

# ***Child 3rd edition Martorell Test Bank***

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## Child Edition 3 by Martorell

CORRECT ANSWERS ARE LOCATED IN THE 2ND HALF OF THIS DOC.

**TRUE/FALSE - Write 'T' if the statement is true and 'F' if the statement is false.**

- 1) An ovum duplicates itself repeatedly by cell division to produce all the cells that make up a baby.
  - ☐ true
  - ☐ false
- 2) If fertilization does not occur, the ovum and any sperm cells in the woman's body die.
  - ☐ true
  - ☐ false
- 3) Women's fertility is less affected by age than men's fertility, but it declines significantly in the late 30s.
  - ☐ true
  - ☐ false
- 4) According to the Centers for Disease Control (CDC), in the United States, infertility is experienced by an estimated 15 percent of women aged 15 to 44.
  - ☐ true
  - ☐ false
- 5) For women who experience infertility due to a blockage of the fallopian tubes, the blockage can be the result of pelvic infections or sexually transmitted infections.
  - ☐ true
  - ☐ false
- 6) In 2019, less than 25 percent of any single trial of assisted reproductive technology (ART) resulted in a successful pregnancy.
  - ☐ true
  - ☐ false
- 7) In multiple pregnancies, the risk of preterm delivery and low birth weight decreases with the number of babies being carried.
  - ☐ true
  - ☐ false
- 8) Intracytoplasmic sperm injection involves injecting a single sperm into the ovum.
  - ☐ true
  - ☐ false

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- 9) In the United States, adoption by same-sex couples is legal in all 50 states.
- ☐ true
  - ☐ false
- 10) Every sex cell in the normal human body has 23 pairs of chromosomes.
- ☐ true
  - ☐ false
- 11) At the moment of conception, the single-celled zygote receives all the biological information needed to guide its development into a unique individual.
- ☐ true
  - ☐ false
- 12) It is the mother who determines the sex of a child.
- ☐ true
  - ☐ false
- 13) Once hormones signal the SRY gene on the X chromosome to turn on, cell differentiation and formation of the ovaries are triggered.
- ☐ true
  - ☐ false
- 14) At 6 to 8 weeks after conception, the testes start to produce the male hormone testosterone.
- ☐ true
  - ☐ false
- 15) Red hair is a dominant trait.
- ☐ true
  - ☐ false
- 16) Permanent alterations in genes or chromosomes that usually produce harmful characteristics but provide the raw material of evolution are called mutations.
- ☐ true
  - ☐ false
- 17) As compared to defects transmitted by dominant genes, defects carried by recessive genes are more likely to be lethal at an earlier age.
- ☐ true
  - ☐ false

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- 18) Incomplete dominance is a pattern of inheritance in which certain characteristics carried on the X chromosome inherited from the mother are transmitted differently to her male and female offspring.
- ☐ true
  - ☐ false
- 19) Chromosomal abnormalities typically occur because of errors in cell division.
- ☐ true
  - ☐ false
- 20) Children with Down syndrome tend to benefit cognitively, socially, and emotionally when placed in special schools rather than in regular classrooms.
- ☐ true
  - ☐ false
- 21) People with Down syndrome tend to live longer than the general population.
- ☐ true
  - ☐ false
- 22) Heritability refers to the relative influence of heredity and environment in a particular individual.
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- ☐ true
  - ☐ false
- 23) The tendency to seek out environments compatible with one's genotype is called niche-picking.
- ☐ true
  - ☐ false
- 24) Nonshared environmental effects refer to the effects of environmental conditions on genetically different individuals.
- ☐ true
  - ☐ false
- 25) Obesity is measured by body mass index (BMI).
- ☐ true
  - ☐ false

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- 26) Genetic influences on personality appear to become less important with age.
- ☐ true
  - ☐ false
- 27) Autism is likely to have an environmental basis rather than a genetic basis and shows greater concordance between dizygotic twins than between monozygotic twins.
- ☐ true
  - ☐ false
- 28) Advanced paternal age is a risk factor for schizophrenia.
- ☐ true
  - ☐ false
- 29) Infants born during the winter or spring months are at higher risk for schizophrenia.
- ☐ true
  - ☐ false

### **MULTIPLE CHOICE - Choose the one alternative that best completes the statement or answers the question.**

- 30) A(n)\_\_\_\_\_ is a one-celled organism resulting from fertilization.
- A) zygote
  - B) ovum
  - C) blastula
  - D) spermatozoon
- 31) Which of the following statements is true about fertilization?
- A) At birth, a female is likely to have about 2 million immature ova in her two ovaries.
  - B) Fertilization typically occurs before the ovum reaches the fallopian tube.
  - C) Fertilization typically involves only one sperm being released into the vagina.
  - D) At birth, a male is likely to have about a several hundred million sperm cells.
- 32) Fertilization typically occurs
- A) before the ovum reaches the fallopian tube.
  - B) in the uterus.
  - C) while the ovum is passing through the fallopian tube.
  - D) in the cervix.

