Test Bank for Invitation to the Life Span 4th Edition by Berger

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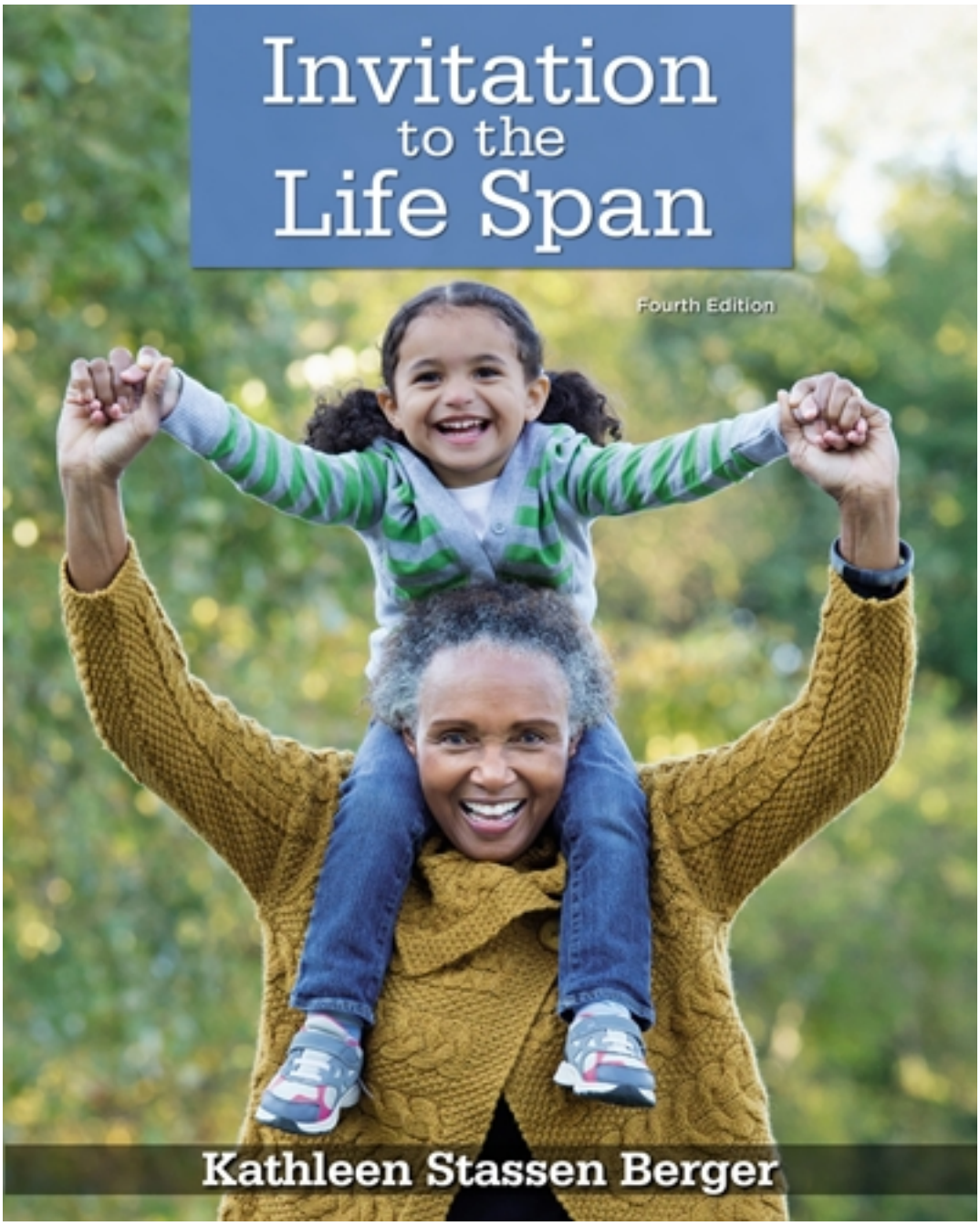

Test Bank

Name:_____ Class:_____ Date:_____

Chapter 02: Fill-in-the-Blank

1. The genes on the chromosomes in the nucleus of each cell instruct the cell to manufacture the _____ needed to sustain life and development.
ANSWER: proteins

2. The _____ on the chromosomes in the nucleus of each cell instruct the cell to manufacture the proteins needed to sustain life and development.
ANSWER: genes

3. Almost every human body cell contains _____ chromosomes.
ANSWER: 46

4. Each variation of a gene is called a(n) _____.
ANSWER: allele

5. All important human characteristics are _____, including diseases known to be inherited.
ANSWER: epigenetic

6. _____ refers to all the microbes that live within every part of the body.
ANSWER: Microbiome

7. When a sperm and an ovum combine, they create a new single cell called a "_____."
ANSWER: zygote

8. Genes with various repeats or deletions of base pairs are called "_____."
ANSWER: copy number variations

9. A person's collection of genes is referred to as that person's "_____."
ANSWER: genotype

10. In 22 of the 23 pairs of chromosomes, both members of each pair are closely matched. Each of these 44 chromosomes is called a(n) "_____."
ANSWER: autosome

11. The first 22 chromosomes contain hundreds of genes in the same positions and sequence. If the code of the gene from one parent is exactly like the code on the same gene from the other parent, the gene pair is _____.
ANSWER: homozygous

12. The first 22 chromosomes contain hundreds of genes in the same positions and sequence. If the code of the gene from one parent differs from the code on the same gene from the other parent, the gene pair is _____.
ANSWER: heterozygous

13. If the 23rd pair of chromosomes is _____, the individual will be female.
ANSWER: XX

14. Tamika learned in her high school science class that a female has a(n) _____ on the 23rd pair of

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chromosomes.
ANSWER: XX

15. If the 23rd pair of chromosomes is _____, the individual will be male.
ANSWER: XY

16. Salman learned in his high school science class that a male has a(n) _____ on the 23rd pair of chromosomes.
ANSWER: XY

17. Michelle and Thomas are having a baby and are hoping for a boy. The sex of the developing baby depends on the chromosomal contribution of _____.
ANSWER: Thomas

18. One nation that forbids prenatal sex selection is _____.
ANSWER: China

19. Every sex difference is influenced by _____.
ANSWER: culture (environment) (nurture)

20. Identical twins are also called _____ twins.
ANSWER: monozygotic

21. Terri and Tina are the result of one ovum fertilized by one sperm that split into two zygotes. Terri and Tina are _____.
ANSWER: identical twins (monozygotic twins)

22. Fraternal twins are also called _____ twins.
ANSWER: dizygotic

23. Andrew and Ashley are the result of two separate ova that were fertilized by two separate sperm at roughly the same time. Andrew and Ashley are _____.
ANSWER: fraternal twins (dizygotic twins)

24. Older women are more likely to double-ovulate. As a result, they are more likely to have _____.
ANSWER: twins

25. A person's appearance, behavior, and brain and body functions combine to form the _____.
ANSWER: phenotype

26. A trait like personality is _____, or affected by many genes.
ANSWER: polygenic

27. _____ refers to a trait that is affected by many factors, both genetic and environmental, that enhance, halt, shape, or alter the expression of genes, resulting in a phenotype that may differ markedly from the genotype.

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Chapter 02: Fill-in-the-Blank

ANSWER: Multi-factorial

28. Suan has inherited genes that put him at risk for developing diabetes. However, Suan never develops diabetes due to a healthy diet and exercise. This example demonstrates that human characteristics, including diabetes, are _____.
ANSWER: epigenetic

29. The _____ is an international effort to map the complete human genetic code.
ANSWER: Human Genome Project

30. When the effects of genes add up to influence the phenotype, they are called "_____ genes."
ANSWER: additive

31. Height is probably influenced by _____ genes, each contributing a very small amount.
ANSWER: 180 (additive)

32. The interaction of a heterozygous pair of alleles in such a way that the phenotype reflects one allele more than the other is referred to as a "_____."
ANSWER: dominant-recessive pattern

33. When someone inherits a recessive gene that is not expressed, that person is a(n) _____ of that gene.
ANSWER: carrier

34. A special case of the dominant–recessive pattern occurs with genes that are X-linked or located on the _____ chromosome.
ANSWER: X

35. Males inherit X-linked disorders from the _____.
ANSWER: mother

36. During differentiation, cells specialize, taking different forms and reproducing at various rates, depending on where they are located. They are no longer omnipotent _____ that could develop into a new person.
ANSWER: stem cells

37. After about the eight-cell stage within the zygote, cells start to _____, meaning that they take different forms and reproduce at various rates, depending on where they are located.
ANSWER: differentiate

