Sarajevo School of Science and Technology
Sarajevo, May 10, 2014

Entrance Exam

BIOLOGY (30 questions, 90 minutes)

Name: _____

Questions 1-22, circle the correct answer.

1. The most important bio-catalyzers in living systems are:

A. Hormones
B. Vitamins
C. Enzymes
D. Cytokines
E. Auxins

2. Fill in the words: A human gamete contains a _____ number of chromosomes, which is __ of them.

A. Haploid
B. Diploid
C. 24
D. 22
E. 46
F. 23

3. Transport tissues in plants are:

A. Sclerenchyma
B. Xylem
C. Collenchyma
D. Phloem
E. Periderm

4. This makes up about 50-55% of blood and is yellowish in color.

A. Leukocytes
B. Platelets
C. White blood cells
D. Plasma

5. Ecosystem includes:

A. Biocenosis
B. Temperature
C. Light
D. Humidity
E. All of the above.

6. DNA strand of 1200 nucleotides length codes for a protein containing:

A. 400 amino acids
B. 600 amino acids
C. 300 amino acids
D. 200 amino acids

7. Translation occurs in:

A. Ribosomes
B. Nucleolus
C. Chromosomes
D. Mitochondria

8. A human zygote is formed by:

A. Gametogenesis
B. Asexual reproduction
C. The union of male and female gamete.
D. The union of homologous chromosomes during meiosis.

9. Besides digestive juices pancreas produces hormone:

A. Adrenalin
B. Insulin
C. Trypsin
D. Pepsin

10. All lipids are:

A. Macromolecules
B. Made of carbon, oxygen, hydrogen and nitrogen
C. Water soluble
D. Not water soluble

11. The inner lining of the digestive tract is made up of what type of tissues?

A. Muscular
B. Nervous
C. Epithelial
D. Connective

12. Genes carry the hereditary information from one offspring to another. What organic compound in genes is specifically designed for this task?

A. Proteins
B. Enzymes
C. Lipids
D. Nucleic acids

13. How many ATP's do we get from glycolysis of one molecule of glucose?

A. 2 ATP's
B. 36 ATP's
C. 5 ATP's
D. 10 ATP's

14. What base occurs in RNA instead of the nitrogenous base thymine found in DNA:

A. Uracil
B. Cytosine
C. Guanine
D. Ribose

15. During transcription RNA polymerase has a role in:

A. Termination
B. Elongation
C. Initiation
D. All of the above

16. If the total amount of adenine and thymine in a double-stranded DNA is 45%, the amount of guanine in this DNA will be:

A. 22.5%
B. 27.5%
C. 45%
D. 55%

17. The sequences of cell cycle is:

A. S, M, G1, G2
B. G1, G2, S, M
C. M, G1, G2, S
D. G1, S, G2, M

18. In what phase of cell cycle does DNA replication occur:

A. G1
B. S
C. G2
D. Prophase

19. Ovulation is:

A. Ovarian cell development.
B. Maturation of the follicle.
C. The rupturing and releasing of fully developed ovarian cells.
D. Ovarian cell maturation.
E. Development of the follicle.

20. Ozone hole is greatest over:

A. India
B. Europe
C. Antartica
D. Africa

21. Light microscope capable of magnification up to 275 times was invented by:

A. Robert Hooke
B. Louis Pasteur
C. Antonie van Leeuwenhoek
D. Theodor Schwann

22. Complementary heterocyclic bases in the DNA chain are:

A. Adenine-Guanine
B. Thymine-Guanine
C. Guanine-Cytosine
D. Adenine-Cytosine
E. Adenine-Thymine

23-30. ***Match expressions 23-30 with its counterparts a - k (NOTE: There can be more then one per expression):***

a) Anticodon,
b) Part of the gene expression process,
c) Receiving and transferring the signal from the outside into the cell,
d) Photosynthesis,
e) Site of transcription,
f) Absorbs light,
g) DNA replication,
h) RNA to proteins,
i) Located in the cell membrane,
j) Copying one double-strand DNA molecule into two double-strand DNAs,
k) Centromere,
l) Formation of somatic cells.

23. Nucleus_____

24. Translation_____

25. Chromosomes_____

26. Receptor _____

27. Mitosis _____

28. Chlorophyll_____

29. DNA polymerase_____

30. tRNA _____