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- 33) In a sexually mature woman, ovulation occurs about once every \_\_\_\_\_ days until menopause.
- A) 7
  - B) 10
  - C) 19
  - D) 28
- 34) Sperm are produced in the \_\_\_\_\_ of a mature male at a rate of several hundred million a day and are ejaculated in the semen at sexual climax.
- A) ovary
  - B) cervix
  - C) testes
  - D) uterus
- 35) The most common cause of infertility in men is
- A) low sperm count.
  - B) artificial insemination.
  - C) high sperm motility.
  - D) malnutrition.
- 36) Which of the following is a risk factor for infertility in women?
- A) dehydration
  - B) insomnia
  - C) excess caffeine
  - D) extreme weight gain or loss
- 37) Which of the following statements is true about infertility?
- A) Obesity is unlikely to have a negative effect on fertility.
  - B) Smoking is likely to have a strong negative effect on fertility.
  - C) High levels of caffeine and alcohol consumption are the leading causes of infertility.
  - D) Exposure to environmental pollutants is unlikely to be related to infertility.
- 38) In the context of assisted reproductive technology (ART), artificial insemination by a donor recommended when
- A) there is an increased risk for children of a multiples birth.
  - B) the production of multiple ova needs to be stimulated.
  - C) there is no female partner.
  - D) the male partner is infertile.

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- 39) Dan and Fiona find it difficult to conceive naturally and decide to utilize technology to conceive. Fiona is first given fertility drugs to trigger the production of multiple ova. Her ova are then removed surgically, fertilized in a laboratory dish, and implanted in her uterus. This technique is called
- A) artificial insemination.
  - B) in vitro fertilization.
  - C) intracytoplasmic sperm injection.
  - D) surrogacy.
- 40) The simplest form of assisted reproductive technology (ART) is\_\_\_\_\_, and it can facilitate conception if a man has a low sperm count.
- A) ovum transfer
  - B) intracytoplasmic sperm injection
  - C) artificial insemination
  - D) in vitro fertilization
- 41) In a technique called intracytoplasmic sperm injection (ICSI)
- A) sperm is injected into a woman's vagina, cervix, or uterus.
  - B) a woman first receives fertility drugs to stimulate the production of multiple ova, and then the ova are surgically removed, fertilized by sperm in a laboratory dish, and implanted in the woman's uterus.
  - C) the ova are removed, combined with sperm, and immediately placed in the fallopian tubes, where the ovum is fertilized.
  - D) single sperm can be injected into the ovum.
- 42) Liang and Jenn find it difficult to conceive naturally. Tests reveal that the infertility is because of Fred's extremely low sperm count. To help Wilma conceive, Dr. Samuel injects Fred's sperm into Wilma's cervix. This procedure is called
- A) in vitro fertilization.
  - B) intracytoplasmic sperm injection.
  - C) artificial insemination.
  - D) ovum transfer.

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- 43) Which of the following statements about in vitro fertilization is FALSE?
- A) The likelihood of success with in vitro fertilization using a mother's own ova drops precipitously as a woman gets older.
  - B) According to recent research, about 40 percent of in vitro fertilization procedures using fresh, nondonor eggs resulted in a pregnancy.
  - C) In vitro fertilization addresses severe male infertility.
  - D) Children conceived through in vitro fertilization are more likely than naturally conceived infants to have a variety of birth defects, although the incidence of such defects is still small.
- 44) Which country below has banned commercial surrogacy?
- A) Thailand
  - B) France
  - C) the United States
  - D) Russia
- 45) Which of the following statements is true about adoption?
- A) In June 2017, the U.S. Supreme Court ruled that same-sex couples were to be treated as equal under the law, and same-sex adoption is now legal in all 50 states.
  - B) In 2008, adoptions were unlikely to occur through publicly funded adoption agencies or through intercountry adoption.
  - C) In August 2011, the U.S. Supreme Court ruled that stepparents could adopt the child of a spouse even if the spouse did not have legal custody of the child.
  - D) Since the mid-1970s, the percentage of never-married women who adopt out their children has increased significantly.
- 46) About\_\_\_ percent of adopted boys and\_\_\_ percent of adopted girls in the United States are foreign born.
- A) 32; 12
  - B) 12; 32
  - C) 6; 9
  - D) 14; 19
- 47) Which of the following is true about the genetic code?
- A) Deoxyribonucleic acid (DNA) has a cylindrical structure.
  - B) Chromosomes are found only in the male and female gamete cells.
  - C) The complete sequence of genes in the human body constitutes the human genome.
  - D) A single gene is likely to be located in numerous potential points on a chromosome.

