Biol 119 Exam 3 A

Name_____

1) Human cells, with the exception of the gametes, reproduce by mitosis.
   A) True
   B) False

2) Mitosis in mammals usually takes less than an hour.
   A) True
   B) False

3) A short segment of DNA that contains the code or blueprint for one or more proteins is called a gene.
   A) True
   B) False

Match the following stages of interphase to their description.

4) phase during which the cell's DNA is duplicated

5) phase during which the cell prepares for cell division

6) phase during which most of the growth of a cell occurs

A) G_2

B) S

C) G_1

7) DNA is organized and arranged in the nucleus as
   A) the nucleolus
   B) chromosomes
   C) ribosomes
   D) histones
   E) mitotic spindles

8) Once an RNA molecule has been made from DNA, it enters the cytoplasm of the cell where it is used by the cell to produce a
   A) cell membrane
   B) carbohydrate
   C) fat
   D) nucleus
   E) protein

9) During DNA replication, which one of the following would pair with thymine?
   A) cytosine
   B) adenine
   C) guanine
   D) uracil
   E) another thymine

10) During the cell cycle, DNA replicates during the late G_1 phase.

A) True
B) False

11) Mutations in human DNA rarely impair normal cell function because

A) damaged cells commit "suicide" to prevent damage to the body
B) cells have one major repair enzyme that corrects the mutations quickly C) the cells attack dysfunctional gene products, averting damage to the cell D) repair of DNA prevents all mutations from ever causing damage to a cell
E) multiple DNA repair enzymes usually quickly correct the mutations before any damage can occur

12) How many codons are in the following sequence of nucleotides: AAAUGCUCGUAA?

A) 1 B) 4 C) 6 D) 3 E) 12

13) The processes of initiation, elongation, and termination that occur in the production of a protein is called.

A) translation
B) DNA replication
C) formation of an intact ribosome
D) processing of a fat in the endoplasmic reticulum
E) correction of a mutation

14) A codon is

A) a promoter that prevents the attachment of RNA polymerase
B) a type of DNA repair enzyme
C) a sequence of three nitrogenous bases on mRNA that corresponds to an amino acid
D) a sequence of three nitrogenous bases on tRNA that corresponds to an amino acid
E) the part of the ribosome to which mRNA attaches

15) Mitosis differs from meiosis in that only mitosis

A) results in the production of haploid cells
B) is preceded by interphase
C) involves the pairing of homologous chromosomes during prophase I
D) results in cells that are genetically identical to the original cell
E) involves two successive cell divisions

16) The process by which cells become specialized from one another is called

A) mitosis
B) differentiation
C) cleavage
D) meiotic specialization
E) pluripotency

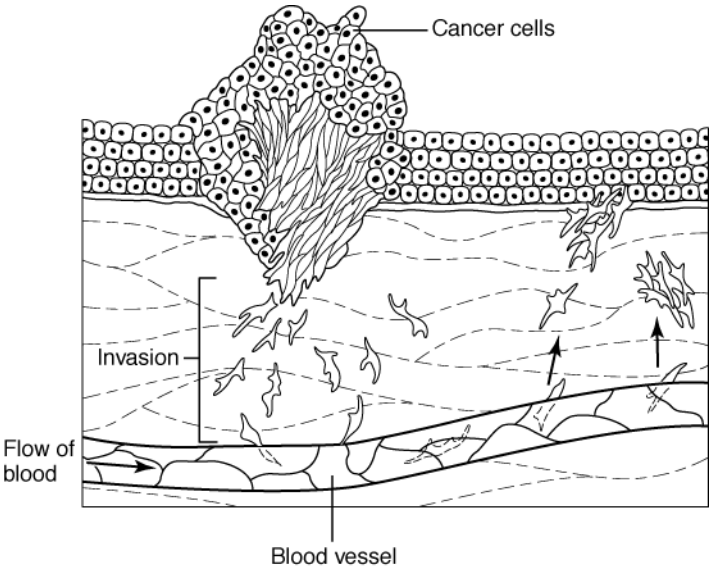
17) Cloning of human cells for the purpose of treating a patient is referred to as

A) somatic cell nuclear transfer
B) embryo splitting
C) therapeutic cloning
D) medicinal cloning
E) pluripotency

18) Damage to mutator genes increase the likelihood of cancers because the gene products of the normal genes repair DNA.
A) True
B) False

19) A mass of rapidly dividing cells that have potentially lost the ability to regulate cell division is called a
A) keratosis
B) neoplasm
C) metastasis
D) malignancy
E) angiogenesis

20) When a cancer remains in one location, it is referred to as
A) *in situ* cancer
B) benign
C) metastasis
D) dysplasia
E) hyperplasia



21) Which one of the following is shown in the figure above?
A) metastatic tumor
B) precancerous mass of cells
C) *in situ* cancer
D) benign tumor
E) death of a neoplasm

The following is a list of carcinogens. Match each to the type of cancer with which it is associated.