38. _____ is the process in which the developing organism embeds itself into the lining of the uterus.
ANSWER: Implantation

39. _____ is the name for a developing human organism from about the third week through the eighth week after conception.
ANSWER: Embryo

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40. A developing human organism from the start of the ninth week after conception until birth is called the "_____."
ANSWER: fetus

41. A(n) _____ uses sound waves to generate an image of a fetus *in utero.*
ANSWER: ultrasound (sonogram)

42. The age at which a fetus may survive outside the womb is known as the "_____."
ANSWER: age of viability

43. The crucial factor in newborn survival is maturation of the _____.
ANSWER: brain

44. A _____ test result suggests a problem that does not exist.
ANSWER: false positive

45. The most common extra-chromosome condition that results in a surviving child is _____.
ANSWER: Down syndrome (trisomy-21)

46. Every human has at least _____ autosomes and one X chromosome.
ANSWER: 44

47. Most of the known single-gene disorders are _____.
ANSWER: dominant

48. _____ disorders are more common because they are passed down from one generation to the next by carriers who are unaware of their genotypes.
ANSWER: Recessive

49. The cognitive deficits caused by the genetic condition _____ are the most common form of inherited intellectual disability.
ANSWER: fragile X syndrome

50. Carriers of the sickle-cell gene die less often from _____, which is prevalent and lethal in parts of Africa.
ANSWER: malaria

51. _____ can help prospective parents understand their genetic risk so that they can make informed decisions about conceiving a child.
ANSWER: Genetic counseling

52. A(n) _____ is any agent or condition that increases the risk for prenatal abnormalities.
ANSWER: teratogen

53. Agents and conditions that can harm the prenatal brain, impairing the future child's intellectual and emotional functioning, are called "_____ teratogens."

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ANSWER: behavioral

54. Low levels of _____ during pregnancy can produce neural-tube defects.
ANSWER: folic acid

55. Newborn Chris weighed 3.5 pounds at birth. Chris would be classified as _____ -birthweight.
ANSWER: very-low

56. _____ is the term for a baby whose birthweight is significantly lower than expected, given the time since conception.
ANSWER: Small for gestational age (small-for-dates)

57. The phenomenon in which low-SES immigrant women tend have fewer birth complications than native-born peers with higher incomes is called the "_____."
ANSWER: immigrant paradox

58. On average, a first baby is born after _____ hours of active labor.
ANSWER: 12

59. The _____ is used to assess the newborn's health at one minute and five minutes after birth.
ANSWER: Apgar scale

60. Most births in the United States take place in a(n) _____.
ANSWER: hospital

61. A surgical birth, in which incisions through the mother's abdomen and uterus allow the fetus to be removed quickly, is referred to as a "_____."
ANSWER: cesarean section (c-section) (section)

62. A woman who helps with the birth process, and who is likely to arrive at the woman's home during early labor and later work alongside a hospital's staff, is called a "_____."
ANSWER: doula

63. In the United States, _____ of births occur via c-section.
ANSWER: one-third

64. Wanda is in labor and has requested a pain reliever known as a(n) _____, which is an injection given in the spine that alleviates pain.
ANSWER: epidural

65. Labor that is started, speeded up, or strengthened with a drug is referred to as "_____ labor."
ANSWER: induced

66. In the Netherlands, _____ percent of births take place at home.
ANSWER: 30 (thirty)

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67. The _____ is a test often administered to newborns that measures responsiveness and records 46 behaviors, including 20 reflexes.
ANSWER: Brazelton Neonatal Behavioral Assessment Scale (NBAS)

68. A newborn's involuntary response to a particular stimulus is called a(n) "_____."
ANSWER: reflex

69. After giving birth to her first child, Maria experienced a deep sadness that made caring for her child (and herself) difficult. Her husband noticed and called the family's doctor, who suggested Maria may have _____.
ANSWER: postpartum depression (baby blues) (postpartum psychosis)

70. Malek gained weight and experienced nausea when his wife, Brenda, was pregnant. Malek experienced _____.
ANSWER: couvade

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Chapter 02: Multiple Choice

1. Each human body cell contains _____ chromosomes.
   a. 46 pairs of
   b. 46
   c. 23
   d. 20 pairs of

ANSWER: b

2. A small section of a chromosome that instructs the cell to manufacture proteins needed to sustain life and development is the:
   a. nucleus.
   b. gene.
   c. genotype.
   d. zygote.

ANSWER: b

3. The full set of genes that provides the instructions for making living organisms is called the:
   a. phenotype.
   b. zygote.
   c. genome.
   d. allele.

ANSWER: c

4. Each human has a total of about _____ genes.
   a. 10,000
   b. 20,000
   c. 30,000
   d. 40,000

ANSWER: b

5. Each gene directs the formation of specific proteins made from a string of _____ amino acids.
   a. 10
   b. 20
   c. 30
   d. 40

ANSWER: b

6. All living things are composed of cells, which manufacture the _____ needed to sustain life and development.
   a. proteins
   b. zygotes
   c. genotypes
   d. phenotypes

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ANSWER: a

7. Each molecule of deoxyribonucleic acid (DNA) is stored on:
   a. a chromosome.
   b. RNA.
   c. a gene.
   d. a zygote.

ANSWER: a

8. One aspect of both nature and nurture that profoundly affects each person is the _____, which refers to all bacteria that live within every part of the body.
   a. genome
   b. allele
   c. microbiome
   d. zygote

ANSWER: c

9. A variation that makes a gene different in some way from other genes for the same characteristics is a(n):
   a. chromosome.
   b. zygote.
   c. genotype.
   d. allele.

ANSWER: d

10. The process of methylation can do all the following to genetic instructions EXCEPT _____ them.
   a. alter
   b. connect
   c. remove
   d. transcribe

ANSWER: c

11. Some genes are _____, which means "many forms."
   a. polymorphic
   b. multimorphic
   c. allelomorphic
   d. transmorphic

ANSWER: a

12. Dr. Margo studies how environmental factors affect gene expression. She studies:
   a. atypical longevity.
   b. sociobiology.

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c. human pathogenesis.
d. epigenetics.

ANSWER: d

13. The single cell formed from the union of two gametes, a *sperm* and an *ovum*, is called a:
a. chromosome.
b. phenotype.
c. genotype.
d. zygote.

ANSWER: d

14. Every human begins life as a single cell, which is called a:
a. chromosome.
b. zygote.
c. genotype.
d. genome.

ANSWER: b

15. Humans have 23 pairs of _____, which contain the instructions to make the proteins needed for life and growth.
a. chromosomes
b. alleles
c. genotypes
d. zygotes

ANSWER: a

16. The instructions for making amino acids are on about 3 billion pairs of chemicals called "_____ pairs."
a. couple
b. foundation
c. base
d. copy

ANSWER: c

17. An individual's entire genetic inheritance is called a(n):
a. phenotype.
b. allele.
c. genotype.
d. gamete.

ANSWER: c

18. In 22 of the 23 pairs of chromosomes, both members of the pair are closely matched. Each of these 44

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chromosomes is called a(n):

a. allele.
b. gamete.
c. autosome.
d. blastocyst.

ANSWER: c

19. The first 22 chromosomes contain hundreds of genes in the same positions and sequence. If the code of the gene from one parent is exactly like the code on the same gene from the other parent, the gene pair is:

a. homozygous.
b. heterozygous.
c. monozygotic.
d. dizygotic.

ANSWER: a

20. The first 22 chromosomes contain hundreds of genes in the same positions and sequence. If the code of the gene from one parent differs from the code on the same gene from the other parent, the gene pair is:

a. homozygous.
b. heterozygous.
c. monozygotic.
d. dizygotic.

ANSWER: b

21. Individual A's 23rd pair of chromosomes is XX. Individual A is:

a. male.
b. female.
c. neither male nor female.
d. both male and female.

ANSWER: b

22. Individual A's 23rd pair of chromosomes is XY. Individual A is:

a. male.
b. female.
c. neither male nor female.
d. both male and female.

ANSWER: a

23. On the 23rd pair of chromosomes, males have:

a. two X chromosomes.
b. two Y chromosomes.
c. an X chromosome and a Y chromosome.

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d. just a Y chromosome.

ANSWER: c

24. On the 23rd pair of chromosomes, females have:
a. two X chromosomes.
b. two Y chromosomes.
c. an X chromosome and a Y chromosome.
d. just a Y chromosome.

ANSWER: a

25. Males have one X and one Y on:
a. each sperm.
b. on the 43rd chromosome.
c. the 23rd pair of chromosomes.
d. each stem cell.