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- 48) In the context of the genetic code, the fundamental unit of heredity is a chemical called
- A) threonine.
  - B) adenosine monophosphate.
  - C) arachidonic acid.
  - D) deoxyribonucleic acid.
- 49) \_\_\_\_\_ are the functional units of heredity.
- A) Zygotes
  - B) Genes
  - C) Follicles
  - D) Gametes
- 50) Every cell in the normal human body has \_\_\_\_\_ pairs of chromosomes.
- A) 24
  - B) 23
  - C) 46
  - D) 48
- 51) A process through which DNA replicates itself so each newly formed cell is a genetic copy with the same hereditary information is called
- A) diffusion. TBEXAM.COM
  - B) meiosis.
  - C) translocation.
  - D) mitosis.
- 52) Which of the following is true of meiosis?
- A) It results in two cells, each with 46 chromosomes.
  - B) It reduces the number of chromosomes by half.
  - C) It refers to the addition of an extra 21st chromosome.
  - D) It represents the process by which the ovum and sperm combine.
- 53) Meiosis is a type of cell division in which
- A) nonsex cells divide and replicate DNA.
  - B) permanent alterations are made in genetic material.
  - C) sex cells end up with 23 chromosomes.
  - D) recessive disorders are passed on to female children.

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- 54) When sperm and ovum fuse at conception, they produce a zygote with \_\_\_\_\_ chromosomes.
- A) 28
  - B) 50
  - C) 23
  - D) 46
- 55) Which of the following is true of the sequence of bases in a gene?
- A) It tells the cells how to make the proteins that enable them to carry out specific functions.
  - B) It is meant to be a recipe for making a particular human.
  - C) It turns the gene on and off at different points in the development of an individual.
  - D) It has a double-helix structure and resembles a long, spiraling ladder.
- 56) In the context of the mechanisms of heredity, normal human females have \_\_\_\_\_ and normal human males have \_\_\_\_\_.
- A) an XY pairing of chromosomes; an XO pairing of chromosomes
  - B) an XY pairing of chromosomes; a YX pairing of chromosomes
  - C) two X chromosomes; an XO pairing of chromosomes
  - D) two X chromosomes; an XY pairing of chromosomes
- 57) \_\_\_\_\_ are chromosomes that are not related to sexual expression.
- A) Allosomes
  - B) Ribosomes
  - C) Lysosomes
  - D) Autosomes
- 58) How many pairs of autosomes do humans normally have?
- A) 22
  - B) 46
  - C) 44
  - D) 11
- 59) Which of the following statements about genetic transmission is true?
- A) The color of your hair and your height are both heritable traits that are not linked.
  - B) Dominant traits are expressed only if both copies of the gene are dominant.
  - C) Recessive traits are always expressed.
  - D) Most traits result from dominant inheritance.

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- 60) During the 1860s, Gregor Mendel laid the foundation for people's understanding of patterns of inheritance. Mendel's most important finding was that
- A) genes occur singly and not in pairs.
  - B) genes do not have fixed positions on chromosomes.
  - C) dominant traits are expressed only if both copies of a gene are recessive.
  - D) traits are transmitted independently of each other.
- 61) Genes that produce alternative expressions of a trait are called
- A) gametes.
  - B) alleles.
  - C) autosomes.
  - D) karyotypes.
- 62) Which of the following exemplifies a homozygous trait in a person?
- A) Briana has curly hair similar to that of her parents.
  - B) Connor has freckles like his father, whereas his mother has clear skin.
  - C) Jayden, a mixed-race child, takes after his Asian mother who does not have eyelid creases.
  - D) Nyle's blood type is AB, whereas his mother's and father's blood types are A and B, respectively.
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- 63) A spontaneous dominant mutation known as \_\_\_\_\_ results in dwarfism.
- A) toxoplasmosis
  - B) achondroplasia
  - C) bordetella
  - D) achlorhydria
- 64) An abnormal variant of a normal gene is called
- A) polygenic inheritance.
  - B) epigenesis.
  - C) multifactorial transmission.
  - D) inherited predisposition.
- 65) An individual's \_\_\_\_\_ consists of his or her observable traits; an individual's \_\_\_\_\_ is his or her underlying genetic makeup.
- A) dominant inheritance; recessive inheritance
  - B) dominant inheritance; homozygosis
  - C) incomplete dominance; phenotype
  - D) phenotype; genotype

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- 66) Petra wants to have an exact duplicate of herself. However, she needs to realize that although cloning can produce identical\_\_\_\_\_, it cannot produce identical\_\_\_\_\_.
- A) phenotypes; autosomes
  - B) phenotypes; genotypes
  - C) genotypes; phenotypes
  - D) autosomes; sex chromosomes
- 67) Louise's blue eyes and petite frame are the observable characteristics that comprise her
- A) alleles.
  - B) genetic imprint.
  - C) phenotype.
  - D) genotype.
- 68) When the police ask a witness to describe an assailant and the witness says that the assailant is tall with red, curly hair, the witness is describing the assailant's
- A) alleles.
  - B) genetic pattern.
  - C) phenotype.
  - D) genotype.
- 69) \_\_\_\_\_ is defined as a mechanism that turns genes on or off and determines the functions of body cells.
- A) Mitosis
  - B) Meiosis
  - C) Phagocytosis
  - D) Epigenesis
- 70) Birth disorders are the leading cause of infant death in the United States, accounting for\_\_\_\_ percent of infant deaths.
- A) 32
  - B) 45
  - C) 21
  - D) 15

