: C DIF: Difficult REF: In the Beginning: 23 Pairs of Chromosomes
    OBJ: Heredity, environment, and development MSC: Application

31. The time between conception and birth is called the _____ period.
    a. prenatal
    b. neonatal
    c. postnatal
    d. teratogenic

    ANS: A DIF: Easy REF: From Conception to Birth
    OBJ: Period of the zygote MSC: Factual

32. Which of the following is the correct order of the stages of pregnancy?
    a. period of the embryo, period of the fetus, period of the zygote
    b. period of the zygote, period of the embryo, period of the fetus
    c. period of the fetus, period of the zygote, period of the embryo
    d. period of the embryo, period of the zygote, period of the fetus

    ANS: B DIF: Moderate REF: From Conception to Birth
    OBJ: Period of the zygote MSC: Factual

33. Out of the 200–500 million sperm cells that are released during an ejaculation, only _____ complete the short journey up the Fallopian tubes to where an egg is waiting to be fertilized.
    a. half
    b. one
    c. a few hundred
    d. a few thousand

    ANS: C DIF: Difficult REF: From Conception to Birth
    OBJ: Period of the zygote MSC: Factual

34. Jeanette and her husband Eric have recently engaged in sexual intercourse. After this activity was completed, an egg in Jeanette's Fallopian tube was fertilized by a sperm cell that was released by Eric. The result is a(n) _____, which marks the beginning of pregnancy.
    a. zygote
    b. embryo
    c. fetus
    d. blastocyst

    ANS: A DIF: Moderate REF: From Conception to Birth
    OBJ: Period of the zygote MSC: Application

35. Despite the fact that a human female has a normal pregnancy duration (or gestational period) of 38 weeks, people often refer to pregnancy as a 40-week event. Why is this?
    a. Because the heightened influence of teratogens in the world today has actually extended the duration of pregnancy from conception to delivery.
    b. Because pregnancy usually begins two weeks after a woman's menstrual period, and that is the time from which the beginning of pregnancy is measured.
    c. Because the duration of pregnancy actually gets longer as a woman ages, and it ranges from 38 to 42 weeks. 40 weeks is the average, so that is what people say.
    d. Because physicians want to allow for a two-week "window" at the end of the pregnancy so that women do not become concerned if they have not delivered by the end of the 38th week.

    ANS: B DIF: Moderate REF: From Conception to Birth
    OBJ: Period of the zygote MSC: Conceptual

36. Which of the following structures eventually develops into a baby?
    a. the amniotic sac
    b. the germ disc
    c. the trophoblast
    d. the blastocyst

    ANS: B DIF: Difficult REF: From Conception to Birth
    OBJ: Period of the zygote MSC: Factual

37. Pregnant Patty's body is currently experiencing the event that triggers hormonal changes that will prevent further menstruation. This event is called
    a. implantation.
    b. conception.
    c. dilation.
    d. effacement.

    ANS: A DIF: Moderate REF: From Conception to Birth
    OBJ: Period of the zygote MSC: Application

38. Lucy is currently expecting her first child, and she is talking to her friend Dale, who does not have any children of his own. Dale knows very little about human development, and asks Lucy how the food she eats gets to the developing child. Lucy smiles and shakes her head, before saying,
    a. The uterus is responsible for doing all of that. Why do you think that is where the baby grows?
    b. The germ disc separates me from the child, but has a small hole in it that allows vitamins and nutrients to get to the child.
    c. The umbilicus is responsible for taking food out of my system and delivering it directly into the baby's stomach.
    d. There is a structure called the placenta that helps my body exchange nutrients and waste with the baby.

    ANS: D DIF: Easy REF: From Conception to Birth
    OBJ: Period of the zygote MSC: Application

39. Once a zygote implants itself in the uterine lining, it officially becomes a(n) _____.
    a. embryo
    b. baby
    c. fetus
    d. germ disc

    ANS: A DIF: Moderate REF: From Conception to Birth
    OBJ: Period of the embryo MSC: Factual

40. Brad and Angelina take their daughter Anniston to the zoo, and are looking at a bunch of different animals. Anniston, who has recently been learning about human development, sees a _____ and says, "Mommy, Daddy! That looks just like a human embryo in its third week of development!"
    a. spider
    b. salamander
    c. aardvark
    d. prairie dog

    ANS: B DIF: Difficult REF: From Conception to Birth
    OBJ: Period of the embryo MSC: Application

41. According to the weatherman on the local news, the outside temperature today will reach 102 degrees, with a possible heat index of 110 degrees. Thankfully for Quanetta, who is pregnant with her second child, the _____ will maintain a constant temperature for her unborn baby.
    a. uterus
    b. amniotic fluid
    c. umbilical cord
    d. placenta

    ANS: B DIF: Moderate REF: From Conception to Birth
    OBJ: Period of the embryo MSC: Application

42. The _____ is a structure that contains veins and arteries and connects a developing child to the placenta.
    a. umbilical cord
    b. amnion
    c. germ disc
    d. blastocyst

    ANS: A DIF: Easy REF: From Conception to Birth
    OBJ: Period of the embryo MSC: Factual

43. Of the three prenatal stages of development which is by far the longest?
    a. the period of the zygote
    b. the period of the embryo
    c. the period of the fetus
    d. the period of the neonate

    ANS: C DIF: Moderate REF: From Conception to Birth
    OBJ: Period of the fetus MSC: Factual

44. Mel is at the obstetrician's office with his girlfriend Denise, who is pregnant with their child. They have just started the ninth week of the pregnancy, and the doctor explains to them that the unborn child's brain has developed distinct structures and is already beginning to regulate certain body functions. Based on what you know about prenatal development, you know that the period of the _____ has just begun.
    a. zygote
    b. embryo
    c. umbilicus
    d. fetus

    ANS: D DIF: Moderate REF: From Conception to Birth
    OBJ: Period of the fetus MSC: Application

45. Marsha's doctor informs her that her child is just entering the longest period of prenatal development. About how long has Marsha been carrying her unborn child?
    a. 1 day
    b. 3 weeks
    c. 9 weeks
    d. 28 weeks

    ANS: C DIF: Moderate REF: From Conception to Birth
    OBJ: Period of the fetus MSC: Application

46. Why is it that 22 weeks is considered the earliest "age of viability" for an unborn child?
    a. Because this is the age by which the child's systems are functioning well enough to potentially sustain life outside of the mother's body.
    b. Because it is not until this age that the unborn child's brain begins developing.
    c. Because this is the age when the child's sex is determined, and when appropriate genitals begin to form.
    d. Because this is the age after which teratogens can no longer impact the baby.

