

1 - Which organelle contains the enzyme needed to synthesize ATP in the presence of oxygen?

- A) Centriole
- B) Flagellum
- C) Golgi
- D) Cytoplasm
- E) Mitochondrion

2 - Proteins are made from amino acids by the process of:

- A) Hydrolysis
- B) Pinocytosis
- C) Active transport
- D) Dehydration
- E) Synthesis

3 - Which of the following structures is the most closely associated with the breakdown of ingested material?

- A) Lysosomes
- B) Mitochondria
- C) Ribosomes
- D) Smooth ER
- E) Microtubules

4 - Which statement is TRUE for DNA?

- 1) It can be found in the cell nucleus
- 2) It can be found in the mitochondria
- 3) It can be found in the nucleolus of the cell
- 4) It can be found in some viruses
- 5) It can be found in bacteria

- A) 1,2,3,4,5      B) 1,2,3,4      C) 1,2,3      D) 1,2      E) 1

5 - Which type of bond is responsible for formation of the primary structure of protein?

- A) Peptide bond
- B) H-bond
- C) Ionic bond
- D) Glycosidic bond

6 - Which one of the following molecules is a purine base?

- A) Cytosine
- B) Guanine
- C) Thymine
- D) Uracil

7 - Which of the following carbohydrates yields two glucose molecules upon enzymatic hydrolysis?

- A) Cellulose
- B) Fructose
- C) Galactose
- D) Maltose

8 - Which of the following shows the correct path of protein synthesized on the ER?

- A) ER → nucleus → lysosomes
- B) ER → Golgi → lysosomes
- C) Golgi → lysosomes → ER
- D) Lysosomes → Golgi → ER

9 - A cell is isolated and found to contain ribosomes and circular DNA. This cell is...

- A) A bacterium
- B) A prokaryotic cell
- C) Both A and B are correct
- D) Both A and B are false

10 - The size of a bacterial cell is of the order:

- A)  $10^{-1}$  to  $10^{-2}$  mm
- B)  $10^{-2}$  to  $10^{-3}$  mm
- C)  $10^{-3}$  to  $10^{-4}$  mm
- D)  $10^{-4}$  to  $10^{-5}$  mm
- E) None of the answers is correct

11 - In the following three columns, cell constituents, biochemical component and biochemical functions are listed. Which of the triads has a meaning?

- |                                     |            |                   |
|-------------------------------------|------------|-------------------|
| A) Cytoplasm                        | Vitamin C  | Synthesis of RNA  |
| B) Vacuole                          | Methionin  | Glucose oxidation |
| C) Golgi apparatus                  | Chlorophyl | Synthesis of ATP  |
| D) Nucleus                          | Uracil     | Synthesis of RNA  |
| E) None of the triads is meaningful |            |                   |

12 - The nucleotide sequence of a DNA codon is GTA. A messenger RNA molecule with a complimentary codon is transcribed from the DNA. In the process of protein synthesis, transfer RNA pairs with the mRNA codon. Which is the nucleotide sequence of the tRNA anticodon?

- A) CAT
- B) CUT
- C) GUA
- D) CAU
- E) None of the answers is correct

13 - Please find the CORRECT pairs of milestone discoveries and scientist(s):

1. The model of DNA – J. Watson and F. Crick
2. Discovery of penicillin – A. Fleming
3. The theory of evolution by natural selection – C. Darwin and A. Wallace
4. Prevention of anthrax, chicken cholera and rabies – Louis Pasteur
5. Discovery for laws of heredity – Paul Ehrlich

A) 1,3,4              B) 1,2,3              C) 1,3              D) 1,2              E) 1,2,3,4

14 - Which statement is not true about cell organelles?

- A) Outer surface of the rough endoplasmic reticulum is covered in ribosomes
- B) There is always only one nucleus in every eukaryotic cell
- C) The chloroplasts convert light energy into chemical energy
- D) Cytoplasm = cell content inside the cell membrane except nucleus
- E) Mitochondria are always outside the nucleus, but within the cell

15 - The mitotic spindle first appears during

- A) Prophase
- B) Metaphase
- C) Anaphase
- D) Telophase
- E) None of the answers is correct

16 - During mitosis, chromosomes begin to separate during

- A) Prophase
- B) Metaphase
- C) Anaphase
- D) Telophase
- E) None of the answers is correct

17 - Plants are part of a group known as a

- A) Genus
- B) Family
- C) Kingdom
- D) Species
- E) None of the answers is correct

18 – Chromatin contains

- A) DNA and proteins
- B) DNA and structural polysaccharides
- C) RNA and proteins
- D) DNA and glucoproteins
- E) Amino acids as monomers

19 - Which of the following cell structures contain(s) microtubules?

- A) Chromosomes
- B) Lysosomes
- C) Centrioles
- D) Mitochondria
- E) Endoplasmic reticulum

20 - Which of the following statements is FALSE?

- A) Polypeptide chains are built up from amino acids
- B) Starch is built up from glucoses
- C) Cellulose is built up from glucoses
- D) Glycogen is built up from glucoses
- E) Phospholipids are built up from glycerol and 3 fatty acids

Which statement is TRUE for the rough endoplasmic reticulum (rER)?

1. It carries numerous ribosomes, which give it its rough appearance
2. Ribosomes synthesize proteins on the surface of rER
3. Proteins are transported to the rER for synthesis from the Golgi
4. Its abundance in a cell reflects increased protein synthesis
5. It is the site of translation from mRNA to a polypeptide chain

A) 1,2,3,4,5      B) 1,2,3,4      C) 1,2,3      D) 1,2,4,5      E) 1