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- 71) In the context of races and ethnicities, which of the following is a true statement about birth disorders?
- A) Hispanic infants report the highest rates of hypospadias.
  - B) Hispanic infants have a higher occurrence of neural tube and ear defects than do non-Hispanic white infants.
  - C) African American infants are more likely than others to have cleft lip or gastrointestinal abnormalities.
  - D) Asian American infants are at a higher risk for most birth defects than others.
- 72) Which of the following is NOT one of the four most prevalent birth defects?
- A) heart defects
  - B) cleft palate
  - C) hemophilia
  - D) club foot
- 73) Which of the following statements is true about the genetic or chromosomal abnormalities that are not apparent at birth and appear later?
- A) Huntington's disease results in excessive bleeding in males and typically appears during adolescence.
  - B) Cystic fibrosis is a condition that is most common in people of northern American descent.
  - C) Sickle-cell anemia is a metabolic disorder more common among Asian Americans and generally appears in infants between 3 to 4 months of age.
  - D) Tay-Sachs is a fatal degenerative disease of the central nervous system and is most common in Jews of eastern European ancestry.
- 74) Beta thalassemia is a birth defect that
- A) causes severe anemia, leading to weakness, fatigue, and frequent illness.
  - B) leads to respiratory failure.
  - C) leads to the overproduction of mucus, which collects in the lungs and digestive tract.
  - D) causes poor blood clotting.
- 75) At age 5, Krystal was diagnosed with an abnormality. Excess mucus was getting collected in her lungs and digestive tract, and she did not grow like other normal children her age. Given the information, she was most likely suffering from
- A) cystic fibrosis.
  - B) Down syndrome.
  - C) neural tube defects.
  - D) Huntington's disease.

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- 76) Which of the following is a blood disorder that is more common in African Americans than in other ethnic groups and does not generally appear until at least 6 months of age?
- A) Tay-Sachs disease
  - B) sickle-cell anemia
  - C) cystic fibrosis
  - D) thalassemia
- 77) Which of the following statements is true about phenylketonuria?
- A) It is best treated with the help of enzymes used to improve digestion.
  - B) It is most likely to be found in families of Mediterranean descent.
  - C) It is a metabolic disorder that results in intellectual disability.
  - D) It is an enzyme deficiency that is likely to lead to cirrhosis of the liver in early infancy.
- 78) Recessive defects are expressed only if a child is \_\_\_\_\_ for that gene.
- A) homozygous
  - B) hemizygous
  - C) azygous
  - D) heterozygous
- 79) Incomplete dominance is a pattern of inheritance in which
- A) multiple genes at different sites on chromosomes affect a complex trait.
  - B) a child receives identical recessive alleles, resulting in expression of a nondominant trait.
  - C) a child receives two different alleles, resulting in partial expression of a trait.
  - D) a child receives different alleles but only the dominant one is expressed.
- 80) Which of the following statements about inheritance of genetic defects is true?
- A) Males are less likely to be affected by any trait carried on the X chromosome.
  - B) Defects transmitted by recessive genes tend to be lethal at an earlier age in contrast to those transmitted by dominant genes as they can be passed down to the next generation by carriers.
  - C) Recessive defects are expressed only if a child is heterozygous for that gene.
  - D) Achondroplasia (a type of dwarfism) and Huntington's disease are disorders transmitted by recessive inheritance.

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- 81) Reza, a 2-day-old baby, has muscle weakness and is unable to move his limbs. His doctors perform a surgery to close his spinal canal and to place a shunt inside his brain to drain excess fluid. In the context of birth defects, Reza is likely to have
- A) spina bifida.
  - B) anencephaly.
  - C) Duchenne muscular dystrophy.
  - D) Tay-Sachs disease.
- 82) A pattern of inheritance in which certain characteristics carried on the X chromosome inherited from the mother are transmitted differently to her male and female offspring is called
- A) recessive inheritance.
  - B) dominant inheritance.
  - C) multifactorial inheritance.
  - D) sex-linked inheritance.
- 83) A pattern of inheritance in which multiple genes at different sites on chromosomes affect a complex trait is called
- A) multifactorial transmission.
  - B) incomplete dominance.
  - C) epigenesis.
  - D) polygenic inheritance.
- 84) Which of the following is true of Duchenne muscular dystrophy?
- A) It is caused by an incompletely closed spinal canal.
  - B) It is usually fatal in males, and death usually occurs in young adulthood.
  - C) Its symptoms include enlarged kidneys, respiratory problems, and paralysis.
  - D) It can be treated with antibiotics and physical therapy.
- 85) In the context of birth defects, which of the following is true of sickle-cell anemia?
- A) It is a metabolic disorder resulting in intellectual disabilities.
  - B) It increases the susceptibility of at-risk individuals to pneumonia and stroke.
  - C) Families of Mediterranean descent are primarily at risk for sickle-cell anemia.
  - D) Treatment for sickle-cell anemia involves regular blood transfusions with clotting factors.