    ANS: A DIF: Difficult REF: From Conception to Birth
    OBJ: Period of the fetus MSC: Conceptual

47. The age of _____ is defined as the age at which a fetus can survive if it must be born because most of its bodily systems function adequately. It typically occurs 22 to 28 weeks into the pregnancy.
    a. zygotic intent
    b. viability
    c. plasticity
    d. continuity

    ANS: B DIF: Easy REF: From Conception to Birth
    OBJ: Period of the fetus MSC: Factual

48. Which of the following types of sensory input are most salient to a fetus?
    a. visual input
    b. tactile input
    c. olfactory input
    d. auditory input

    ANS: D DIF: Moderate REF: From Conception to Birth
    OBJ: Period of the fetus MSC: Factual

49. Which of the following is NOT one of the general risk factors identified by your textbook for pregnant women and their babies?
    a. nutrition
    b. the mother's age
    c. drugs
    d. stress

    ANS: C DIF: Moderate REF: Influences on Prenatal Development
    OBJ: General risk factors MSC: Factual

50. Charlotte has just found out that she is pregnant, and she is thrilled about the news. She is concerned, however, because although she knows that her weight and body will change over the next several months, she wants those changes to be healthy. Which of the following advice should you give?
    a. Your child will need more and more as she develops, so there is no amount of weight gain that is unhealthy during pregnancy.
    b. You should increase your food intake by 10% to 20% to meet the needs of the baby.
    c. You are truly eating for two now, so you should be eating twice as much as normal.
    d. As long as you take prenatal vitamins every day, there is no real need for you to eat more than usual.

    ANS: B DIF: Moderate REF: Influences on Prenatal Development
    OBJ: General risk factors MSC: Factual

51. A pregnant woman not getting enough healthy food, vitamins, and nutrients may put her baby at risk for all but which of the following?
    a. premature birth
    b. effects to the child's nervous system
    c. increased risk of later life eating disorders
    d. vulnerability to illness

    ANS: C DIF: Difficult REF: Influences on Prenatal Development
    OBJ: General risk factors MSC: Factual

52. Maternal stress is most likely to negatively impact a developing embryo/fetus when that stress is
    a. intermittent and extreme.
    b. intermittent and moderate.
    c. prolonged and extreme.
    d. prolonged and moderate.

    ANS: C DIF: Easy REF: Influences on Prenatal Development
    OBJ: General risk factors MSC: Conceptual

53. Which of the following describes one of the reasons why stress hormones that are elevated in women who are highly anxious during pregnancy can negatively impact the baby?
    a. stress-related hormones can block the flow of oxygen to the baby
    b. stress-related hormones absorb essential vitamins and nutrients that are essential for healthy development
    c. stress-related hormones increase the chances of the baby developing a stress-related mental illness later in life
    d. stress-related hormones delay the onset of uterine contractions, which can lead to babies being born well after their due date

    ANS: A DIF: Difficult REF: Influences on Prenatal Development
    OBJ: General risk factors MSC: Conceptual

54. Your authors point out that teenage women have a greater chance of having problems during their pregnancy, labor, and delivery than pregnant women in their 20s. They suggest that this is mainly because
    a. pregnant teenagers are more likely to be economically disadvantaged and lack good prenatal care.
    b. pregnant teenagers are more likely to smoke cigarettes during pregnancy.
    c. pregnant teenagers are more likely to drink alcohol during pregnancy.
    d. pregnant teenagers are less likely to get adequate sleep and rest during pregnancy.

    ANS: A DIF: Easy REF: Influences on Prenatal Development
    OBJ: General risk factors MSC: Conceptual

55. In general, pregnancies are most likely to proceed normally when the mother is between the ages of _____ years.
    a. 18 and 25
    b. 21 and 25
    c. 21 and 30
    d. 20 and 35

    ANS: C DIF: Moderate REF: Influences on Prenatal Development
    OBJ: General risk factors MSC: Factual

56. Alissa is a 41-year-old, married, professional woman who has just found out that she is pregnant with her third child. According to your textbook, which of the following conditions is her baby at higher risk of due to Alissa's age?
    a. Down syndrome
    b. Phenylketonuria
    c. ADHD
    d. Von Recklinghausen disease (neurofibromatosis)

    ANS: A DIF: Moderate REF: Influences on Prenatal Development
    OBJ: General risk factors MSC: Application

57. Any agent that interferes with normal prenatal development is a(n) _____.
    a. fetalytic
    b. teratogen
    c. ototoxin
    d. carcinogen

    ANS: B DIF: Easy REF: Influences on Prenatal Development
    OBJ: Teratogens: Drugs, diseases and environmental hazards MSC: Factual

58. In Germany in the 1950s, the effects of teratogens gained widespread attention when pregnant women who took _____ to help them sleep gave birth to babies with deformations of their heads, legs, hands, and/or fingers. Over 7,000 babies were harmed by this drug before it was removed from the market.
    a. phenteramine
    b. aspasneet
    c. thalidomide
    d. paregoric

    ANS: C DIF: Difficult REF: Influences on Prenatal Development
    OBJ: Teratogens: Drugs, diseases and environmental hazards MSC: Factual