ANSWER: c

26. Melissa and Brandon are having a baby and are hoping for a boy. The baby's sex will be decided by the chromosomes of:
a. Melissa.
b. Brandon.
c. both Melissa and Brandon.
d. neither Melissa nor Brandon.

ANSWER: b

27. Brad learned in his college biology class that, with respect to the sex chromosomes, the:
a. Y chromosome is larger than the X chromosome and has more genes.
b. X chromosome is larger than the Y chromosome and has more genes.
c. X and Y chromosomes are the same size, but the X chromosome has more genes.
d. X and Y chromosomes are the same size and have the same number of genes.

ANSWER: b

28. Couples can select the sex of a child by all the following methods EXCEPT:
a. inactivating X or Y sperm before conception.
b. selecting only X eggs for fertilization.
c. aborting XX or XY fetuses.
d. undergoing in vitro fertilization and then inserting only male or female zygotes.

ANSWER: b

29. In China, a "one-child" policy cut the birth rate in half. Although the intended goal of reducing poverty was achieved, several unintended consequences were identified. All the following were unintended consequences EXCEPT for:

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a. there being far more unmarried men in China than women.
b. millions of newborn girls being placed up for adoption.
c. males living longer than females.
d. increased abortions of female fetuses.

ANSWER: c

30. Identical twins are also called _____ twins.
a. monozygotic
b. dizygotic
c. zygotic
d. gamete

ANSWER: a

31. James and Jacob are identical twins. They are the result of:
a. one ovum fertilized by one sperm that split into two zygotes.
b. two separate ova that were fertilized by two different sperm.
c. one ovum that was fertilized by two sperm.
d. two ova that were fertilized by one sperm.

ANSWER: a

32. Stacey is in need of an an organ donation. Which organ donor would be the BEST match for Stacey?
a. her grandparent
b. her younger sibling
c. James, her dizygotic twin
d. Samantha, her monozygotic twin

ANSWER: d

33. Fraternal twins are also called _____ twins.
a. monozygotic
b. dizygotic
c. zygotic
d. gamete

ANSWER: b

34. Jennifer and Jerry are dizygotic twins. They are the result of:
a. one ovum fertilized by one sperm that split into two zygotes.
b. two separate ova that were fertilized by two different sperm.
c. one ovum that was fertilized by two sperm.
d. two ova that were fertilized by one sperm.

ANSWER: b

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35. Which of the following women is MOST likely to have dizygotic twins?
    a. Pallavi, who is Korean
    b. Oluchi, who is Nigerian
    c. Mei, who is Chinese
    d. Marissa, who is American

ANSWER: b

36. Which of the following women is MOST likely to conceive dizygotic twins?
    a. Ashleigh, who is 20
    b. Brynna, who is 27
    c. Samima, who is 30
    d. Olu, who is 35

ANSWER: d

37. Dizygotic twins have _____ of their genes in common.
    a. 25 percent
    b. 50 percent
    c. 75 percent
    d. 100 percent

ANSWER: b

38. The _____ is a person's appearance, personality, intelligence, and all other traits.
    a. phenotype
    b. allele
    c. genotype
    d. gamete

ANSWER: a

39. Vince and Juan are playing basketball. Vince shoots the ball, and Juan blocks the shot. Vince says, "Wow, I didn't realize how tall you were until you did that!" Vince's comment refers to Juan's:
    a. phenotype.
    b. allele.
    c. genotype.
    d. gamete.

ANSWER: a

40. An individual's phenotype describes all the following EXCEPT an individual's:
    a. genetic potential.
    b. appearance.
    c. personality.
    d. intelligence.

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ANSWER: a

41. Almost every trait is _____, which means it is affected by many genes.
    a. polygenic
    b. nonadditive
    c. X-linked
    d. monozygotic

ANSWER: a

42. Nancy rushed into the house after school and announced to her parents, "My personality is _____! So many genes make me who I am!"
    a. polygenic
    b. nonadditive
    c. multifactorial
    d. monozygotic

ANSWER: a

43. _____ refers to a trait that is affected by many variables, both genetic and environmental, that enhance, halt, shape, or alter the expression of genes, resulting in a phenotype that may differ markedly from the genotype.
    a. *Polygenic*
    b. *Nonadditive*
    c. *Multifactorial*
    d. *Monozygotic*

ANSWER: c

44. Jamal was born with genes to be a professional athlete, but his environmental experiences never supported the development of his potential athletic ability, so he never became a professional athlete. This example illustrates the concept of a trait being:
    a. polygenic.
    b. nonadditive.
    c. multifactorial.
    d. monozygotic.

ANSWER: c

45. *Epigenetics* means that a trait:
    a. is determined by genes alone.
    b. is determined by the environment alone.
    c. is determined by genes and the environment.
    d. is determined by genes more than the environment.

ANSWER: c

46. Wayne has inherited genes that put him at risk for developing diabetes, but he never develops diabetes due

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to a healthy diet and exercise. This example demonstrates that human characteristics, including diabetes, are:

a. polygenic.
b. nonadditive.
c. continuous.
d. epigenetic.

ANSWER: d

47. The _____ was a worldwide effort to map all human genes.

a. Hap Map
b. Apgar scale
c. Human Genome Project
d. Brazelton Assessment

ANSWER: c

48. Upon the completion of the Human Genome Project, several surprise findings were made, including all the following EXCEPT that:

a. humans have far fewer genes than had previously been thought.
b. humans are extremely genetically different from each other.
c. almost all genes are present in every human being.
d. the genetic codes for humans and chimpanzees are 98 percent the same.

ANSWER: b

49. When the effects of genes combine to create the phenotype, they are called "_____ genes."

a. dominant
b. recessive
c. additive
d. nonadditive

ANSWER: c

50. Samantha learned from her science teacher that her height resulted from about 180 genes, each contributing a tiny amount of genetic information. She learned that her height was due to:

a. additive genes.
b. dominant genes.
c. recessive genes.
d. nonadditive genes.

ANSWER: a

51. The interaction of a heterozygous pair of alleles in such a way that the phenotype reflects one allele more than the other is referred to as a(n):

a. additive pattern.
b. multifactorial pattern.

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c. dominant–recessive pattern.
d. polygenic pattern.

ANSWER: c

52. Brown-eyed Inez has a blue-eyed mother and a brown-eyed father. In this case, her brown eyes were determined by a _____ allele.
a. dominant
b. recessive
c. dominant–recessive
d. dizygotic

ANSWER: a

53. Lara has a recessive gene in her genotype that is not expressed in her phenotype. She is a(n) _____ of that gene.
a. recipient
b. carrier
c. expressor
d. reactor

ANSWER: b

54. _____ refers to a gene carried on the X chromosome.
a. *X-linked*
b. *Polygenic*
c. *Multifactorial*
d. *Recessive*

ANSWER: a

55. Nate is color-blind. His gene for color blindness is MOST likely a:
a. dominant gene on his X chromosome.
b. dominant gene on his Y chromosome.
c. recessive gene on his X chromosome.
d. recessive gene on his Y chromosome.

ANSWER: c

56. _____ are more likely to be carriers of X-linked traits, and _____ are more likely to express them.
a. Females; males
b. Females; females
c. Males; females
d. Males; males

ANSWER: a

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57. Genes with various repeats or deletions of base pairs are referred to as:
    a. embryonic, germinal, and fetal.
    b. fetal, embryonic, and germinal.
    c. germinal, embryonic, and fetal.
    d. germinal, fetal, and embryonic.

ANSWER: c

58. Research indicates that alcoholism is caused by:
    a. nature only.
    b. nurture only.
    c. a combination of nature and nurture.
    d. poor moral character.

ANSWER: c

59. Danielle is doing a presentation on prenatal development. Her presentation will focus on the following three periods, in the order of:
    a. embryonic, germinal, and fetal.
    b. fetal, embryonic, and germinal.
    c. germinal, embryonic, and fetal.
    d. germinal, fetal, and embryonic.

ANSWER: c

60. During the _____ period of prenatal development, the placenta must achieve implantation.
    a. germinal
    b. embryonic
    c. fetal
    d. conception

ANSWER: a

61. During the germinal period, the first task of the zygote's outer cells is:
    a. differentiation.
    b. duplication.
    c. germination.
    d. implantation.

ANSWER: d

62. About ___ percent of natural conceptions never implant.
    a. 10
    b. 25
    c. 50
    d. 75

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ANSWER: c

63. About a week after conception, the outer layer of the multiplying cells forms a protective circle, or shell, that will become the:
    a. placenta.
    b. umbilical cord.
    c. vernix.
    d. infant.

