1. Which of the following is NOT a function of bones in humans?
1) to regulate temperature
2) to store minerals
3) to produce blood cells
4) to protect organs

2. Prokaryotes do NOT have:
1) cell membrane
2) nucleus
3) cytoplasm
4) genetic material

3. The carriers of oxygen in blood are cells called:
1) thrombocytes
2) lymphocytes
3) erythrocytes
4) leucocytes

4. Organisms remove metabolic wastes by the process of:
1) absorption
2) digestion
3) synthesis
4) excretion

5. The hormone calcitonin is secreted by:
1) thyroid gland
2) hypothalamus
3) parathyroid gland
4) anterior pituitary

6. Which order of terms is correct from the most complex to simplest?
1) organ systems - organisms - tissues - cells
2) organ systems - organs - tissues - cells
3) cells - tissues - organs - organ systems
4) organs - organ systems - organisms - tissues

7. The principal cation inside a cell is:
1) potassium $K^+$
2) proteins, amino acids, sulfate, phosphate
3) sodium $Na^+$
4) chloride $Cl^-$
8. Which of these complementary bonds of nucleotide pairs is found in the DNA molecule?
   1) guanine-cytosine
   2) adenine-cytosine
   3) adenine-guanine
   4) uracil-cytosine

9. Electromagnetic receptors are:
   1) photoreceptors in eye
   2) receptors of gustatory and olfactory systems
   3) muscle spindle
   4) organ of Corti in ear

10. Which of the following are the smallest (in diameter) of the blood vessels?
    1) arteries
    2) veins
    3) capillaries
    4) arterioles

11. Proteins are synthesized from less complex organic compounds known as:
    1) carbohydrates
    2) carbons
    3) enzymes
    4) amino acids

12. What kind of a gamete is NOT formed by an individual with AaBb genotype?
    1) Ab
    2) ab
    3) AB
    4) Aa

13. The nucleus is taken out of a somatic cell of an organism and is placed in an egg cell that has had its own nucleus removed. This process, which results in the production of genetically identical organism, is known as:
    1) crossing-over
    2) fertilization
    3) cloning
    4) binary fission

14. In humans, meiotic cell division occurs in specialized organs known as:
    1) gametes
    2) cell organelles
    3) gonads
    4) epididymis
15. Normal mitotic cell division results in each daughter cell having:
1) the same number but different types of chromosomes as the parent cell
2) half the number of chromosomes as the parent cell
3) twice the number of chromosomes as the parent cell
4) the same number and the same types of chromosomes as the parent cell

16. In a population with two alleles for a particular locus, A and a, the allele frequency of a is 0.4. What is the frequency of dominant homozygotes if the population is in the Hardy-Weinberg equilibrium?
1) 0.6
2) 0.48
3) 0.16
4) 0.36

17. Eukaryotic transcription is different from prokaryotic transcription, because:
1) eukaryotic transcription is parallel to its translation in time
2) eukaryotic transcription unit is an operon
3) eukaryotic mRNA is synthesized in cytoplasm
4) eukaryotic primary transcript undergoes RNA processing

18. The child has the blood group B. His mother has the blood group AB. What kind of genotype is IMPOSSIBLE to be the father's genotype?
1) AO
2) AA
3) OO
4) BB

19. Nukleotides ACG are paired with the nucleotides UGC:
1) when a rRNA codon pairs with an amino acid
2) during transcription
3) during replication
4) when a mRNA codon pairs with a tRNA anticodon

20. What is the probability that a heterozygote parent pair (Aa x Aa) will have a child with the recessive phenotype?
1) 25%
2) 50%
3) 100%
4) 75%

21. Testcross means this crossing:
1) PP x Pp
2) Pp x Pp
3) Pp x PP
4) Pp x pp
22. Which of the following vitamins is the most soluble in water?
1) B₂
2) A
3) K₃
4) D₂

23. Thomas Hunt Morgan discovered the fundamental principle of genetics:
1) the law of linked genes on the same chromosome
2) the law of codominant heredity of ABO blood group
3) the law of allele segregation into separate gametes
4) the law of conservation of genetic material in DNA

24. In Mendel's experiments, phenotypic ratio of the F2 generation is:
1) 1 : 2 : 1
2) 1 : 3 : 1
3) 3 : 1
4) 1 : 1

25. In humans, where does the process of chemical digestion begin?
1) mouth
2) stomach
3) small intestine
4) esophagus

26. In humans, oxygen-rich blood is carried from the lungs:
1) by the pulmonary veins to the left atrium of the heart
2) by the pulmonary arteries to the left ventricle of the heart
3) by the pulmonary veins to the left ventricle of the heart
4) by the pulmonary arteries to the left atrium of the heart

27. Which of these organelles is NOT found in the cytoplasm?
1) mitochondrion
2) smooth endoplasmic reticulum
3) Golgi apparatus
4) nucleolus

28. Prions are:
1) viruses in lysogenic phase
2) viruses causing AIDS
3) infectious virions
4) slow acting infectious proteins
29. Hemophilia is an X-linked recessive disease. A phenotypically normal man married a phenotypically normal woman. Their daughter is healthy but their son suffers from hemophilia. What can you say about the parents’ genotypes?
   1) father is a mutation carrier
   2) mother is a mutation carrier
   3) both parents are mutation carriers
   4) it must be a de novo mutation, because none of the parents is a mutation carrier

30. Genetic information of prokaryotes is included in:
   1) several linear DNA
   2) one linear DNA and plasmids
   3) one circular DNA and plasmids
   4) several circular DNA