59. Whose mother most likely took thalidomide while pregnant because she was unaware its potential to harm her baby?
    a. Dean, who has a heart defect
    b. Martin, who has deformed arms and legs
    c. Jerry, who is deaf
    d. Lewis, who is severely mentally retarded

    ANS: B DIF: Moderate REF: Influences on Prenatal Development
    OBJ: Teratogens: Drugs, diseases and environmental hazards MSC: Application

60. Young Marvin, just a few months of age, is growing at a slower rate than would be expected for his age. He has heart problems and a slightly misshapen face, and is often very fussy and difficult to soothe. Which of the following substances did his mother likely ingest on a regular basis during her pregnancy?
    a. nicotine
    b. aspirin
    c. alcohol
    d. cocaine

    ANS: C DIF: Moderate REF: Influences on Prenatal Development
    OBJ: Teratogens: Drugs, diseases and environmental hazards MSC: Application

61. Why is there no conclusive evidence that there is a specific amount of alcohol a pregnant woman can drink without causing harmful effects to her child?
    a. Because there is no way to know exactly how much alcohol is in any given drink, and thus it is impossible to accurately gauge the amount of alcohol being consumed.
    b. Because the research has concluded that even very small amounts of alcohol are certainly damaging to an unborn child.
    c. Because any safe level of consumption is probably not the same for all women, as a result of heredity and health factors.
    d. Because alcohol is so often taken with other drugs that it is impossible to determine how much of it would be safe to consume.

    ANS: C DIF: Difficult REF: Influences on Prenatal Development
    OBJ: Teratogens: Drugs, diseases and environmental hazards MSC: Conceptual

62. If a woman smokes cigarettes or other forms of tobacco during pregnancy, which of the following effects is MOST likely to occur?
    a. They are more likely to give birth to a child with cystic fibrosis or sickle cell anemia.
    b. They are more likely to have a child who is born in the "breech" position, thus complicating their delivery and increasing the odds of requiring a Caesarian section procedure.
    c. They are more likely to have a child born suffering from spina bifida
    d. They are more likely to suffer a miscarriage or to have a child born with a lower birth weight

    ANS: D DIF: Difficult REF: Influences on Prenatal Development
    OBJ: Teratogens: Drugs, diseases and environmental hazards MSC: Factual

63. Although an unborn child may be protected from many different maternal illnesses, such as colds and some strains of the flu, other illnesses can be extremely harmful to the baby. Which of the following is NOT listed as one of those illnesses?
    a. toxoplasmosis
    b. cytomegalovirus
    c. shingles
    d. chlamydia

    ANS: C DIF: Difficult REF: Influences on Prenatal Development
    OBJ: Teratogens: Drugs, diseases and environmental hazards MSC: Factual

64. Wendy is pregnant with her son, who will be named William. Wendy has been diagnosed with a specific illness, and she knew about this prior to getting pregnant. Although there is no way to know for sure if the illness will harm William during his development, the most likely symptoms of any such harm would include damage to his central nervous system, his teeth, and his bones. From which of the following illnesses does Wendy suffer?
    a. AIDS
    b. rubella
    c. syphilis
    d. genital herpes

    ANS: C DIF: Difficult REF: Influences on Prenatal Development
    OBJ: Teratogens: Drugs, diseases and environmental hazards MSC: Application

65. Although the risk of using a cellular telephone during pregnancy is, as of yet, unclear, your authors do note that there is one way in which using cell phones represents an enormous risk for both pregnant women and their unborn children. That is:
    a. using cell phones while exercising.
    b. using cell phones while driving.
    c. using cell phones while cooking.
    d. sleeping next to a charging cell phone.

    ANS: B DIF: Easy REF: Influences on Prenatal Development
    OBJ: Teratogens: Drugs, diseases and environmental hazards MSC: Factual

66. Why is it that environmental teratogens may be even more treacherous to deal with than, say, maternal illnesses or the use of drugs during pregnancy?
    a. Because environmental teratogens are widely understood to be the most serious in their potential to damage unborn children.
    b. Because environmental teratogens are, in fact, unavoidable.
    c. Because people have given up trying to "live clean" and avoid exposure to environmental teratogens.
    d. Because people are so often unaware of environmental teratogens in their surroundings.

    ANS: D DIF: Difficult REF: Influences on Prenatal Development
    OBJ: Teratogens: Drugs, diseases and environmental hazards MSC: Conceptual

67. The key lesson learned by the fact that thalidomide showed no impact when tested on pregnant rats but led to birth defects in humans is that
    a. teratogens impact different genotypes differently.
    b. teratogens impact specific aspects of development.
    c. teratogen effects may not emerge until later in life.
    d. teratogen effects are the same regardless of the time when the individual is exposed.

    ANS: A DIF: Difficult REF: Influences on Prenatal Development
    OBJ: How teratogens influence prenatal development MSC: Conceptual

68. The fact that exposure to a teratogen during the period of the zygote often leads to a spontaneous abortion (miscarriage) while the same exposure during the period of the fetus can lead to minor defects of bodily structures or systems demonstrates that
    a. the impact of teratogens depends on the genotype of the organism
    b. the impact of teratogens changes the course of prenatal development
    c. different teratogens affect different aspects of prenatal development
    d. the impact of a teratogen depends on the amount, or dose, of the teratogen

    ANS: B DIF: Easy REF: Influences on Prenatal Development
    OBJ: How teratogens influence prenatal development MSC: Conceptual

69. The fact that ingestion of nicotine can lead to an increased risk of miscarriage or low birth weight while contracting rubella can cause aberrant development of the eyes, ears, and heart demonstrates that
    a. the impact of teratogens depends on the genotype of the organism.
    b. the impact of teratogens changes of the course of prenatal development.
    c. each teratogen affects a specific aspect (or aspects) of prenatal development.
    d. the impact of a teratogen depends on the amount, or dose, of the teratogen.