22) leukemia

23) lung cancer

24) cervical cancer

25) skin cancer

26) colon cancer

A) smoke

B) red meat and saturated animal fat

C) HTLV-1 virus

D) ultraviolet light

E) human papilloma virus

27) Any factor that can contribute to the conversion of a healthy cell into a cancerous one is known as
A) a carcinogen
B) a growth inhibitor
C) a tumor
D) a growth factor
E) regulatory genes

Match each of the following types of tumors to its description. Answers may be used more than once.

28) cells of the tumor invade normal tissues and metastasize

29) cells of the tumor resemble those of surrounding normal tissue

30) cells do not move to other locations in body; remain in initial tissues

31) cell mass is localized and surrounded by a connective tissue layer; cell structure is slightly abnormal

32) condition that continues to spread throughout the body, causing damage to several different organ systems; death often results

A) *in situ* tumor

B) malignant tumor

C) benign tumor

33) Free radicals produced during biochemical reactions can serve as carcinogens if they are NOT neutralized by
A) proto-oncogenes
B) antioxidants
C) growth factors
D) mutator genes
E) repair enzymes

34) Which one of the following types of cancer is preventable by a vaccine?
A) skin cancer
B) lung cancer
C) breast cancer
D) colon cancer
E) cervical cancer

35) The use of cancer-specific antigens to generate antibodies that target cancer cells is a process known as
A) immunotherapy
B) radiation therapy
C) antigenic loading
D) chemotherapy
E) angiogenesis

36) Common side effects associated with chemotherapy are due to
A) death of normal cells caused by the chemicals
B) change in blood pH caused by the chemicals
C) death of cancer cells and their subsequent removal from the body
D) fevers induced by the chemicals
E) destruction of RNA in most normal cells

37) Development of cancer in cells within lymph nodes is called
A) cervical B) keratosis C) *in situ* D) lymphoma E) leukemia

38) A Punnett square can be used to determine possible genotypes of offspring as well as possible genotypic and phenotypic ratios of the offspring given a particular combination of alleles.
A) True
B) False

39) Variations of homologous genes that result in differences in structure and function are
A) loci B) autosomes C) linked D) dominant E) alleles

40) If both alleles of a particular gene are identical, the person is said to be
A) heterozygous
B) phenotypic
C) genotypic
D) an identical twin
E) homozygous

41) The law of segregation states that
A) when different alleles for the same trait come together, one allele will be recessive to another
B) genes for different traits assort independently of each other during the formation of egg and sperm
C) different alleles for the same gene occupy unique loci on sister chromatids
D) when two identical alleles come together, complete dominance occurs in terms of phenotype
E) genes separate from each other during gamete formation so that each sperm and egg receive only one allele from each pair

42) The Punnett square is a useful tool for
A) predicting the level of crossing over that will occur during meiosis
B) determining which genes or traits assort independently during gamete formation
C) calculating how many mutations occur during DNA replication
D) determining the rate of segregation of alleles
E) predicting the ratios of possible genotypes of a particular combination of alleles

Based on the information below, answer the following two questions.
"The color of the four-o'clock flower is as follows:
homozygous dominant - red
homozygous recessive - white"

43) The flower color in this plant is inherited by incomplete dominance. If a flower homozygous dominant for flower color is crossed with a white flower, the color of the offspring flowers will be expected to be
A) all red
B) all white
C) all pink
D) 50% white and 50% pink
E) 50% white and 50% red

44) A father is blood type B and a mother is blood type A. They have a child with blood type O. What are the genotypes of the father and mother?
A) The father must be BO and the mother must be AA.
B) The father must be BO and the mother must be AO.
C) The father must be BB and the mother must be AA.
D) The father must be BB and the mother must be AO.
E) This isn't possible.

45) In polygenic inheritance,
A) the environment has no influence in phenotype expression
B) all traits are expressed as incomplete dominance
C) all individuals in the population are initially heterozygous for a particular trait
D) multiple alleles and genes contribute to a phenotype
E) the genotype makeup of individuals in a population is the only factor influencing phenotypes

46) The trend toward increased height and weight due to improved nutrition in certain human populations is an example of the effect of _____ on phenotypes.
A) genetic disorders
B) the environment
C) codominance
D) polygenic inheritance
E) gene linkage

47) A phenotypic trait is considered sex-linked when
A) the genes for the phenotype occur on X or Y chromosomes
B) a trait occurs only in males
C) the phenotype occurs only in females
D) the phenotype is expressed only after sexual intercourse
E) the phenotype is polygenic for both sexes

48) A couple has a daughter who is color-blind. The mother is not color-blind, but the father is. What is the genotype of the mother for this trait?
A) one dominant allele, one recessive allele
B) three dominant alleles
C) one abnormal Y chromosome, one normal X chromosome
D) two recessive alleles
E) two dominant alleles

49) A person born with Edwards syndrome has a genotypic condition identified as
A) trisomy 18
B) XO
C) nondisjunction
D) XXY
E) trisomy 21

Match each of the following disorders to the genotype with which it is associated.

50) one X chromosome; no Y or additional X chromosome

51) trisomy 18

52) XXY

53) trisomy 21

A) Down syndrome
B) Edwards syndrome
C) Klinefelter syndrome
D) Turner syndrome

54) Polygenic inheritance depends on gene products from multiple genes.
A) True
B) False

55) A deletion occurs when a piece of chromosome breaks off and is lost.
A) True
B) False