

Model Questions

Biochemistry Olympiad – 2010 University of Dhaka H.S.C./A-level

(A Bengali version of the question paper will be provided in the final examination)

Directions: Each of the questions or incomplete statements below is followed by four suggested answers or completions. Select the best answer in each case. Answer **All** questions:

1. Which of the following statements is not true:
- (a) Viruses contain DNA or RNA
 - (b) The nucleic acid of a virus is surrounded by a protein coat.
 - (c) Viruses multiply inside living cells using viral mRNA, tRNA and ribosomes.
 - (d) Viruses cause the synthesis of specialized infectious elements.

Answer: (c)

2. Increased level of aldosterone causes_____.
- (a) Decrease in reabsorption of Na^+
 - (b) Decrease in blood volume
 - (c) Decrease in reabsorption of Cl^-
 - (d) Decrease in urine volume

Answer: (d)

3. The genotypic ratio, according to Mendel's 1st law (Law of Segregation) is_____.
- (a) 2:1:3
 - (b) 1:2:1
 - (c) 9:3:3:1
 - (d) 3:1

Answer: (d)

4. Which of the following is not true for Krebs cycle:
- (a) Known as citric acid cycle
 - (b) Gives total of 24 ATPs from one molecule of glucose
 - (c) Is a mitochondrial reaction cycle
 - (d) Two molecules of CO_2 is produced from one molecule of glucose.

Answer: (d)

5. Which of the followings do not contain nucleus?
- (a) Hepatocytes
 - (b) Neurons

- (c) Erythrocytes
- (d) Leukocytes

Answer: (c)

6. "Cells undergo a definite number of cell division" – this statement is not appropriate for_____.
- (a) Rapidly dividing cells
 - (b) Cancerous cells
 - (c) Germ cells
 - (d) All of the above

Answer: (b)

7. Centrosome is duplicated in which stage of the cell division?
- (a) Telophase
 - (b) Metaphase
 - (c) Anaphase
 - (d) Interphase

Answer: (d)

8. Which process is involved in reproduction of single celled organism?
- (a) Mitosis
 - (b) Meiosis
 - (c) Both
 - (d) None of the above

Answer: (a)

9. One of a series of different forms of a gene is known as_____.
- (a) Allele
 - (b) Locus
 - (c) Factor
 - (d) Block

Answer: (a)

10. The range of p^H in blood is_____.
- (a) 7.2 - 7.4
 - (b) 7.0 - 8.0
 - (c) 6.3 - 6.5
 - (d) 8.2 - 8.4

Answer: (a)

11. The systolic pressure of a healthy person is-
- (a) 80 mm Hg
 - (b) 90 mm Hg
 - (c) 95 mm Hg
 - (d) 120 mm Hg

Answer: (d)

12. Which one is not an excretory organ?
- (a) Kidney
 - (b) Liver
 - (c) Digestive tract
 - (d) Lungs

Answer: (c)

13. Which of the following organelles is not present in animal cells?
- (a) Nucleus
 - (b) Vacuole
 - (c) Lysosome
 - (d) Golgi body

Answer: (b)

14. The largest organ in human body is_____.
- (a) Liver
 - (b) Kidney
 - (c) Heart
 - (d) Pancreas

Answer: (a)

15. The natural occurring amino acids are_____.
- (a) L-form
 - (b) D-form
 - (c) Racemic (DL)-form
 - (d) None of the above

Answer: (a)

16. How does insulin decrease blood glucose level?
- (a) By break down of glucose
 - (b) By stimulating excretion of glucose
 - (c) By increasing cellular uptake of glucose
 - (d) All of the above

Answer: (c)

17. Which type of cells is responsible for producing antibody?
- (a) T-lymphocytes only
 - (b) B-lymphocytes only
 - (c) Both T- and B- lymphocytes
 - (d) None of the above

Answer: (b)

18. The pH of lysosome is_____.
- (a) Acidic
 - (b) Basic
 - (c) Neutral
 - (d) None of the above

Answer: (a)

19. Feminine characteristics are developed due to_____.
- (a) Testosterone
 - (b) Luteinizing hormone
 - (c) Estrogen
 - (d) Aldosterone

Answer: (c)

20. Write down whether the following statements are *TRUE* or *FALSE*; if *FALSE* then correct the statement without using negatives or *vice-versa*.

- (a) The amount of energy released in anaerobic respiration is less than that of aerobic respiration. (TRUE)
- (b) Autotrophic organisms obtain their food from other organisms. (FALSE)

Correct: Autotrophic organisms produce their own food

- (c) In DNA structure, base pairings are occurred between adenine (A): cytosine (C) and guanine (G): thymine (T). (FALSE)

Correct: In DNA structure, base pairings are occurred between A:T and G:C

- (d) The term 'voluntary muscle' refers to the movement according to our will. (TRUE)
- (e) Schwann cells are responsible for formation of myelin sheaths. (TRUE)

21. Match the terms below (a-s) to the descriptions that follow (i-v). Each description may be used once, more than once, or not at all.

Terms:

- (a) Insulin; (b) Hypothalamus; (c) Acetylcholine; (d) Glycogenolysis
(e) Anabolism; (f) Catabolism; (g) Glycolysis; (h) Krebs cycle
(i) Bacteria; (j) Fungi; (k) Virus; (l) Ligase enzyme
(m) Restriction enzyme; (n) Hyperglycemia; (o) Hypoglycemia; (p) Vector
(q) Plasmid; (r) Gene; (s) Electron Transport Chain

Descriptions:

- (i) Maintains normal blood glucose level / Answer: (a)
(ii) Acetyl-CoA links glycolysis with / Answer: (h)
(iii) Antibiotics are efficient against / Answer: (i)
(iv) Blood glucose concentration increased in / Answer: (n)
(v) Generally used as the vector of gene cloning / Answer: (q)