    ANS: C DIF: Easy REF: Influences on Prenatal Development
    OBJ: How teratogens influence prenatal development MSC: Conceptual

70. What was the most critical lesson about teratogens learned from studies on the use of the drug DES by pregnant women?
    a. Sometimes what appear to be teratogens actually are harmless drugs.
    b. Infants in the late fetal period appear to be the most at risk for impact from drug-related teratogens.
    c. Sometimes the effects of teratogens are not apparent until long after exposure.
    d. Females appear to be at much greater risk from teratogens.

    ANS: C DIF: Moderate REF: Influences on Prenatal Development
    OBJ: How teratogens influence prenatal development MSC: Conceptual

71. In which type of prenatal testing is a grainy picture of the fetus generated that allows for identification of the child's position and, at a certain point, its sex?
    a. amniocentesis
    b. chorionic villus sampling
    c. ultrasound
    d. transvaginal magnetic resonance imaging

    ANS: C DIF: Easy REF: Influences on Prenatal Development
    OBJ: Prenatal diagnosis and treatment MSC: Factual

72. Which of the following is a relative limitation of the use of an ultrasound?
    a. It requires an instrument so large that is impractical to have in most physicians' offices.
    b. It is notoriously unreliable at accurately identifying the sex of the child prior to birth.
    c. It carries a 1% chance of inducing a miscarriage.
    d. It gives a very grainy picture that takes an expert's eyes to interpret.

    ANS: D DIF: Easy REF: Influences on Prenatal Development
    OBJ: Prenatal diagnosis and treatment MSC: Factual

73. Randi is pregnant for the first time. Given the frequency with which twins and triplets have occurred in her family, she is understandably concerned that she will have a multiple-birth pregnancy. If you were her gynecologist, which of the following prenatal tests would you recommend to either confirm or rule out the number of babies she is carrying?
    a. quadruple maternal blood test
    b. amniocentesis
    c. chorionic villus sampling
    d. ultrasound

    ANS: D DIF: Moderate REF: Influences on Prenatal Development
    OBJ: Prenatal diagnosis and treatment MSC: Application

74. If you were most interested in knowing the genotype of your unborn baby, perhaps to find out if there were specific genetic or chromosomal problems, which prenatal test would be most appropriate?
    a. ultrasound
    b. maternal glucose test
    c. amniocentesis
    d. chorionic villus sampling

    ANS: C DIF: Moderate REF: Influences on Prenatal Development
    OBJ: Prenatal diagnosis and treatment MSC: Factual

75. If you are pregnant and want to get a prenatal test to assess various aspects of your unborn child's well-being, which of the following should you avoid if you suffer from trypanophobia (or the fear of needles)?
    a. amniocentesis
    b. ultrasound
    c. chorionic villus sampling
    d. fetal cardiac monitoring

    ANS: A DIF: Easy REF: Influences on Prenatal Development
    OBJ: Prenatal diagnosis and treatment MSC: Application

76. A procedure that involves removing a sample of tissue from part of the placenta that is done 9 to 12 weeks into a pregnancy is called
    a. amniocentesis.
    b. chorionic villus sampling.
    c. ultrasound.
    d. maternal glucose test.

    ANS: B DIF: Moderate REF: Influences on Prenatal Development
    OBJ: Prenatal diagnosis and treatment MSC: Factual

77. Why would a person be naturally concerned about undergoing an amniocentesis or chorionic villus sampling during their pregnancy?
    a. Because a miscarriage is 1–2% more likely after these tests.
    b. Because the results from both tests take two to four weeks to obtain.
    c. Because they are both rather painful, while an ultrasound is noninvasive and painless.
    d. Because they both carry an unacceptable rate of "false positive" results.

    ANS: A DIF: Moderate REF: Influences on Prenatal Development
    OBJ: Prenatal diagnosis and treatment MSC: Conceptual

78. Troy is very interested in the field of fetal medicine. Given this, he would most likely be fascinated by a book titled
    a. *Afterbirth Care and You.*
    b. *The Benefits of Healthy Eating Before Pregnancy.*
    c. *Fixing Birth Defects Before Birth.*
    d. *The Importance of Childhood Inoculations.*

    ANS: C DIF: Easy REF: Influences on Prenatal Development
    OBJ: Prenatal diagnosis and treatment MSC: Applications

79. What is the current status of the use of genetic engineering to help treat illnesses that are caused by defective genes?
    a. Genetic engineering is still illegal in the United States, though other countries are using it on a routine basis.
    b. Genetic engineering has been found useful for metabolic disorders, but only when employed prior to the fetal stage of prenatal development.
    c. Some successful applications of genetic engineering have been seen with older children.
    d. Genetic engineering has never been successfully used in animals or human beings, but the theories are sound and research is ongoing.

    ANS: C DIF: Difficult REF: Influences on Prenatal Development
    OBJ: Prenatal diagnosis and treatment MSC: Factual

80. How many stages of labor are there?
    a. 1
    b. 3
    c. 5
    d. 7

    ANS: B DIF: Moderate REF: Labor and Delivery
    OBJ: Stages of labor MSC: Factual

81. Felicia is at the end of her pregnancy, and she is now in labor. She has been having contractions for about 18 hours, and her cervix is slowly dilating to approximately 10 centimeters. Which stage of labor is Felicia currently in?
    a. Stage one
    b. Stage two
    c. Stage three
    d. Stage four

    ANS: A DIF: Moderate REF: Labor and Delivery
    OBJ: Stages of labor MSC: Application

82. Roz is in the process of giving birth to her daughter. The baby has made its way from the uterus into the vagina, and is currently being expelled from Roz's body as Roz contracts her abdominal muscles. In which stage of labor is Roz?
    a. Stage one
    b. Stage two
    c. Stage three
    d. Stage four

    ANS: B DIF: Moderate REF: Labor and Delivery
    OBJ: Stages of labor MSC: Application

83. Which of the stages of labor is the briefest, and involves only a few "pushes" to expel the placenta?
    a. Stage nine
    b. Stage seven
    c. Stage five
    d. Stage three

    ANS: D DIF: Easy REF: Labor and Delivery
    OBJ: Stages of labor MSC: Factual

84. Why would it be fair to say that physicians Grantly Dick-Read and Ferdinand Lamaze revolutionized approaches to childbirth?
    a. Because they advocated for a more natural approach to childbirth rather than viewing it as a "medical event."
    b. Because together they developed the epidural procedure, which significantly reduced a woman's pain during labor.
    c. Because they promoted the use of midwives and doulas over physicians and nurses to assist mothers in labor
    d. Because they developed the "fetal monitor," which allowed for physicians to note when a child was in distress during labor.