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- 86) Which of the following statements is true about Klinefelter syndrome?
- A) It results in a webbed neck, low-set ears, and short stature.
  - B) It is caused by an extra female sex chromosome.
  - C) It results from a missing sex chromosome.
  - D) It is found only in females.
- 87) Which of the following is also called trisomy-21 because it is characterized in more than 90 percent of cases by an extra 21st chromosome?
- A) cystic fibrosis
  - B) Tay-Sachs disease
  - C) Down syndrome
  - D) sickle-cell anemia
- 88) Which of the following statements about Down syndrome is true?
- A) The cognitive functioning of children with Down syndrome is normal.
  - B) The conditions of children with Down syndrome can be improved with dietary changes.
  - C) Down syndrome is a sex-linked chromosomal disorder.
  - D) The risk of having a child with Down syndrome rises with the age of the mother.
- 89) The clinical service that advises prospective parents of their probable risk of having children with hereditary defects is known as
- A) genetic imprinting.
  - B) teratogenesis.
  - C) genetic coding.
  - D) genetic counseling.
- 90) In the context of heritability, if a pair of twins is said to be concordant, the twins are likely to
- A) attribute life to objects that are not alive.
  - B) make changes in their speech to match specific situations.
  - C) share a specific trait or disorder.
  - D) have accumulated differences in their genotypes.
- 91) Which of the following terms describes the tendency of twins to share the same trait or disorder?
- A) disposition
  - B) temperament
  - C) concordance
  - D) canalization

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- 92) In an attempt to study the degree to which genetics influences activity levels in newborns, a researcher compares monozygotic and dizygotic twins for their level of similarity on the "activity level" trait. This research study attempts to determine the \_\_\_\_\_ of the "activity level" trait.
- A) teratogenesis
  - B) genotype
  - C) karyotype
  - D) heritability
- 93) A heritability estimate of 0.5 percent indicates that
- A) both genes and the environment have an equal role in shaping a particular trait.
  - B) a particular trait has been shaped by factors other than the environment and genetics.
  - C) genes are 100 percent responsible for variances in a trait within a population.
  - D) the environment exclusively shaped a trait.
- 94) Although Roberto's adoptive parents are short in stature, he is tall like his biological mother. What might we conclude about Roberto's height?
- A) It is influenced primarily by environment.
  - B) It is influenced primarily by heredity.
  - C) It is primarily a result of incomplete dominance.
  - D) It is primarily a result of independent segregation.
- 95) Which of the following most clearly demonstrates the influence of environment?
- A) Georgio was adopted at birth and resembles his biological father and brother closely.
  - B) Sally was adopted when she was 2 years old, and she has developed a good vocabulary because her adoptive father encourages her to read.
  - C) Tanner and Taylor, identical twins, were separated at birth and have many similarities such as obesity, blood pressure, and left-handedness.
  - D) Shanika and Shakira are fraternal twins who were reared apart, and only Ann has high blood pressure.
- 96) Which of the following statements about monozygotic twins is FALSE?
- A) When monozygotic twins are less concordant on a trait than dizygotic twins, we see the likely effects of heredity.
  - B) Monozygotic twins share all their genes.
  - C) Monozygotic twins are twice as genetically similar, on average, as dizygotic twins.
  - D) Schizophrenia, autism, alcoholism, and depression tend to run in families and to show greater concordance between monozygotic twins than between dizygotic twins.

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- 97) In the context of making an estimate of the relative influence of genes and environment on a trait, identify a true statement about family studies.
- A) Researchers study twins that are raised in either their biological family or an adoptive family.
  - B) Researchers measure the degree to which biological relatives share certain traits.
  - C) Researchers look at similarities between adopted children and their adoptive families.
  - D) Researchers compare pairs of monozygotic, or identical, twins with same-sex dizygotic, or fraternal, twins.
- 98) Potential variability, depending on environmental conditions, in the expression of a hereditary trait is known as
- A) canalization.
  - B) concordance rate.
  - C) reaction range.
  - D) environmental interaction.
- 99) \_\_\_\_\_ is defined as a limitation on variance of expression of certain inherited characteristics.
- A) Canalization
  - B) Multifactorial transmission
  - C) Transduction
  - D) Mutation
- 100) \_\_\_\_\_ is the conventional term for a range of potential expressions of a hereditary trait.
- A) Canalization
  - B) Reaction range
  - C) Transduction
  - D) Karyotype
- 101) A strongly canalized trait is one that
- A) is easily influenced by environmental conditions.
  - B) is affected only by an extreme change in environmental conditions.
  - C) is manifested mostly in males.
  - D) is characterized by a large reaction range.