ANSWER: a

64. The germinal period ends approximately _____ after conception.
    a. 2 days
    b. 3 months
    c. 2 weeks
    d. 12 weeks

ANSWER: c

65. Maria just learned that she is 6 weeks pregnant. She is in the _____ period of prenatal development.
    a. germinal
    b. embryonic
    c. fetal
    d. third

ANSWER: b

66. The ____ period lasts from the third week through the eighth week of pregnancy.
    a. germinal
    b. embryonic
    c. fetal
    d. viability

ANSWER: b

67. Which of the following structures develops FIRST during the period of the embryo?
    a. the neural tube
    b. the primitive streak
    c. the upper arms
    d. the placenta

ANSWER: b

68. During the embryonic period, the neural tube will become the:
    a. reproductive organs.
    b. intestinal tract.

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c. backbone, legs, and arms.
d. brain and spinal cord.

ANSWER: d

69. Juan and Keta recently learned that Keta is pregnant. The couple is very excited about the pregnancy and are eager to know the sex of the fetus. The doctor explains that she will be able to determine the sex by the end of the third month using:
a. an X-ray.
b. amniocentesis.
c. an ultrasound.
d. the Apgar scale.

ANSWER: c

70. The longest period of prenatal development is the _____ period.
a. embryonic
b. fetal
c. proximodistal
d. germinal

ANSWER: b

71. The third period of gestation is the _____ period.
a. zygotic
b. embryonic
c. germinal
d. fetal

ANSWER: d

72. By the end of the ____ prenatal month, sex organs develop and are soon visible via ultrasound.
a. second
b. third
c. fourth
d. fifth

ANSWER: b

73. The _____ is the age at which a fetus might survive outside the mother's uterus if specialized medical care is available.
a. germinal period
b. embryonic period
c. fetal age indicator
d. age of viability

ANSWER: d

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74. The age of viability occurs at about ____ weeks after conception.
    a. 16
    b. 18
    c. 22
    d. 26

ANSWER: c

75. With respect to test results, a false positive is the result of a laboratory test that reports something as:
    a. true when in fact it is not true.
    b. false when in fact it is not false.
    c. true when in fact it is true.
    d. false when in fact it is false.

ANSWER: a

76. Within hours after conception, the first 23 pairs of chromosomes within the zygote _____, forming two complete sets of genes.
    a. atrophy
    b. differentiate
    c. duplicate
    d. detach

ANSWER: c

77. A high school science teacher asks the students which cells could be used to produce any other cell in the body. The correct answer is the omnipotent _____ cells.
    a. polymorphic
    b. foundation
    c. stem
    d. allele

ANSWER: c

78. After about the eight-cell stage within the zygote, cells start to _____, meaning that they take dissimilar forms and reproduce at various rates, depending on where they are located.
    a. divide
    b. duplicate
    c. differentiate
    d. detach

ANSWER: c

79. Brenda loves to share information that she has learned from school with her parents. She comes home one day and, at dinner, tells her family she has learned about cell differentiation in science class. She correctly tells them that once cells differentiate:
    a. they can still specialize and take different forms.

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b. only cells in the brain can still transform into different cells.
c. they can transform into stem cells.
d. they can no longer specialize and take different forms.

ANSWER: d

80. Women become drunk on _____ compared to men.
a. more alcohol
b. less alcohol
c. the same amount of alcohol
d. more alcohol in the summer and less alcohol in the winter

ANSWER: b

81. Which mother is at greatest risk of having a child with a chromosomal abnormality?
a. a 15-year-old mother
b. a 25-year-old mother
c. a 35-year-old mother
d. a 45-year-old mother

ANSWER: d

82. The MOST common extra-chromosome condition is:
a. Down syndrome.
b. nearsightedness.
c. fragile X syndrome.
d. Tourette syndrome.

ANSWER: a

83. Down syndrome is also called:
a. trisomy-12.
b. trisomy-13.
c. trisomy-21.
d. trisomy-31.

ANSWER: c

84. An individual with an extra chromosome on the 21st pair of chromosomes has:
a. Down syndrome.
b. nearsightedness.
c. fragile X syndrome.
d. Tourette syndrome.

ANSWER: a

85. About one in every _____ infants is born with only one sex chromosome or with three or more, which

Chapter 02: Multiple Choice

creates a chromosomal abnormality.

a. 100
b. 300
c. 500
d. 700

ANSWER: b

86. MOST of the known single-gene disorders are:

a. recessive.
b. dominant.
c. difficult to identify.
d. additive.

ANSWER: b

87. Which of the following is an example of a single-gene disorder that is dominant?

a. Down syndrome
b. nearsightedness
c. fragile X syndrome
d. Huntington's disease

ANSWER: d

88. A fatal central nervous system disorder caused by more than 35 repetitions of a particular set of three base pairs is:

a. Down syndrome.
b. nearsightedness.
c. fragile X syndrome.
d. Huntington's disease.

ANSWER: d

89. The cognitive deficits caused by the genetic condition of _____ are the MOST common form of inherited intellectual disability.

a. Down syndrome
b. nearsightedness
c. fragile X syndrome
d. Huntington's disease

ANSWER: c

90. MOST recessive genetic disorders are:

a. on the autosomes.
b. X-linked.
c. additive.

d. polygenic.

ANSWER: a

91. Consultation and testing by trained experts that enables individuals to learn about their heritability, including harmful conditions they could pass along to any children they might conceive, is referred to as:

a. couples counseling.
b. marriage counseling.
c. genetic counseling.
d. individual counseling.

ANSWER: c

92. Individuals who may especially benefit from preconception, prenatal, or even prenuptial (before marriage) genetic counseling include all the following EXCEPT:

a. women over age 35 and men over age 40.
b. couples who are infertile.
c. couples who have had several spontaneous abortions or stillbirths.
d. women who are younger than 25 and men who are younger than 30.

ANSWER: d

93. A teratogen is any agent or condition that increases the risk for:

a. prenatal abnormalities.
b. damage to the placenta.
c. extra chromosomes.
d. male infertility.

ANSWER: a

94. Claire is one month pregnant and consults with her doctor about the different categories of teratogens. The doctor tells her that all of the following are categories of teratogens EXCEPT:

a. drugs.
b. pollutants.
c. immunizations.
d. viruses.

ANSWER: c

95. Jackie is 5 years old. She has been diagnosed with ADHD and shows signs of learning problems. Her pediatrician suggests that Jackie's problems could be the result of prenatal exposure to _____, though he stresses that the link is not straightforward at this time.

a. caffeine
b. high levels of fat
c. cell differentiation
d. behavioral teratogens

ANSWER: d

Name:_____ Class:_____ Date:_____

Chapter 02: Multiple Choice

96. With respect to prenatal development, teratogens _____ prenatal abnormalities.
a. increase the risk of
b. decrease the risk of
c. always cause
d. do not cause
ANSWER: a

97. Drugs, viruses, pollutants, malnutrition, and stress during pregnancy are referred to as:
a. threshold effects.
b. risk factors.
c. teratogens.
d. vulnerability factors.
ANSWER: c

98. Anya and her husband are considering having a baby. Anya's obstetrician recommends that she stop consuming alcohol and update her immunizations:
a. before she gets pregnant.
b. as soon as she knows she is pregnant.
c. anytime during the first trimester of pregnancy.
d. as soon as the baby is born.
ANSWER: a

99. Olivia is pregnant, yet she still has four alcoholic drinks each day. Her baby may be at increased risk for the development of _____ syndrome.
a. fetal alcohol
b. embryonic alcohol
c. Turner
d. Reye
ANSWER: a

100. A woman carrying dizygotic twins drinks alcohol. The twins' blood alcohol levels are equal, yet one twin may be more severely affected than the other because their alleles for the enzyme that metabolizes alcohol differ. This is evidence that the _____ influence(s) the effects of teratogens.
a. age of the embryo/fetus
b. genes of the parent
c. genes of the embryo/fetus
d. doses of teratogen
ANSWER: c

101. Low folic acid during pregnancy can result in:
a. heart defects.

Chapter 02: Multiple Choice

b. lung defects.
c. limb deformities.
d. neural-tube defects.

ANSWER: d

102. Amber is pregnant and wants to ensure that she does everything she can to prevent the occurrence of a neural-tube defect in her child. She makes sure that she has the proper amount of _____ in her diet.
a. vitamin D
b. zinc
c. folic acid
d. vitamin K

ANSWER: c

103. Genetic counseling may be MOST useful to parents at which of the following stages?
a. before becoming pregnant
b. during the last month of pregnancy
c. during delivery
d. after the birth of a special needs child

ANSWER: a

104. A common reason that couples do not seek genetic counseling is that:
a. they are fertile.
b. they already eat a well-balanced diet.
c. they are from different ethnic groups.
d. they are well over the age of 35.