    ANS: A DIF: Difficult REF: Labor and Delivery
    OBJ: Approaches to childbirth MSC: Conceptual

85. Wilma is afraid of the pain involved in delivering her baby. Are childbirth classes likely to help her?
    a. Yes, because women who take these courses may experience less tension, and thus may have less pain during the delivery.
    b. Yes, because women who take these courses qualify for painkilling medications they would not usually receive.
    c. No, because childbirth courses only make people more knowledgeable about the birthing process and can have no effect on pain.
    d. No, because individuals who know most about the birthing process experience the most pain.

    ANS: A DIF: Difficult REF: Labor and Delivery
    OBJ: Approaches to childbirth MSC: Application

86. Which of the following is NOT one of the physical changes that a woman is likely to experience after pregnancy?
    a. Her breasts may begin to produce milk.
    b. Her uterus becomes smaller.
    c. Her levels of female hormones may drop.
    d. Her control of her bowels may become compromised.

    ANS: D DIF: Easy REF: Labor and Delivery
    OBJ: Adjusting to parenthood MSC: Factual

87. Roughly _____ of new mothers experience the "baby blues," which may involve feelings of irritation and resentment, accompanied by crying spells.
    a. one-quarter
    b. one-third
    c. one-half
    d. two-thirds

    ANS: C DIF: Difficult REF: Labor and Delivery
    OBJ: Adjusting to parenthood MSC: Factual

88. For 10 to 15% of new mothers, the baby blues extends into months of irritability, feelings of low self-worth and apathy, and sleep and appetite disturbances. This condition, called postpartum _____, can influence a child's development if it persists.
    a. psychosis
    b. depression
    c. anxiety
    d. couvade

    ANS: B DIF: Easy REF: Labor and Delivery
    OBJ: Adjusting to parenthood MSC: Factual

89. Postpartum depression
    a. occurs in about 50 percent of new mothers.
    b. is more common following planned pregnancies than unplanned pregnancies.
    c. is a purely psychological phenomenon (i.e., has no physiological basis).
    d. may be reduced via breast-feeding.

    ANS: D DIF: Moderate REF: Labor and Delivery
    OBJ: Adjusting to parenthood MSC: Factual

90. While Jonah was making his way through his mother's birth canal, his umbilical cord got wrapped around his neck. Thankfully this situation was resolved before Jonah developed _____, which would have involved a disruption of oxygenated blood to his brain.
a. hypoxia
b. cerebral atrophy
c. aneurysm
d. hemorrhage

ANS: A DIF: Moderate REF: Labor and Delivery
OBJ: Birth complications MSC: Application

91. Which of the following conditions, seen in pregnant women, involves high blood pressure, proteins in the urine, and swelling in the extremities due to fluid retention?
a. cephalopelvic disproportion
b. preeclampsia
c. irregular position
d. prolapsed umbilical cord

ANS: B DIF: Moderate REF: Labor and Delivery
OBJ: Birth complications MSC: Factual

92. Nora was born just after the 32nd week of pregnancy. According to your authors, she would be referred to as a _____ baby.
a. preeclampsia
b. low birth weight
c. preterm
d. viability

ANS: C DIF: Easy REF: Labor and Delivery
OBJ: Birth complications MSC: Application

93. If a child experiences many birth complications, and later experiences different types of family adversity, she is at an increased risk for developing _____.
a. schizophrenia
b. Down syndrome
c. sarcoidosis
d. obsessive-compulsive disorder

ANS: A DIF: Difficult REF: Labor and Delivery
OBJ: Birth complications MSC: Factual

94. Born 39 weeks after conception, Sasha weighs in at around two pounds. Given this information, Sasha is best defined as
a. full-term and normal birth weight.
b. preterm and normal birth weight.
c. preterm and very low birth weight.
d. full-term and extremely low birth weight.

ANS: D DIF: Difficult REF: Labor and Delivery
OBJ: Birth complications MSC: Application

95. In order for a child to be described as having low birth weight, (s)he would have to weigh:
a. less than 2,500 grams but more than 1,500 grams.
b. less than 1,500 grams but more than 1,000 grams.
c. less than 3,000 grams but more than 2,000 grams.
d. less than 1,000 grams but more than 500 grams.

ANS: A DIF: Difficult REF: Labor and Delivery
OBJ: Birth complications MSC: Factual

96. Which of the following appears to be the most important factors that enhances the long-term outcomes for a small-for-date baby?
    a. having a supportive and stimulating home environment
    b. minimizing his/her exposure to environmental allergens
    c. delaying vaccinations until after the child is two years of age
    d. making sure that the child spends at least three weeks in an incubator following childbirth

    ANS: A DIF: Moderate REF: Labor and Delivery
    OBJ: Birth complications MSC: Conceptual

97. Infant mortality rate is defined as the percentage of infants who die
    a. before birth.
    b. during birth.
    c. before their first birthday.
    d. before their second birthday.

    ANS: C DIF: Moderate REF: Labor and Delivery
    OBJ: Infant mortality MSC: Factual

98. Of the following countries, which has the highest rate of infant mortality?
    a. The United States of America
    b. Turkey
    c. Japan
    d. The Netherlands

    ANS: B DIF: Difficult REF: Labor and Delivery
    OBJ: Infant mortality MSC: Factual

99. Why is it that the United States has among the highest rates of infant mortality despite having such widely available medical care?
    a. Because the United States does not mandate prenatal testing for all pregnant women.
    b. Because the United States has more babies with low birth weight than virtually all other developed nations.
    c. Because the United States has the highest rate of pregnant women who abuse alcohol and drugs during their pregnancy.
    d. Because the United States has the greatest level of toxins in its water and food supplies, thus leading to more prenatal complications.