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- 102) Which of the following is true about canalized traits?
- A) Children the world over acquire reading skills at approximately the same time.
  - B) Personality is a highly canalized trait and is unaffected by the kinds of families children grow up in.
  - C) Cognition is a highly canalized trait and is independent of variations in experience.
  - D) Babies the world over reach language milestones at approximately the same time and in the same order.
- 103) \_\_\_\_\_ usually refers to the effects of similar environmental conditions on genetically different individuals.
- A) Teratogenesis
  - B) Genotype–environment interaction
  - C) Epigenesis
  - D) Phenotype–environment interaction
- 104) Children select experiences that are consistent with their genetic tendencies. In the context of genotype–environment correlations, this best describes a(n)
- A) active correlation.
  - B) passive correlation.
  - C) evocative correlation.
  - D) reactive correlation.
- 105) The environment often reflects or reinforces genetic differences. This tendency of certain genetic and environmental influences to reinforce each other is called
- A) environment–phenotype covariance.
  - B) genotype–environment correlation.
  - C) nonshared environmental effect.
  - D) shared environmental effect.
- 106) Chandra, a young adult, was interested in a career in research and decided to pursue it. She was very successful academically. She realized that she missed social interaction, so she decided to teach biology to high school students. The moment she entered her classroom, she knew that it was where she belonged. Which of the following terms best explains Chandra's development?
- A) passive genotype–environment correlation
  - B) normative genotype–environment correlation
  - C) reactive genotype–environment correlation
  - D) active genotype–environment correlation

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- 107) Vikram and Rajneesh are teenage siblings born two years apart who live with their parents and grandparents. Vikram loves long-distance running and spends many hours alone training for marathons. His brother Rajneesh is athletic, too, but is more extroverted and sociable, so he joins a local soccer league and organizes a monthly poker night with his favorite soccer teammates. Which of the following best explains the differences between the development of the siblings' talents and social lives?
- A) evocative correlations
  - B) nonshared environmental effects
  - C) canalizations
  - D) genotype–environment interaction
- 108) Which of the following types of genotype–environment correlations is only experienced by children raised by their biological parents?
- A) active correlations
  - B) passive correlations
  - C) evocative correlations
  - D) reactive correlations
- 109) \_\_\_\_\_ is defined as the unique environment in which each child grows up, consisting of distinctive influences or influences that affect one child differently than another.
- A) Nonshared environmental effect
  - B) Canalization
  - C) Genotype–environment interaction
  - D) Bioecology
- 110) Parents and siblings each treating a child differently is an example of a(n)
- A) reactive correlation.
  - B) nonshared environmental effect.
  - C) genotype-environment interaction.
  - D) genotype–environment correlation.
- 111) In the context of the ways in which inheritance and experience work together, which of the following is true of an evocative correlation?
- A) This response involves other people reacting to a child's genetic makeup.
  - B) This response illustrates how heredity restricts the range of development for some traits.
  - C) This response functions only when a child is living with a biologically related parent.
  - D) This response is most common among adolescents and adults.

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- 112) Which of the following statements about obesity is true?
- A) Studies indicate that up to 70 percent of the risk of obesity is genetic.
  - B) There is a specific genetic code for obesity.
  - C) Obesity is on the rise in Western countries solely because of a genetic vulnerability to obesity.
  - D) The risk of obesity is free of environmental risk factors.
- 113) Intelligence is a trait that is
- A) influenced by the effects of large numbers of genes working together.
  - B) determined by a relatively small number of recessive genes.
  - C) determined from the karyotype of the father.
  - D) characterized by a lack of plasticity toward extreme environmental features.
- 114) Sophia was adopted when she was a year old. If she takes an IQ test at the age of 16, her intelligence level is most likely to resemble that of her
- A) adoptive parents.
  - B) friends and peers.
  - C) biological parents.
  - D) adoptive siblings.
- 115) Which of the following is true of temperament?
- A) It is closely related to the age of parents during conception.
  - B) It lacks a genetic basis.
  - C) It appears to be largely inborn.
  - D) It is inconsistent over the years.
- 116) A neurological disorder that is characterized by loss of contact with reality; hallucinations and delusions; loss of coherent, logical thought; and inappropriate emotionality is known as
- A) dyslexia.
  - B) depression.
  - C) schizophrenia.
  - D) Down syndrome.
- 117) Many studies suggest that schizophrenia
- A) is characterized by a strong hereditary influence.
  - B) is seldom seen in family clusters.
  - C) is solely a result of environmental stress.
  - D) is caused by a single gene.