ANSWER: a

105. Babies born under 1,000 grams (2 pounds, 3 ounces) are considered:
a. low-birthweight.
b. very-low-birthweight.
c. extremely-low birthweight.
d. small for gestational age.

ANSWER: c

106. Babies born slightly under 1,500 grams (3 pounds 5 ounces) are considered _____ birthweight.
a. low
b. very low
c. extremely low
d. average

ANSWER: b

Name:_____ Class:_____ Date:_____

Chapter 02: Multiple Choice

107. Baby Danny weighed 2 pounds, 8 ounces at birth. Danny would be classified as ____ birthweight.
a. low
b. very low
c. extremely low
d. average
ANSWER: b

108. Newborns born to migrants are generally healthier in every way, including birthweight, than newborns of U.S.-born women. This phenomenon is called the:
a. sociocultural paradox.
b. immigrant paradox.
c. ethnic anomaly.
d. cultural enigma.
ANSWER: b

109. A baby born two or more weeks early is called:
a. premature.
b. preterm.
c. low-birthweight.
d. small for gestational age.
ANSWER: b

110. A baby whose birthweight is significantly lower than expected given the time since conception is referred to as:
a. preterm.
b. premature.
c. low-birthweight.
d. small for gestational age.
ANSWER: d

111. Juan and Juliana moved to the United States from Mexico two years ago and just had their first baby. Although Juan and Juliana's SES is lower than that of their native-born peers, their baby was born at a healthy weight. This phenomenon is called the _____ paradox.
a. immigrant
b. refugee
c. native-born
d. SES
ANSWER: a

112. Adults who were low-birthweight babies have an increased risk of developing:
a. diabetes.
b. malnutrition.

Chapter 02: Multiple Choice

c. normal-range weight.
d. obesity.

ANSWER: a

113. The frequency of low-birthweight in the United States is:
a. increasing.
b. stabilizing.
c. among the highest in the world.
d. decreasing.

ANSWER: a

114. Which of the following statements about international rates of low-birthweight is true?
a. The U.S. rate is higher than that of virtually every other developed nation.
b. Japan has the lowest rate of low-birthweight babies in the world.
c. Germany, Denmark, and Australia have higher rates of low-birthweight babies than the U.S.
d. Canada, Sweden, and the U.S. have the lowest rate of low-birthweight babies in the world.

ANSWER: a

115. Statistically, which woman is at the greatest risk for having a low-birthweight baby?
a. Amber, who is 27 years old and middle-class
b. Jody, who has been diagnosed with diabetes
c. Cloie, who regularly misses meals
d. Delfina, who is a Hispanic immigrant

ANSWER: c

116. In the United States, which is NOT a potential reason for the rise in the frequency of low-birthweight babies?
a. food insecurity
b. drug use
c. cigarette use
d. genetic factors

ANSWER: d

117. Janet, pregnant for the first time, wonders how long it will take to deliver her son. You can tell Janet that for first births, the average baby is born after ____ hours of active labor.
a. 7
b. 11
c. 12
d. 20

ANSWER: c

Name:_____ Class:_____ Date:_____

Chapter 02: Multiple Choice

118. At around 38 weeks after conception, the _____ starts the sequence of events that prepares the fetus for delivery and starts labor.

a. fetal brain
b. maternal brain
c. placenta
d. amniotic sac

ANSWER: a

119. In the third stage of labor, the:

a. cervix begins to dilate.
b. baby's head moves into the birth canal.
c. mother experiences intense contractions.
d. placenta is delivered.

ANSWER: d

120. In MOST cases, newborns:

a. are unable to breathe on their own.
b. do not cry until the umbilical cord is cut.
c. breathe and cry on their own immediately.
d. breathe on their own, and cry when the umbilical cord is cut.

ANSWER: c

121. A person who supports a mother through the birth process from early labor at home through delivery at home or in a hospital is called a:

a. humanitarian.
b. doctor.
c. postpartum nurse.
d. doula.

ANSWER: d

122. Today, _____ are likely to arrive at a pregnant woman's home during early labor and later work alongside hospital staff.

a. doulas
b. birthing coaches
c. physicians' assistants
d. neonatal support teams

ANSWER: a

123. Theresa went into labor at her home. Joan arrived soon after and began to time her contractions and give gentle massages. She assisted Theresa and her partner when it was time to leave for the hospital and accompanied them through the birth process. Joan was Theresa's:

a. postpartum nurse.

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b. doctor.
c. couvade.
d. doula.

ANSWER: d

124. A surgical birth, in which incisions through the mother's abdomen and uterus allow the fetus to be removed quickly, is also referred to as a(n):
a. epidural.
b. cesarean section.
c. induced labor.
d. doula.

ANSWER: b

125. In the United States, more than _____ of births occur via c-section.
a. one-third
b. one-half
c. two-thirds
d. three-fourths

ANSWER: a

126. The Apgar scale is used at one minute and five minutes after birth to:
a. evaluate the newborn's sensory abilities.
b. evaluate the health of the new mother.
c. help the mother recover from childbirth.
d. evaluate the health of the newborn.

ANSWER: d

127. Newborn Kendra received an Apgar score of 4. This score indicates that Kendra is:
a. healthy and responsive.
b. in need of emergency care.
c. slightly lethargic but in good condition.
d. hungry, cold, and irritable.

ANSWER: b

128. A baby is assessed at one minute after birth using the Apgar scale. Three of the five vital signs are good, but the baby is weak and inactive and does not grimace. The two vital signs the medical team is concerned about are:
a. muscle tone and heartbeat.
b. respiratory effect and color.
c. muscle tone and reflexes.
d. reflex irritability and respiratory effect.

Name:_____ Class:_____ Date:_____

Chapter 02: Multiple Choice

ANSWER: c

129. By age 3, children born by cesarean section are more likely to:
a. exhibit behavioral problems, such as hyperactivity.
b. have learning and motor difficulties.
c. be diagnosed with autism.
d. be obese.

ANSWER: d

130. Compared to vaginal births, c-section births:
a. are less expensive.
b. increase the risk of complications after birth.
c. usually take longer.
d. are less safe for the baby.

ANSWER: b

131. Epidurals, often used in hospital births to manage pain during childbirth, have been shown to:
a. help prevent unnecessary c-sections.
b. encourage breast-feeding from the beginning.
c. decrease the newborn's readiness to suck.
d. induce labor.

ANSWER: c

132. Carla, in labor with her first child, is in a great deal of pain and has been experiencing strong contractions for nearly 12 hours with little progress toward birth. Although Carla was hoping for a natural birth, her doctor has urged her to use an epidural. Which of the following problems occurs MOST often following an epidural?
a. Newborns are at high risk for birth complications like cerebral palsy.
b. An epidural increases the chance of having a cesarean section.
c. An epidural speeds up the labor process.
d. The mother loses consciousness prior to delivery.

ANSWER: b

133. Labor that is started, speeded, or strengthened with a drug is referred to as:
a. a home birth.
b. induced labor.
c. a cesarean section.
d. an epidural.

ANSWER: b

134. Vicki was two weeks over her due date. The doctor decided it was BEST for Vicki to _____ labor due to the increasing size of the fetus.
a. postpone

Chapter 02: Multiple Choice

b. induce
c. forego
d. decrease

ANSWER: b

135. Which of the following is TRUE regarding rates for cesarean sections and epidurals?
a. They have been relatively steady over the past three decades.
b. They are the same in the United States as in most other developed nations.
c. They vary by doctor and by hospital.
d. They are higher for births attended by midwives.

ANSWER: c

136. In which of the following countries are home births MOST common?
a. United States
b. Canada
c. England
d. Netherlands

ANSWER: d

137. The day after he was born, Chris was given a test that measures responsiveness and records 46 behaviors, including 20 reflexes. This test is called the:
a. Apgar scale.
b. Brazelton Neonatal Behavioral Assessment Scale.
c. Bayley Infant Neurological Screener.
d. Denver Developmental Screening.

ANSWER: b

138. Which of the following is NOT an example of a newborn reflex?
a. sneezing
b. sucking
c. sleeping
d. stepping

ANSWER: c

139. Carly just gave birth to her first child two weeks ago. Thomas, Carly's husband, has noticed that Carly is unable to sleep, talks excessively, and seems extremely concerned that something is wrong with the baby, despite being reassured by the doctor. Carly's behavior may indicate that she is experiencing:
a. postpartum depression.
b. bipolar depression.
c. schizophrenia.
d. a dissociative episode.