    ANS: B DIF: Difficult REF: Labor and Delivery
    OBJ: Infant mortality MSC: Conceptual

100. _____ involves mixing sperm and egg cells together in a Petri dish, and then placing several fertilized eggs inside the mother's uterus. The hope is that they will become implanted in the uterine wall and lead to pregnancy.
    a. Gamete intrafallopian transfer
    b. Intracytoplasmic sperm injection
    c. Zygote intrafallopian transfer
    d. In-vitro fertilization

    ANS: D DIF: Easy REF: Linking Research to Life
    OBJ: Conception in the 21st century MSC: Factual

TRUE/FALSE

1. Sickle-cell disease is a direct result of teratogenic influences, including maternal malnutrition or tobacco use.

   ANS: F REF: In the Beginning: 23 Pairs of Chromosomes
   OBJ: Mechanisms of Heredity

2. When a child is conceived, the parents pass along 46 genes, two of which decide whether the baby will be a boy or a girl.

   ANS: F REF: In the Beginning: 23 Pairs of Chromosomes
   OBJ: Mechanisms of Heredity

3. When the alleles in a pair of chromosomes are the same, they are referred to as heterozygous.

   ANS: F REF: In the Beginning: 23 Pairs of Chromosomes
   OBJ: Mechanisms of Heredity

4. If a dominant gene meets up with a recessive gene, the traits that are contained in the dominant gene will ultimately be expressed.

   ANS: T REF: In the Beginning: 23 Pairs of Chromosomes
   OBJ: Heredity, environment, and development

5. Genetically, identical twins and fraternal twins share the same amount of genes. The enhanced similarities seen in identical twins are a result of environmental factors.

   ANS: F REF: In the Beginning: 23 Pairs of Chromosomes
   OBJ: Heredity, environment, and development

6. The many changes that transform a fertilized egg into a newborn human constitute the neonatal period.

   ANS: F REF: From Conception to Birth OBJ: Period of the zygote

7. Only a single sperm cell can successfully make the journey up a woman's Fallopian tube to an unfertilized egg.

   ANS: F REF: From Conception to Birth OBJ: Period of the zygote

8. Once a zygote implants itself in the lining of the uterus, it becomes a fetus.

   ANS: F REF: From Conception to Birth OBJ: Period of the embryo

9. An embryo rests in a sac called the placenta, which is filled with amniotic fluid that cushions the embryo and maintains a constant temperature.

   ANS: F REF: From Conception to Birth OBJ: Period of the embryo

10. The age of viability for a fetus normally occurs between 22 and 28 weeks after conception.

    ANS: T REF: From Conception to Birth OBJ: Period of the fetus

11. During pregnancy, it is necessary for the mother to eat 10% to 20% more than regular in order to adequately provide for the needs of her unborn child.

    ANS: T REF: Influences on Prenatal Development
    OBJ: General risk factors

12. When a woman experiences higher levels of stress during pregnancy, are child may be prone to greater difficulties paying attention as infants and higher levels of behavioral problems in preschool.

    ANS: T REF: Influences on Prenatal Development
    OBJ: General risk factors

13. The major risks of a mother contracting the chicken pox during pregnancy include encephalitis, an enlarged spleen, and blood clotting problems in the baby.

    ANS: F REF: Influences on Prenatal Development
    OBJ: Teratogens: Drugs, diseases, and environmental hazards

14. The research is now clear, and states that a pregnant woman may safely consume up to three glasses of red wine a week. Alternately, she may have the equivalent of four ounces of "hard liquor" or two standard sized cans or bottles of beer. These small amounts of alcohol have been found to be safe for the unborn child.

    ANS: F REF: Influences on Prenatal Development
    OBJ: Teratogens: Drugs, diseases, and environmental hazards

15. The reason why environmental teratogens pose a special kind of risk for unborn children is that pregnant mothers may be unaware of their presence in her surroundings, which makes it more difficult to protect herself from them.

    ANS: T REF: Influences on Prenatal Development
    OBJ: Teratogens: Drugs, diseases, and environmental hazards

16. The least invasive form of prenatal screening discussed in your textbook is the use of an ultrasound.

    ANS: T REF: Influences on Prenatal Development
    OBJ: Prenatal diagnosis and treatment

17. One of the difficulties associated with the use of anesthesia during childbirth is that anesthetized mothers cannot use their abdominal muscles to push the baby through the birth canal.

    ANS: T REF: Labor and Delivery OBJ: Approaches to childbirth

18. Somewhere around 10% to 15% of new mother experience the "baby blues," which is a very serious psychological condition that can lead to problems for the child.

    ANS: F REF: Labor and Delivery OBJ: Adjusting to parenthood

19. A child who weighs less than 1,000 grams at birth would be described as being a "low birth weight" baby.

    ANS: F REF: Labor and Delivery OBJ: Birth complications

20. Although in-vitro fertilization is successful approximately 75% of the time, it is very expensive and is rarely covered by health insurance.

    ANS: F REF: Linking Research to Life
    OBJ: Conception in the 21st century

COMPLETION

1. A group of compounds that provides a specific set of biochemical instructions for development is a(n) _____.

   ANS: gene

   REF: In the Beginning: 23 Pairs of Chromosomes OBJ: Mechanisms of Heredity

2. Steve is on a first date with Valerie, who is very enamored with his beautiful blue eyes. Steve's _____, or the physical expression of his genetic code, may have guaranteed him a second date!

   ANS: phenotype

   REF: In the Beginning: 23 Pairs of Chromosomes OBJ: Mechanisms of Heredity

3. When a phenotype reflects the combined activity and influence of many separate genes, the pattern is known as _____ inheritance.