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- 118) Concordance rates for schizophrenia are highest
- A) for infants born in early summer.
  - B) between grandparents and grandchildren.
  - C) between monozygotic twin pairs.
  - D) between dizygotic twin pairs.
- 119) Simone and Kumar were both 19 years old when Simone conceived for the first time. During the third month of her pregnancy, Simone suffered trauma because of her elder brother's untimely death in a tragic road accident. After carrying the baby to term, Simone gave birth to a baby boy. The baby is at an increased risk of
- A) Tay-Sachs disease.
  - B) schizophrenia.
  - C) phenylketonuria.
  - D) polycystic kidney disease.

**SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.**

- 120) Describe how and when human conception normally occurs.

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- 121) The science of genetics is the study of heredity—the inborn factors from the biological parents that affect development. Define the function of each of the following terms, and explain their relationship to the mechanisms of heredity: DNA, chromosomes, and genes.
- 122) Define dominant inheritance, recessive inheritance, and polygenic inheritance and explain the significance of polygenic inheritance, including how it differs from the other two patterns of genetic transmission.

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- 123) What is Down syndrome? Explain how often it occurs. What challenges does a person with Down syndrome face?
- 124) Describe how researchers use family studies, adoption studies, and twin studies to investigate the heritability of traits.
- 125) Describe the role of heredity and environment in obesity, schizophrenia, and intelligence.

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## Answer Key

Test name: Chapter 02

- 1) FALSE
- 2) TRUE
- 3) FALSE
- 4) FALSE
- 5) TRUE
- 6) TRUE
- 7) FALSE
- 8) TRUE
- 9) TRUE
- 10) FALSE
- 11) TRUE
- 12) FALSE
- 13) FALSE
- 14) TRUE
- 15) FALSE
- 16) TRUE
- 17) TRUE
- 18) FALSE
- 19) TRUE
- 20) FALSE
- 21) FALSE
- 22) FALSE
- 23) TRUE
- 24) FALSE
- 25) TRUE
- 26) FALSE
- 27) FALSE
- 28) TRUE
- 29) TRUE
- 30) A
- 31) A
- 32) C
- 33) D
- 34) C
- 35) A
- 36) D
- 37) B

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- 38) D
- 39) B
- 40) C
- 41) D
- 42) C
- 43) B
- 44) B
- 45) A
- 46) D
- 47) C
- 48) D
- 49) B
- 50) B
- 51) D
- 52) B
- 53) C
- 54) D
- 55) A
- 56) D
- 57) D
- 58) A
- 59) A
- 60) D
- 61) B
- 62) A
- 63) B
- 64) D
- 65) D
- 66) C
- 67) C
- 68) C
- 69) D
- 70) C
- 71) B
- 72) C
- 73) D
- 74) A
- 75) A
- 76) B
- 77) C

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- 78) A
- 79) C
- 80) B
- 81) A
- 82) D
- 83) D
- 84) B
- 85) B
- 86) B
- 87) C
- 88) D
- 89) D
- 90) C
- 91) C
- 92) D
- 93) A
- 94) B
- 95) B
- 96) A
- 97) B
- 98) C
- 99) A
- 100) B
- 101) B
- 102) D
- 103) B
- 104) A
- 105) B
- 106) D
- 107) B
- 108) B
- 109) A
- 110) B
- 111) A
- 112) A
- 113) A
- 114) C
- 115) C
- 116) C
- 117) A

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118) C

119) B

120) Short Answer

Fertilization, or conception, is the process by which sperm and ovum—the male and female gametes, or sex cells—combine to create a single cell called a zygote, which then duplicates itself again and again by cell division to produce all the cells that make up a baby. At birth, a female is believed to have about 2 million immature ova in her two ovaries, each ovum in its own small sac, or follicle. In a sexually mature woman, ovulation occurs about once every 28 days until menopause. After being expelled from the ovary, the ovum is swept along through one of the fallopian tubes by tiny hair cells, called cilia, toward the uterus, or womb.

Sperm are produced in the testicles (testes), or reproductive glands, of a mature male at a rate of several hundred million a day and are ejaculated in the semen at sexual climax. Deposited in the vagina, they try to swim through the cervix (the opening of the uterus) and into the fallopian tubes, but only a tiny fraction make it that far. The nature of the sperm and the ovum that finally fuse together has tremendous implications for the person being conceived.

Fertilization typically occurs while the ovum is passing through the fallopian tube. If fertilization does not occur, the ovum and any sperm cells in the woman's body die. The sperm are absorbed by the woman's white blood cells, and the ovum passes through the uterus and exits through the vagina.

121) Short Answer

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The fundamental unit of heredity is a chemical called deoxyribonucleic acid (DNA). The double-helix structure of DNA resembles a long, spiraling ladder whose steps are made of pairs of chemical units called bases.