Name:_____ Class:_____ Date:_____

Chapter 02: Multiple Choice

ANSWER: a

140. Postpartum depression:
a. is a normal development and no cause for concern.
b. has no treatment.
c. does not typically interfere with the care of a newborn.
d. can be mitigated by successful breast-feeding.

ANSWER: d

141. While Li's wife was pregnant, he experienced weight gain and indigestion. When she gave birth, he felt sharp physical pain as well. He was experiencing:
a. postpartum depression.
b. couvade.
c. false labor.
d. the Moro reflex.

ANSWER: b

142. Marissa had a baby three weeks ago. She has been feeling sad and inadequate as a mother, which has made caring for her newborn difficult. Marissa may be experiencing:
a. post-traumatic stress disorder.
b. postpartum depression.
c. generalized anxiety disorder.
d. separation anxiety.

ANSWER: b

143. Nadia just had a baby and now is experiencing a sense of inadequacy and sadness. She may have:
a. couvade.
b. separation anxiety.
c. a psychotic episode.
d. postpartum depression.

ANSWER: d

144. Studies indicate that _____ may mitigate maternal depression.
a. breast-feeding
b. having a home birth
c. couvade
d. epidurals

ANSWER: a

145. Paternal experiences of pregnancy and birth called _____ are expected in some cultures, a normal variation in many, and considered pathological in others.
a. shenkui

Chapter 02: Multiple Choice

b. Saora disorder
c. biological paradox
d. couvade

ANSWER: d

Name:_____ Class:_____ Date:_____

Chapter 02: True/False

1. Genes are located on chromosomes.
   a. True
   b. False

ANSWER: True

2. All humans have about 100,000 genes.
   a. True
   b. False

ANSWER: False

3. Almost every cell in the human body has 23 single chromosomes.
   a. True
   b. False

ANSWER: False

4. An allele is a variation that makes a gene different in some way from other genes for the same characteristic.
   a. True
   b. False

ANSWER: True

5. An individual's collection of genes is called a "phenotype."
   a. True
   b. False

ANSWER: False

6. The first 22 chromosomes contain hundreds of genes in the same positions and sequence. If the code of the gene from one parent is exactly like the code of the same gene from the other parent, the gene pair is heterozygous.
   a. True
   b. False

ANSWER: False

7. If the 23rd pair of chromosomes contains two X chromosomes, then that individual is a male.
   a. True
   b. False

ANSWER: False

8. If the 23rd pair of chromosomes contains one X chromosome and one Y chromosome, then the individual is male.
   a. True
   b. False

ANSWER: True

Name:_____ Class:_____ Date:_____

Chapter 02: True/False

9. Every *ovum* a woman creates contains an X chromosome.
   a. True
   b. False

ANSWER: True

10. The mother's *ovum* determines whether the fetus will become a boy or a girl.
   a. True
   b. False

ANSWER: False

11. Dizygotic twins originate from the same zygote; therefore, they have the same genotype.
   a. True
   b. False

ANSWER: False

12. An individual's phenotype is dependent entirely on that person's genes.
   a. True
   b. False

ANSWER: False

13. Almost every trait is polygenic, which means it is affected by many genes.
   a. True
   b. False

ANSWER: True

14. When the effects of genes add up to make the phenotype, they are called dominant–recessive genes.
   a. True
   b. False

ANSWER: False

15. When a person inherits a recessive gene that is not expressed in the phenotype, that person is a carrier of the gene.
   a. True
   b. False

ANSWER: True

16. When the 23 pairs of chromosomes replicate and form two complete sets of the genome, this process is referred to as "duplication."
   a. True
   b. False

ANSWER: True

Name:_____ Class:_____ Date:_____

Chapter 02: True/False

17. The cells that result from the early duplication and division processes are called stem cells, which are able to produce any other specialized cell.

a. True

b. False

ANSWER: True

18. Every person starts life as a single cell called an embryo.

a. True

b. False

ANSWER: False

19. The first two weeks of prenatal development are called the fetal period.

a. True

b. False

ANSWER: False

20. At the end of the embryonic period, the embryo has all of the basic organs and body parts (except sex organs) of a human being.

a. True

b. False

ANSWER: True

21. Regarding biological sex (XX or XY), women become drunk on more alcohol than men.

a. True

b. False

ANSWER: False

22. The most common extra-chromosome condition is fragile X syndrome.

a. True

b. False

ANSWER: False

23. Consultation and testing by trained experts that enable individuals to learn about their genetic heritage, including harmful conditions they could pass along to any children they might conceive, is referred to as "couples counseling."

a. True

b. False

ANSWER: False

24. Teratogens increase the risk of harm but do not always cause damage.

a. True

b. False

Name:_____ Class:_____ Date:_____

Chapter 02: True/False

ANSWER: True

25. About 20 percent of all children have difficulties that could be connected to teratogens.
    a. True
    b. False
ANSWER: True

26. The effects of behavioral teratogens may last a lifetime.
    a. True
    b. False
ANSWER: True

27. Behavioral teratogens cause physical defects and brain abnormalities.
    a. True
    b. False
ANSWER: False

28. Embryos exposed to large amounts of alcohol may develop fetal alcohol syndrome.
    a. True
    b. False
ANSWER: True

29. Genes can influence the effects of teratogens.
    a. True
    b. False
ANSWER: True

30. Low-birthweight is defined as a newborn weighing less than 2,500 grams.
    a. True
    b. False
ANSWER: True

31. "Small for gestational age" means the same as "underweight preterm."
    a. True
    b. False
ANSWER: False

32. The nations of sub-Saharan Africa have low rates of low-birthweight babies.
    a. True
    b. False
ANSWER: False

Name:_____ Class:_____ Date:_____

Chapter 02: True/False

33. Couvade is when the zygote embeds itself into the lining of the uterus.
    a. True
    b. False
ANSWER: False

34. Birth takes place around 266 days after conception.
    a. True
    b. False
ANSWER: True

35. The Apgar scale refers to the age at which a fetus might survive if born.
    a. True
    b. False
ANSWER: False

36. The Apgar scale measures color, heart rate, cry, muscle tone, and breathing.
    a. True
    b. False
ANSWER: True

37. The rate of cesarean sections is declining worldwide.
    a. True
    b. False
ANSWER: False

38. Home births are more common in European nations than in the United States.
    a. True
    b. False
ANSWER: True

39. One out of seven new mothers will experience postpartum depression in the days and weeks after giving birth.
    a. True
    b. False
ANSWER: True

40. The strong, loving bond that forms as parents hold and feed their newborn is known as "couvade."
    a. True
    b. False
ANSWER: False

Name:_____ Class:_____ Date:_____

Chapter 02: Essay

1. Explain how cells, proteins, deoxyribonucleic acid (DNA) molecules, chromosomes, and genes are related to each other.

ANSWER: Suggested Answer:
All living things are composed of cells. The work of cells is done by proteins. Each cell manufactures certain proteins according to the instructions stored by molecules of DNA at the heart of each cell. These coding DNA molecules are on a chromosome. The instructions in the chromosomes are organized into genes. Genes direct the formation of specific proteins.

	Good (5 pts.)	Fair (3 pts.)	Weak (0–1 pts.)
Explain how five components are related	Explains how all five components are related	Explains how three or four components are related	Explains how two or fewer components are related

2. Define *genotype* and *phenotype*, explain the impact of both on an individual's traits, and give an example of each.

ANSWER: Suggested Answer:
Genotype refers to the collection of genes a person carries in his or her DNA. For example, a person may carry a gene for red hair without having red hair. Phenotype is a person's actual appearance and behavior. In addition to the genes a person inherits, epigenetic factors and the interaction among genes determine the actual traits that are expressed in each person. For example, a person may carry a gene for depression that only gets expressed if that person experiences a harsh childhood environment.

	Good (5 pts.)	Fair (3 pts.)	Weak (0–1 pts.)
Define genotype and phenotype	Defines genotype and phenotype	Defines either genotype or phenotype	Does not define either term *or* confuses the terms
Explain the impact of both	Explains the impact of both terms	Explains the impact of either term	Does not explain the impact of either term or confuses the terms
Give an example for each term	Gives an example for both terms	Gives an example for either term	Does not give an example for either term or gives incorrect examples

3. Describe how the sex of a fetus is decided at conception.

ANSWER: Suggested Answer:
Sex is determined by the 23rd set of chromosomes. If the set contains two X chromosomes, then the infant is female. If it contains an X and a Y, then the infant is male. The mother's egg cell is always an X. Therefore, the father's sperm determines the sex of the infant, since the sperm can carry either an X or a Y chromosome.