   ANS: polygenic

   REF: In the Beginning: 23 Pairs of Chromosomes
   OBJ: Heredity, environment, and development

4. Monozygotic twins are more commonly referred to as _____ twins, while dizygotic twins are known as _____ twins.

   ANS: identical; fraternal

   REF: In the Beginning: 23 Pairs of Chromosomes
   OBJ: Heredity, environment, and development

5. The process of deliberately seeking environments that are consistent with one's heredity is called _____.

   ANS: niche-picking

   REF: In the Beginning: 23 Pairs of Chromosomes
   OBJ: Heredity, environment, and development

6. If you wanted to be very specific, you would say that a tiny cluster of cells at the center of a zygote, called the _____, is what eventually develops into the baby.

   ANS: germ disc

   REF: From Conception to Birth OBJ: Period of the zygote

7. The sac in which an embryo rests during the second stage of prenatal development is called the _____.

   ANS: amnion

   REF: From Conception to Birth OBJ: Period of the embryo

8. During the period of the _____, the longest stage of prenatal development, the child reaches the age of viability. After this point in the pregnancy, the child would be capable of surviving outside of the mother's body.

   ANS: fetus

   REF: From Conception to Birth OBJ: Period of the fetus

9. Increased maternal age brings a heightened risk of certain difficulties, both with the pregnancy and for the child. Specifically, when the mother is pregnant after the age of 40 there is an enhanced risk of the child being born with _____.

   ANS: Down syndrome

   REF: Influences on Prenatal Development OBJ: General risk factors

10. Pregnant women who regularly consume quantities of alcoholic beverages may give birth to babies with _____ (FASD).

    ANS: fetal alcohol spectrum disorder*

    REF: Influences on Prenatal Development
    OBJ: Teratogens: Drugs, diseases, and environmental hazards

11. If a pregnant woman consumes more than limited amounts of _____ on a regular basis, her child may be born with a lower birth weight and may have decreased muscle tone.

    ANS: caffeine

    REF: Influences on Prenatal Development
    OBJ: Teratogens: Drugs, diseases, and environmental hazards

12. A standard part of prenatal care in the United States is the use of _____, in which sound waves are used to generate a picture of the fetus.

    ANS: ultrasound

    REF: Influences on Prenatal Development
    OBJ: Prenatal diagnosis and treatment

13. Of the three types of prenatal screenings discussed in the textbook, _____ requires the longest wait for results. This is because the genetic material cannot be evaluated until enough cells have reproduced for analysis.

    ANS: amniocentesis

    REF: Influences on Prenatal Development
    OBJ: Prenatal diagnosis and treatment

14. The third stage of childbirth (labor) involves the expulsion of the afterbirth, also called the _____.

    ANS: placenta

    REF: Labor and Delivery OBJ: Stages of labor

15. Ferdinand _____ was one of two physicians noted by your textbook for having revolutionized the way childbirth is thought about. He advocated for a more "natural," or prepared approach to childbirth and saw it as a life event to be celebrated rather than a medical event to be endured.

    ANS: Lamaze

    REF: Labor and Delivery OBJ: Approaches to childbirth

16. _____ refers to a birth complication in which umbilical blood flow is disrupted and the infant does not receive adequate oxygen.

    ANS: Hypoxia

    REF: Labor and Delivery OBJ: Birth complications

17. A child who is born at a weight of less than 100 grams would be referred to as having _____ birth weight.

    ANS: extremely low

    REF: Labor and Delivery OBJ: Birth complications

18. _____ is the most important factor in preventing low birth weight babies, which in turn can reduce the number of infants who die prior to their first birthday.

    ANS: Prenatal care

    REF: Labor and Delivery OBJ: Infant mortality

19. A reproductive technique that is used over 140,000 times and produces more than 55,000 babies each year in the United States is _____.

    ANS: in-vitro fertilization

    REF: Linking Research to Life OBJ: Conception in the 21st century

20. A movement to improve the human species by letting only specific people with desirable characteristics procreate is called _____.

    ANS: eugenics

    REF: Linking Research to Life OBJ: Conception in the 21st century

ESSAY

1. Your textbook notes the following three key concepts in biology. For each one, provide a potential real-life example illustrating each of these principles:
   - "Heredity and environment interact dynamically throughout development."
   - "Genes can influence the kind of environment to which a person is exposed."
   - "Environmental influences typically make children within a family different."

   ANS: Students should provide feasible examples of each of the three concepts noted above. An example of each, some noted by the textbook, is provided below:

   a. If a child receives the recessive homozygous trait for the disease phenylketonuria from his or her parents, they will be born with PKU. If the child is tested at birth and the disease is identified, the parents can control and essentially eliminate the effects of PKU by monitoring and limiting the child's intake of the amino acid phenylalanine. Later, when the child is old enough to control this dietary issue on his/her own, the disease can continue to be muted.

   b. If a child is born with the genotype to grow to a tall height and to develop that phenotype early, the child may opt to spend more time playing basketball, volleyball, or other athletics that "reward" height. The person who selects environments that are consistent with their genetics is engaging in niche-picking.

c. As much as parents may like to think that they treat their children equally, it is more likely that children are parented with differences, some subtle and some large. If a parent recognizes different skills, tendencies, or characteristics in their children, they may interact with the children in ways that encourage and promote those different tendencies. Thus, children who are raised in the same home may have different environmental influences that promote differences between them.

REF: In the Beginning: 23 Pairs of Chromosomes

2. Jeanette is concerned about getting pregnant with her husband, because she is afraid that she will pass on her recessive gene for a sickle cell disease and that her child will develop this condition. Based on what you know about the principles or dominant and recessive inheritance, what would you advise Jeanette?

