

1. Human immunodeficiency virus (HIV) is:

- A) enveloped DNA virus without reverse transcriptase
- B) non-enveloped RNA virus with reverse transcriptase
- C) enveloped DNA virus with reverse transcriptase
- D) enveloped RNA virus with reverse transcriptase

2. Highly infective viral or bacterial pathogens are called:

- A) opportunistic
- B) symbiotic
- C) virulent
- D) parasitic

3. Pinocytosis is:

- A) cell uptake of solid particles
- B) cell uptake of droplets of extracellular fluid
- C) cell excretion of droplets of extracellular fluid
- D) cell excretion of solid particles

4. The structure of eukaryotic flagellum contains:

- A) proteins called flagellins
- B) proteins called lamelins
- C) proteins called kinesins
- D) proteins called tubulins

5. Function of rough endoplasmatic reticulum is:

- A) synthesis of lipids
- B) synthesis and secretion of proteins and glycoproteins
- C) sorting of all proteins in cell
- D) sorting and secretion of polysaccharides

6. G₀ phase of cell life cycle corresponds to:

- A) high proliferation phase
- B) preparation phase for mitosis
- C) synthesis phase, replication of DNA
- D) resting phase

7. Enzyme Primase is:

- A) DNA-dependent DNA polymerase
- B) DNA-dependent RNA polymerase
- C) RNA-dependent RNA polymerase
- D) RNA-dependent DNA polymerase

8. Introns are:

- A) non-coding regions of primary transcripts
- B) coding regions of primary transcripts
- C) non-coding regions of mRNAs
- D) coding regions of mRNAs

9. In Mendel's experiments the number of gamete types in trihybrid cross:

- A) 2
- B) 4
- C) 6
- D) 8

10. Thomas Hunt Morgan described:

- A) independent assortment of chromosomes
- B) gene linkage on the chromosome
- C) gene regulation in *Drosophila melanogaster*
- D) structure of sex chromosomes

11. The phenotype ratio of F₂ generation in Mendelian monohybrid cross for the incomplete dominance inheritance is defined as:

- A) 1 : 3
- B) 3 : 1
- C) 1 : 1
- D) 1 : 2 : 1

12. The human secondary oocyte, the result of meiosis I, contains:

- A) 23 chromosomes and 23 chromatids
- B) 23 chromosomes and 46 chromatids
- C) 46 chromosomes and 23 chromatids
- D) 46 chromosomes and 46 chromatids

13. The gene mutation caused by loss of two nucleotides leads to:

- A) loss of normal amino acid alignment behind the mutation
- B) loss of one amino acid at the protein level
- C) loss of two amino acids at the protein level
- D) loss of three amino acids at the protein level

14. Unbalanced rearrangements of chromosomes DO NOT include:

- A) reciprocal translocations
- B) isochromosomes
- C) deletions
- D) duplications

15. When there are two alleles on a gene (dominant A and recessive a), then the probability (p) of dominant phenotype is:

- A) pA
- B) pAA
- C) pAA + pAa
- D) pAa

16. In the population at equilibrium, on a gene with 2 alleles; the frequency of dominant allele is 60%, the frequency of recessive allele is 40%. What is the frequency of heterozygotes?

- A) 0.50
- B) 0.48
- C) 0.25
- D) 0.24

17. Which sequence of biological formations is from the most complex to the simplest ones?

- A) organ systems – organs – tissues – cells
 - B) cells – tissues – organs – organ systems
 - C) organ systems – organisms – tissues – cells
 - D) organs – organ systems – organisms – tissues
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18. Animal tissues fall into:

- A) three main categories
 - B) four main categories
 - C) five main categories
 - D) six main categories
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19. Nerve system originates from:

- A) mesoderm
 - B) endoderm
 - C) ectoderm
 - D) combined germ layers
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20. The human heart is composed for:

- A) single circulation
 - B) double circulation with mixed oxygenated and deoxygenated blood
 - C) double circulation with separated oxygenated and deoxygenated blood
 - D) quartet circulation with separated oxygenated and deoxygenated blood
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21. Muscles contraction:

- A) requires energy in the form of ATP
 - B) requires energy in the form of GTP
 - C) does not require energy
 - D) requires energy in the form of oxygen
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22. In the human kidney, the osmotic gradient, that concentrates the urine, is present in:

- A) the proximal tubule and the loop of Henle
 - B) the distal tubule and the collecting duct
 - C) the proximal and distal tubules
 - D) the loop of Henle and the collecting duct
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23. In the testes, nourishment of developing sperm is mediated through:

- A) Sertoli cells
 - B) Cowper's cells
 - C) follicular cells
 - D) Leydig cells
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24. The hormone glucagon is produce by:

- A) anterior pituitary
- B) thyroid gland
- C) adrenal glands
- D) Langerhans islets of pancreas

25. Which event DOES NOT correlate with sympathetic nervous activity?

- A) heartbeat acceleration
 - B) stimulation of intestinal peristalsis
 - C) pupil dilatation
 - D) secretion of adrenalin and noradrenalin
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26. Osmotic pressure:

- A) a measure of the tendency of a solution to take up glucose when separated from pure water by a selectively permeable membrane
 - B) a measure of the tendency of a solution to take up sodium when separated from pure water by a selectively permeable membrane
 - C) a measure of the tendency of a solution to take up kalium when separated from pure water by a selectively permeable membrane
 - D) a measure of the tendency of a solution to take up water when separated from pure water by a selectively permeable membrane
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27. The cochlea, the organ of hearing, has:

- A) the large vestibular and tympanic canals containing endolymph, and the small cochlear duct containing perilymph and the Organ of Corti
 - B) the large vestibular and tympanic canals containing endolymph and the Organ of Corti, and the small cochlear duct containing perilymph
 - C) the large vestibular and tympanic canals containing perilymph, and the small cochlear duct containing endolymph and the Organ of Corti
 - D) the large vestibular and tympanic canals containing perilymph and the Organ of Corti, and the small cochlear duct containing endolymph
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28. In the depolarization phase of the nerve action potential:

- A) Na gates are open
 - B) Li gates are open
 - C) Ca gates are open
 - D) Mn gates are open
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29. Blood plasma contains:

- A) 90% water and 10% dry matter
 - B) 80% water and 20% dry matter
 - C) 70% water and 30% dry matter
 - D) 60% water and 40% dry matter
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30. Water-soluble vitamin:

- A) A
- B) E
- C) Folic acid
- D) K