	Good (5 pts.)	Fair (3 pts.)	Weak (0–1 pts.)
Explain how the sex is	Gives the answer	Gives the answer listed above using just X and Y instead of	States that a father's sperm determines the sex without

Name:_____ Class:_____ Date:_____

Chapter 02: Essay

determined	listed above	mentioning chromosomes	offering further explanation

4. Define *autosomes*, and differentiate the terms *homozygous* and *heterozygous*.

ANSWER: Suggested Answer:

In 22 of the 23 pairs of chromosomes, both members of the pair are closely matched. Some of the specific genes have alternate alleles, but each chromosome finds its comparable chromosome, making it a pair. Those 44 chromosomes are called autosomes, which means that they are independent of the sex chromosomes. Each autosome, from number 1 to number 22, contains hundreds of genes in the same positions and sequence. If the code of a gene from one parent is exactly like the code on the same gene from the other parent, the gene pair is homozygous. However, the match is not always letter-perfect, because the mother might have a different allele of a particular gene than the father has. If a gene's code differs from that of its counterpart, the two genes still pair up, but the zygote is heterozygous.

	Good (5 pts.)	Fair (3 pts.)	Weak (0–1 pts.)
Define autosomes	Provides a definition of autosomes	Provides a partial definition of autosomes	Provides an incorrect definition of autosomes or does not define the term
Differentiate the terms homozygous and heterozygous	Explains the difference between homozygous and heterozygous	Is vague about the distinction between homozygous and heterozygous	Does not describe the difference between homozygous and heterozygous

5. List three unanticipated consequences of China's one-child policy. In which year did China rescind this policy?

ANSWER: Suggested Answer:

The unanticipated consequences of China's one-child policy include the following: (1) since 1980, an estimated 9 million abortions of female fetuses; (2) adoption of thousands of newborn Chinese girls by Western families; and (3) by 2010, far more unmarried young men than women. In 2013, China rescinded the one-child policy.

	Good (5 pts.)	Fair (3 pts.)	Weak (0–1 pts.)
List three unanticipated consequences of China's one-child policy	Lists three unanticipated consequences of China's one-child policy	Lists two unanticipated consequences	Does not list any unanticipated consequences
Provide the year when China rescinded the one-child policy	Identifies the year in which China rescinded the one-child policy	Identifies a year that is close to the actual date	Identifies a year that is considerably different than the actual date

6. Describe the difference between *monozygotic* and *dizygotic* twins, including how each type of twin is conceived.

Name:_____ Class:_____ Date:_____

Chapter 02: Essay

ANSWER: Suggested Answer:
Monozygotic twins result when one ovum is fertilized by one sperm, and the zygote splits into two separate zygotes. This results in two identical zygotes that are eventually born as identical twins. Dizygotic, or fraternal, twins result when two ova are fertilized by two different sperm.

	Good (5 pts.)	Fair (3 pts.)	Weak (0–1 pts.)
Describe the difference	States that monozygotic twins are identical and that dizygotic are fraternal	Uses the terms "identical" and "fraternal" instead of the scientific terms	Does not describe the difference or confuses the two twin types
Explain how each type is conceived	Explains the conception process for both twin types	Explains the conception process for either twin type	Does not explain the conception process for either twin type

7. Describe three of the surprises revealed upon the completion of the Human Genome Project.

ANSWER: Suggested Answer:
Following the completion of the Human Genome Project in 2003, people were surprised to find that (1) humans have about 20,000 to 23,000 genes, (2) almost all genes are present in every human being, (3) dogs and mice have more genes than humans, (4) any two people share 99.5 percent of their genetic code, and (5) the genetic codes for humans and chimpanzees are 98 percent the same.

	Good (5 pts.)	Fair (3 pts.)	Weak (0–1 pts.)
Describe three surprises	Describes three of the five surprises outlined above (states far fewer than 100,000 or approx. 20,000 genes)	Describes two of the five surprises outlined above	Describes one or none of the surprises outlined above

8. Explain how color blindness is inherited and why it is much more common in one sex than the other.

ANSWER: Suggested Answer:
Color blindness is an X-linked recessive gene. This means that it is always passed on from a mother on the X chromosome. Since boys have one X and one Y chromosome, they inherit one recessive gene on the X chromosome and have no dominant chromosome to overpower it on the Y chromosome. This makes them much more apt to be color-blind. Girls have two X chromosomes. This means that they will usually have a dominant gene on the other X chromosome. Thus, they may carry the trait but will not experience it themselves.

	Good (5 pts.)	Fair (3 pts.)	Weak (0–1 pts.)
Explain color blindness inheritance	Explains how color blindness is carried on the X chromosome, making males vulnerable	Explains that color blindness comes from a parent without identifying the mother or without identifying which gender is vulnerable	Cannot explain sex-linked color blindness inheritance
Describe why males are more	Describes why males are apt to have it by	Describes why males are apt to have it without	Does not describe why males are apt

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apt to be color-blind	discussing chromosomes and how females carry the gene	discussing why females are carriers	to have this trait or that females are carriers

9. Briefly describe *differentiation* and when it begins. Give at least two examples of cell differentiation.

ANSWER: Suggested Answer:

At approximately the eight-cell stage of a zygote, although duplication and division continue, a process called differentiation starts. In differentiation, cells specialize, taking different forms and reproducing at various rates, depending on where they are located. For instance, some cells become part of an eye, others part of a finger, and still others part of the brain.

	Good (5 pts.)	Fair (3 pts.)	Weak (0–1 pts.)
Describe differentiation	Defines differentiation and gives at least two examples	Defines differentiation and gives one example	Does not define differentiation or does not give at least one example
Tell when it begins	Knows that it begins around the eight-cell stage of a zygote	Knows that it occurs during the zygote stage	Does not state when it occurs or gives the wrong stage

10. Describe the germinal period, embryonic period, and fetal period of prenatal development. Identify the length of each period, including the major developmental milestones that occur during each.

ANSWER: Suggested Answer:

The first two weeks (14 days) of prenatal development are the germinal period. During this time, the zygote undergoes cell duplication and differentiation. The major milestone is the transformation of the zygote into a blastocyst, which forms the embryo and placenta, enabling implantation in the uterus. The embryonic period lasts from the third through the eighth prenatal week (days 14 to 56). The major developmental milestones are body structure and system formation, including a rudimentary central nervous system and circulatory system. The fetal period starts at the ninth prenatal week and ends at birth. Fetal growth, sex organs, and refinement of all the body structures and systems are the major developmental accomplishments.

	Good (5 pts.)	Fair (3 pts.)	Weak (0–1 pts.)
Describe the three prenatal developmental periods, including their lengths	Describes the three prenatal periods, including the length of each one	Describes just two of the prenatal periods or does not accurately describe the length of all three	Describes one or none of the periods or their lengths accurately or confuses the periods
Detail the milestones that occur during each period	Details the major milestones for each period	Details the milestones for two of the periods	Details the milestones for one or none of the periods or confuses them

11. What makes Down syndrome a chromosomal condition? There are 11 characteristics that are often associated with Down syndrome. List four of these characteristics.

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ANSWER: Suggested Answer:
Down syndrome occurs when a person has three copies of chromosome 21. Some 300 distinct characteristics can result from that third chromosome 21. No individual with Down syndrome is identical to another, but the syndrome usually produces (1) a thick tongue, (2) a round face, (3) slanted eyes, (4) distinctive hands, (5) distinctive feet, and (6) distinctive fingerprints. Many people with Down syndrome also have (7) hearing problems, (8) heart abnormalities, (9) muscle weakness, and (10) short stature. They are (11) slower to develop intellectually, especially in language.

	Good (5 pts.)	Fair (3 pts.)	Weak (0–1 pts.)
Identify how Down syndrome is a chromosomal condition	Explains that it is caused by three copies of chromosome 21	Is vague about how Down syndrome occurs or fails to mention the chromosome number	Does not explain how Down syndrome occurs
List four characteristics associated with Down syndrome	Lists four characteristics from the list above	Lists three characteristics from the list above	Lists two or fewer characteristics from the list above

12. Identify three recessive conditions that are X-linked. Which condition results in cognitive deficits that are the most common forms of inherited intellectual disability?