Chromosomes are coils of DNA that consist of smaller segments called genes and are found in every cell in the human body. Each gene has a specific location on its chromosome and contains thousands of bases. The sequence of bases in a gene tells the cell how to make the proteins that enable it to carry out its specific functions. The complete sequence of genes in the human body constitutes the human genome. The human genome is a reference point, or representative genome, that shows the location of all human genes.

122) Short Answer

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In dominant inheritance, when an offspring receives at least one dominant allele for a trait, it will be expressed. Recessive inheritance, or the expression of a recessive trait, occurs only when a person receives two recessive alleles, one from each parent.

Relatively few traits are determined simply through dominant or recessive inheritance. Most traits result from polygenic inheritance, the interaction of many genes. For example, there is not an "intelligence" gene that determines whether or not you are smart. Rather, a large number of genes work in concert to determine your intellectual potential.

Although single genes often determine abnormal traits, there is no single gene that by itself significantly accounts for individual differences in any complex behavior.

### 123) Short Answer

The most common genetic disorder in children is Down syndrome. It is responsible for about 40 percent of cases of moderate-to-severe intellectual disability. The condition is also called trisomy-21 because it is characterized in more than 90 percent of cases by an extra 21st chromosome. The most obvious physical characteristic associated with Down syndrome is a downward-sloping skin fold at the inner corners of the eyes.

Children with Down syndrome also tend to have slowed growth; poor muscle tone; congenital heart defects; thick hands; ear infections and early hearing loss; and impaired communication, language, memory, and motor skills.

### 124) Short Answer

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Heritability is a statistical estimate of how much heredity contributes to variations in a specific trait at a certain time within a given population.

In family studies, researchers measure the degree to which biological relatives share certain traits and determine whether or not the closeness of the familial relationship is associated with the degree of similarity. In other words, the more closely two people are related, the more likely they will be similar on a trait if that trait is indeed genetically influenced. Therefore, researchers use concordance rates on traits to infer genetic influences.

Adoption studies look at similarities between adopted children and their adoptive families and also between adopted children and their biological families. When adopted children are more like their biological parents and siblings in a particular trait (say, obesity), we see the influence of heredity. When they resemble their adoptive families more, we see the influence of environment.

Twin studies compare pairs of monozygotic, or identical, twins with same-sex dizygotic, or fraternal, twins. Monozygotic twins are twice as genetically similar, on average, as dizygotic twins. When monozygotic twins are more alike, or more concordant, on a trait than dizygotic twins, we see the likely effects of heredity. As an extension of this, twins raised in either their biological family or an adoptive family can be studied.

### 125) Short Answer

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Obesity is measured by body mass index, or BMI (comparison of weight to height). Children between the 85th and 95th percentiles are classified as overweight and those above the 95th percentile as obese. The risk of obesity is two to three times higher for a child with a family history of obesity, especially severe obesity. The kind and amount of food eaten in a particular home and the amount of exercise that is encouraged can increase or decrease the likelihood that a child will become obese. Obesity rates rise in countries with rapid socioeconomic growth and increases in gross domestic product. In Western countries, obesity likely stems from the interaction of a genetic predisposition with overeating, supersized portions, and inadequate exercise.

Heredity exerts a strong influence on general intelligence, as measured by intelligence tests, and a moderate effect on specific abilities such as memory, verbal ability, and spatial ability. While specific genes might contribute to intelligence, intelligence is influenced by the effects of large numbers of genes working together. Indirect evidence of the role of heredity in intelligence comes from adoption and twin studies. Adopted children's scores on standardized intelligence tests are consistently closer to the scores of their biological mothers than to those of their adoptive parents and siblings; monozygotic twins are more alike in intelligence than dizygotic twins. Intelligence also depends in part on brain size and structure, which are under strong genetic control.

Schizophrenia is an example of the interaction of heredity and genetics. Schizophrenia is a neurological disorder with a global lifetime prevalence rate of approximately 4 people per 1,000. It is characterized by loss of contact with reality; hallucinations and delusions; loss of coherent, logical thought; and inappropriate emotionality. Estimates of heritability range from 60 to 80 percent. A wide array of rare gene mutations, some of which involve missing or duplicated segments of DNA, may increase susceptibility to schizophrenia. However, monozygotic twins are not always concordant for schizophrenia, perhaps due to epigenetic processes. Researchers also have looked at possible nongenetic influences, such as a series of neurological insults in fetal life, exposure to influenza or rubella, or the mother's loss of a close relative in the first trimester of pregnancy. Infants born in urban areas or those whose mothers experienced obstetric complications or who were poor or severely deprived as a result of war or famine are at higher risk as are infants born during the winter months. Advanced paternal age is also a risk factor for schizophrenia, and there are indications that, at least for boys, very young fathers may put children at elevated risk as well.