ANS: There are several ways a student can go with this essay, but the primary theme should note that (a) the illness requires two recessive genes in order to be expressed, so it is not just her genetic history that determines whether the child will have sickle cell disease; (b) even if she and her husband are both carriers of the gene it is more likely that the child will not develop the illness unless both she and her husband actually have sickle cell disease themselves, and (c) as long as either she or her husband contribute an allele for normal red blood cells, there is no way that their child will develop the sickle cell disease.

REF: In the Beginning: 23 Pairs of Chromosomes

3. List the three stages of prenatal development in the correct order, and note how long each stage lasts. Indicate the major event that indicates the beginning and end of each stage. Finally, discuss the major events that take place within each stage.

   ANS: a) The period of the zygote begins with conception (fertilization of an egg cell by a sperm cell) and ends with implantation into the lining of the uterus. This first stage lasts for the first two weeks of the pregnancy. The major events are (1) cell growth from a one-cell zygote to an organism comprised of several hundred cells, and (2) a travelling of the zygote from the top of the Fallopian tube into the uterus.

   b) The period of the embryo begins at the implantation of the zygote into the lining of the uterus, and ends at the end of the eighth week of pregnancy. There is no specific "event" that marks the transition from the period of the embryo to the period of the zygote, but this second stage marks weeks 2 through 8 of the prenatal period. Body structures and internal organs begin to develop during this period, including the heart, brain, nervous system, arms, legs, head, eyes, and lungs.

   c) The period of the fetus has no event that begins it, but the transition from embryo to fetus occurs at the end of the 8^{th} week of pregnancy. The period ends with childbirth at around the 38^{th} week. (Students may note that this occurs at the 40^{th} week of pregnancy, and individual instructors should decide whether or not to award credit for this answer). All additional prenatal development occurs during this stage, the sex of the baby will be evident in this stage, and viability will be achieved starting at 22 weeks. Movement and regular prenatal activity will increase and become intense, and sensory experiences for the fetus become possible.

   REF: From Conception to Birth

4. Although there are many maternal illnesses that the placenta can protect the unborn child from, several can have teratogenic effects on the child's development. List five maternal illnesses that can disrupt normal prenatal development, and comment on the potential consequences of each condition.

   ANS: The answer to this question can be found by examining Table 2.4, which lists eight such diseases. They include AIDS, chlamydia, chicken pox, cytomegalovirus, genital herpes, rubella (German measles), syphilis, and toxoplasmosis. The accurate answer will list at least five from this list or from an individual instructor's presentation of teratogenic illnesses. It will also associate the correct teratogenic symptoms with each specific illness.

   REF: Influences on Prenatal Development; Table 2.4 "Teratogenic Diseases and Their Consequences"

5. The presence of teratogens during pregnancy creates the risk of problems in development. Your textbook identifies several principles that govern the relationship between teratogens and normal development. List and describe three of those principles.

   ANS: There are five such principles presented by the textbook. The accurate answer will list three of the following five and will provide a discussion that adequately reviews the premise of each one:

   a. The impact of a teratogen depends on the genotype of the organism.

   b. The impact of teratogens changes over the course of prenatal development.

   c. Each teratogen affects a specific aspect (or aspects) of prenatal development.

   d. The impact of teratogens depends on the dose.

   e. Damage from teratogens is not always evident at birth but may appear later in life.

   REF: Influences on Prenatal Development

6. List three prenatal tests that might be offered to a pregnant woman, describe each test, and comment on the benefits and drawbacks of each test.

   ANS: The student should note that ultrasound, amniocentesis, and chorionic villus sampling are all discussed in the textbook. Professors may choose to award credit for other answers (e.g., nuchal fold translucency screening) based on their own presentation of materials.

   a) Ultrasound – provides a picture of the unborn child by passing sound waves into the womb using a small instrument, is noninvasive, can determine the sex and position of the child, and can identify gross physical defects or multiple birth pregnancies. The picture produced is grainy and takes expertise to interpret.

   b) Amniocentesis – involves using a needle to draw out amniotic fluid for genetic analysis. Allows for the genotype of the child to be determined, but takes two weeks for results. Also increases the chance of miscarriage by 1 to 2 percent.

   c) Chorionic villus sampling – involves removing part of the placenta for analysis, and can be done much earlier than amniocentesis. Allows for certain genetic screening, but takes 7 to 10 days for results to be returned. Also increases the chance of miscarriage by 1 to 2 percent.

   REF: Influences on Prenatal Development

7. List the different stages (phases) of childbirth and note what occurs to start and end each stage.

   ANS: Stage 1 starts with uterine contractions that begin to push the baby out of the womb and toward the vagina (birth canal). The cervix, which is the opening between the uterus and vagina, begins to dilate and by the end of the stage will be near 10 centimeters in diameter. Throughout this stage the contractions become more intense and rhythmic. The child's head passing to the fully dilated cervix marks the end of stage 1.

   Stage 2 begins when the baby passes through the cervix and into the vagina and is pushed out of the body when the mother uses her abdominal and vaginal muscles to "push" the baby out. Stage 2 ends when the baby is fully delivered.

   Stage 3 begins with the child emerging from the vagina, and involves a few more pushes so that the placenta, or afterbirth, can be voided from the body. Once the placenta emerges, the third stage and the childbirth have ended.

   REF: Labor and Delivery

8. Describe why in vitro fertilization and eugenics represent controversial issues in human development.

   ANS: In vitro fertilization involves conception outside of the body (e.g., in a Petri dish). Ethical concerns include a parent's right to select specific traits and the high costs, which tend to not be covered by insurance. An additional concern is the question of who should be able to use these technologies, and should any restrictions exist? Additionally, students might discuss the fact that health insurance often does not pay for such treatments, and comment on the advisability of such policies.

   Eugenics is an effort to improve humans by allowing only certain individuals to mate and pass along genes. Clearly there are several sociopolitical problems with such an effort. Astute students might link historical events such as the holocaust and its "ethnic cleansing" efforts to eugenics. Other historical events would also be appropriate to discuss.

   REF: Linking Research to Life: Conception in the 21st Century