ANSWER: Suggested Answer:
Three recessive conditions that are X-linked are (1) hemophilia, (2) Duchenne muscular dystrophy, and (3) fragile X syndrome. The cognitive deficits caused by fragile X syndrome are the most common form of inherited intellectual disability.

	Good (5 pts.)	Fair (3 pts.)	Weak (0–1 pts.)
Identify three recessive conditions that are X-linked	Identifies three recessive conditions that are X-linked	Identifies two of three recessive conditions that are X-linked	Does not identify any recessive conditions that are X-linked
Identify fragile X syndrome as the most common form of inherited intellectual disability	Identifies fragile X syndrome as the most common form of inherited intellectual disability	Identifies fragile X syndrome but does not explain that the cognitive deficits are the most common form of intellectual disability	Does not identify fragile X syndrome as the most common form of inherited intellectual disability

13. Tad and Valessa, married for two years, have been talking about starting a family. Tad knows that he has some health conditions in his family, including autism and dementia. Valessa's uncle died of Huntington's disease, and her grandmother suffered from schizophrenia. Tad and Valessa want to determine their risk of passing on one or more of these disorders to their children if they decide to conceive. What type of professional would help answer their questions? Explain what they can expect to learn.

ANSWER: Suggested Answer:
Tad and Valessa would likely visit a genetic counselor. Because genetic counseling involves consultation and testing by trained experts, Tad and Valessa would learn about their genetic heritage, including harmful conditions that they could pass along to any children they might

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conceive.

	Good (5 pts.)	Fair (3 pts.)	Weak (0-1 pts.)
Identify genetic counseling	Identifies genetic counseling	Identifies genetic counseling	Does not identify genetic counseling
Explains genetic heritage	Explains genetic heritage	Explains genetic heritage	Does not explain genetic heritage

14. Define *behavioral teratogens*, and name at least two common ones. State two potential consequences of exposure to them.

ANSWER: Suggested Answer:
Behavioral teratogens are substances and conditions that do not cause physical defects in a developing fetus but increase the risk of harm to the child's brain. For example, if a pregnant mother 1) smokes, 2) drinks alcohol, 3) uses marijuana or other drugs, or 4) has a virus (such as the flu), the fetus's brain could be damaged. Consequences of exposure to behavioral teratogens include 1) hyperactivity, 2) antisocial behavior, and 3) intellectual disabilities.

	Good (5 pts.)	Fair (3 pts.)	Weak (0–1 pts.)
Define behavioral teratogens	Defines the term and expresses that these cause brain damage, not physical defects	Defines the term such that it could also include physical defects	Does not accurately define the term
Name at least two behavioral teratogens	Names at least two behavioral teratogens	Names one behavioral teratogen	Does not name a common behavioral teratogen or give an example of one that causes physical defects
State two potential consequences	States two potential consequences	States one potential consequence	Does not state a potential consequence or state a physical defect

15. Trace and Emily, recently married, are talking about expanding their family. The couple comes to you for advice on what they can do to ensure a healthy pregnancy. List five suggestions that Emily can follow prior to becoming pregnant.

ANSWER: Suggested Answer:
Prospective mothers like Emily should do the following: 1) plan the pregnancy, 2) take a daily multivitamin with folic acid, 3) avoid binge drinking, 4) update immunizations against all teratogenic viruses, especially rubella, 5) gain or lose weight, as appropriate, 6) reassess use of prescription drugs, and 7) develop daily exercise habits.

	Good (5 pts.)	Fair (3 pts.)	Weak (0–1 pts.)
Identify what prospective mothers should do before pregnancy	Identifies 5 suggestions for ensuring a healthy pregnancy	Identifies 3 suggestions for ensuring a healthy pregnancy	Identifies 2 or fewer suggestions or identifies incorrect suggestions

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16. According to recent studies, how many American women drink during pregnancy? What group of women are most likely to consume alcohol during pregnancy? Assume that a woman gives birth to a child with fetal alcohol syndrome (FAS). Describe the characteristics of a child with this disorder.

ANSWER: Suggested Answer:

Ten percent of pregnant women in the United States use alcohol, a rate that climbs to 19 percent for older pregnant women. Older, college-educated women are the most likely to drink during pregnancy. Fetal alcohol syndrome (FAS) is a cluster of birth defects, including abnormal facial characteristics, slow physical growth, and reduced intellectual ability, that may occur in the fetus of a woman who drinks alcohol while pregnant.

	Good (5 pts.)	Fair (3 pts.)	Weak (0–1 pts.)
Identify the number of women who drink during pregnancy	Identifies the percentage of women who drink during pregnancy	Incorrectly identifies the number of pregnant women who drink during pregnancy, but is within one two percentage points	Does not identify the number of pregnant women who drink during pregnancy or provides an incorrect percentage
Identify the group of women who are most likely to consume alcohol during pregnancy	Identifies older, college-educated women	Identifies older or college-educated women but not both	Does not identify older or college-educated women
Describe characteristics of a child with FAS	Describes 3 characteristics of FAS	Describes 2 characteristics of FAS	Does not describe characteristics of FAS

17. Name four factors that contribute to low-birthweight.

ANSWER: Suggested Answer:

Low-birthweight can be caused by 1) stress, 2) maternal drug use, especially smoking, 3) underage (teen) mother, 4) low maternal body fat, 5) low total maternal weight gain, 6) inadequate vitamins in the mother's diet, 7) poor maternal nutrition, and 8) environmental pollution.

	Good (5 pts.)	Fair (3 pts.)	Weak (0–1 pts.)
Name four factors contributing to low-birthweight	Names four of the factors from the list above	Names three of the factors from the list above	Names two or fewer of the factors from the list above

Names two or fewer of the factors from the list above

18. Newborn Josie received an Apgar rating following her birth. Explain what the Apgar scale is, including the five vital signs that it measures. Josie received a 4 at one minute and five minutes after birth. What does this score indicate?

ANSWER: Suggested Answer:

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The Apgar scale is a quick assessment of a newborn's health, from 0-10. The five vital signs are color, heartbeat, reflexes, muscle tone, and respiratory effort. (Students may instead list the acronym for Apgar: Appearance, Pulse, Grimace, Activity, and Respiration. Full credit should be given for either answer.) Josie's score indicates an emergency. A neonatal pediatrician will be summoned immediately to help save Josie's life.

	Good (5 pts.)	Fair (3 pts.)	Weak (0–1 pts.)
Explain what the Apgar scale is	Explains what the Apgar scale is and what it measures	Explains the Apgar scale but lists fewer than 4 vital signs	Does not explain what the Apgar scale is or what it measures
Explain what Josie's score means	Explains what the Apgar score means	Partially explains what the Apgar score means	Does not explain what the Apgar score means or provides an incorrect response

19. Explain the procedure known as a cesarean section, and discuss at least two benefits and two risks associated with this kind of delivery.

ANSWER: Suggested Answer:
A cesarean section (c-section) is also known as a surgical birth. Incisions through the mother's abdomen and uterus allow the fetus to be removed quickly, instead of being delivered through the vagina. Generally, cesareans are 1) safe for mother and baby and 2) can save a baby's life when the infant experiences distress during a vaginal delivery. Advantages for hospitals include 3) ease in scheduling, and 4) quicker than vaginal deliveries. Drawbacks include 1) a longer recovery period for the mother, 2) complications after birth, and 3) a reduction in breast-feeding.

	Good (5 pts.)	Fair (3 pts.)	Weak (0–1 pts.)
Explain the procedure	Explains the procedure, stating that it is also called a c-section or surgical birth	Explains the procedure without extra details	Does not explain the procedure
Discuss the risks and benefits	Discusses two or more risks and two or more benefits	Discusses two risks *or* two benefits *or* one risk and one benefit	Does not discuss at least one risk and one benefit

20. Describe the maternal symptoms of postpartum depression. What are two possible outcomes of postpartum depression for the baby?

ANSWER: Suggested Answer:
Symptoms of postpartum depression include a mother's 1) deep sadness, 2) feelings of inadequacy, 3) feelings of being burdened by baby care, 4) ignoring the baby's needs, and 5) thoughts of neglecting or hurting the infant. Possible outcomes for the baby include 1) inadequate food and care, 2) possible abuse or neglect, 3) lack of social stimulation, and 4) the likelihood of behavioral problems later on.

	Good (5 pts.)	Fair (3 pts.)	Weak (0–1 pts.)
Describe the maternal symptoms of postpartum	Describes two of the symptoms	Describes one of the symptoms	Does not describe a symptom

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depression			
Name two possible outcomes for the baby	Names two possible outcomes	Names one possible outcome	Does not name a possible outcome