

# BIOLOGY

## ENTRY EXAMS

FOR THE MEDICAL DEGREE ENGLISH PROGRAM  
OF THE UNIVERSITY OF THESSALY

The Biology test for the entrance exam in the *Medical Degree English Program* is rigorously based on the IB (International Baccalaureate) Biology (Standard level) syllabus. It will thoroughly assess the following topics:

1. Cells (eukaryotes, prokaryotes)- Cell Theory
2. Cell ultrastructure
3. Membrane structure
4. Membrane transport
5. Cell division-mitosis
6. Macromolecules of life (DNA, RNA, proteins, lipids, carbohydrates)
7. DNA replication
8. Transcription
9. Translation
10. Genes
11. Chromosomes-Karyotype
12. Meiosis
13. Mendel laws and Inheritance
14. Natural selection and evolution

### Relevant Textbook:

Oxford IB Diploma Programme, Biology Course Book, Andrew Allott and David Mindorff (2014 edition) OXFORD University Press

### EXAMPLES OF TEST QUESTIONS

1. Which of the following is known as the powerhouse of a cell?
  - a) Mitochondria
  - b) Cytoplasm
  - c) Lysosome
  - d) Nuclei
2. Lysosomes are produced by which of the following cell organelles?
  - a) Mitochondria
  - b) Endoplasmic Reticulum
  - c) Golgi Complex
  - d) DNA

3. Which of the following cell organelle is responsible for transporting, modifying, and packaging proteins and lipids?
  - a) Mitochondria
  - b) Endoplasmic Reticulum
  - c) Golgi Complex
  - d) DNA
  
4. Which of the following cell doesn't contain a cell wall?
  - a) Plant cell
  - b) Bacteria
  - c) Fungi
  - d) Animal cell
  
5. In which of the following cell nucleus is not present?
  - a) Eukaryotic cell
  - b) Prokaryotic cell
  - c) Both of the above
  - d) None of the above
  
6. Which of the following organisms doesn't have a cell?
  - a) Virus
  - b) Bacteria
  - c) Fungi
  - d) Algae
  
7. The method of DNA replication is \_\_\_\_\_
  - a) conservative
  - b) semi-conservative
  - c) non-conservative
  - d) disruptive
  
8. Which of the following is the correct order of organization of genetic material from largest to smallest?
  - a) Genome, chromosome, gene, nucleotide
  - b) Nucleotide, gene, chromosome, genome
  - c) Gene, nucleotide, chromosome, genome
  - d) Chromosome, genome, nucleotide, gene
  
9. Which of the following codons is not a termination codon for protein synthesis?
  - a) UUU

- b) UAG
- c) UAA
- d) UGA

10. There are \_\_\_\_\_ major phases in a cell cycle.

- a) 1
- b) 2
- c) 3
- d) 4

11. Meiosis produces cells that have half the genetic content as their parent cells.

- a) True
- b) False

12. DNA replication occurs during \_\_\_\_\_ of the cell cycle.

- a) S phase
- b) Interphase
- c) G<sub>2</sub> phase
- d) G<sub>0</sub> phase

13. The genetic code is degenerate.

- a) True
- b) False

14. How many codons do not code for amino acids?

- a) 3
- b) 5
- c) 9
- d) 11

15. The chromosomal aberrations follow \_\_\_\_\_

- a) meiosis
- b) chromosomal breakage
- c) mitosis
- d) necrosis

16. Which is not a type of chromosomal aberration?

- a) mutations
- b) inversion
- c) translocation
- d) duplication

17. What is the intermediate between a gene and its polypeptide?

- a) rRNA
- b) tRNA
- c) mRNA
- d) siRNA

18. Promoter is a \_\_\_\_\_

- a) gene
- b) site on DNA
- c) site on RNA
- d) toxin

19. The first amino acid incorporated at the N-terminus of polypeptide is

- \_\_\_\_\_
- a) methionine
  - b) cysteine
  - c) tryptophan
  - d) valine

20. The nucleosome is composed of how many histone proteins?

- a) 7
- b) 9
- c) 8
- d) 10

### Answers

- 1. a
- 2. c
- 3. c
- 4. d
- 5. b
- 6. a
- 7. b
- 8. a
- 9. a
- 10. b
- 11. a
- 12. a
- 13. a
- 14. a

15. b

16. a

17. c

18. b

19. a

20. c