

## Model Questions

### Biochemistry Olympiad - 2010 University of Dhaka S.S.C./O-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:

Question 1: Matter has \_\_\_\_\_.

- (a) no mass but occupies space
- (b) mass but occupies no space
- (c) mass and occupies space
- (d) no mass and occupies no space

Answer: (c)

Question 2: In gases, particles vibrate \_\_\_\_\_.

- (a) about their mean position
- (b) about a vertical axis
- (c) about a horizontal axis
- (d) in any direction

Answer: (a)

Question 3: A property not possessed by a fluid is \_\_\_\_\_.

- (a) it can flow
- (b) it has mass
- (c) it has a definite shape
- (d) can be perceived by our senses

Answer: (c)

Question 4: A solid that sublimates on heating is \_\_\_\_\_.

- (a) sodium chloride
- (b) copper sulphate
- (c) lead sulphate
- (d) ammonium chloride

Answer: (d)

Question 5: Temperature is a measure of:

- (a) total kinetic energy of molecules
- (b) total potential energy of molecules
- (c) average potential energy of molecules
- (d) average kinetic energy of molecules

Answer: (a)

Question 6: Carbon-12 atom has:

- (a) 6 electrons, 6 protons, 6 neutrons
- (b) 6 electrons, 12 protons, 6 neutrons
- (c) 12 electrons, 6 protons, 6 neutrons
- (d) 18 electrons, 6 protons and 6 neutrons

Answer: (a)

Question 7: An element has an electronic configuration: 2, 8, 7. Its valency is:

- (a) 1
- (b) 7
- (c) 17
- (d) 8

Answer: (a)

Question 8: Formation of lead and bromine from lead bromide is an example of:

- (a) decomposition reaction
- (b) synthesis reaction
- (c) displacement reaction
- (d) neutralisation reaction

Answer: (a)

Question 9: The main cause of rancidity in foods is:

- (a) Bacteria
- (b) Proteins
- (c) Antioxidants
- (d) Oxidation of fatty acid molecules

Answer: (d)

Question 10: In the equation

$\text{PbO}_2 + 4\text{HCl} \rightarrow \text{PbCl}_2 + 2\text{H}_2\text{O} + \text{Cl}_2$ , the substance undergoing oxidation is \_\_\_\_\_.

- (a) lead dioxide
- (b) hydrochloric acid
- (c) hydrogen
- (d) lead chloride

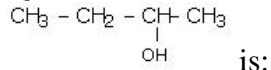
Answer: (b)

Question 11: Which of the following statements is not applicable to carbon compounds?

- (a) They have low melting and boiling points.
- (b) They are ionic in nature.
- (c) They form homologous series.
- (d) They are generally soluble in organic solvents.

Answer: (b)

Question 12: IUPAC name of



is:

- (a) propanol
- (b) butanol
- (c) 2-butanol
- (d) isobutanol

Answer: (c)

Question 13: Micelles are \_\_\_\_\_.

- (a) aggregates of amino acids
- (b) drops of oil or dirt that surrounds the molecule
- (c) a tadpole shaped fatty acid
- (d) cluster of soap molecules surrounding the dirt particle

Answer: (d)

Question 14: A diamond does not conduct electricity because:

- (a) its structure is very compact.
- (b) only carbon atoms are present in its structure.
- (c) there are no free electrons.
- (d) it is crystalline in nature.

Answer: (c)

Question 15: Which of the following statements is not true?

- (a) Alkali dissolve in water to form solutions with  $\text{P}^{\text{H}}$  greater than 7
- (b) Not all alkali are soluble in water
- (c) The products of neutralization are water and salt
- (d) When an alkali solution is neutral, there are equal numbers of hydroxide and hydronium ions

Answer: (b)

Question 16: Which of the followings is not an organic compound?

- (a) Vinegar    (b) Quick lime    (c) Petrol    (d) Wood

Answer: (b)

Question 17: Artificial silk is produced from-

- (a) Ethanoic acid
- (b) Propanoic acid
- (c) Methanoic acid
- (d) Butyric acid

Answer: (a)

Question 18: Vacuoles (in plant cells) \_\_\_\_\_.

- (a) produce energy for the cell
- (b) synthesize proteins
- (c) defend the cell
- (d) provide turgidity and rigidity to plant cells

Answer: (d)

Question 19: The organelle not present in animal cells is \_\_\_\_\_.

- (a) plastid
- (b) centrosome
- (c) nucleus
- (d) mitochondria

Answer: (a)

Question 20: Exchange of gases in higher plants takes place through \_\_\_\_\_.

- (a) lenticels
- (b) roots
- (c) stomata
- (d) stem

Answer: (c)

Question 21: Photosynthesis is \_\_\_\_\_.

- (a) a catabolic reaction
- (b) an anabolic reaction
- (c) an energy releasing reaction
- (d) none of the above

Answer: (b)

Question 22: Auxins are:

- (a) vitamins
- (b) enzymes
- (c) proteins
- (d) hormones

Answer: (d)

Question 23: Lack of magnesium in plants \_\_\_\_\_.

- (a) causes young leaves to wilt
- (b) causes leaves to turn dark green
- (c) increases starch production
- (d) reduces chlorophyll formation

Answer: (d)

Question 24: The part of the digestive system where no digestion takes place is \_\_\_\_\_.

- (a) mouth
- (b) oesophagus
- (c) ileum

(d) stomach

Answer: (b)

Question 25: Cramps are caused by heavy exercise resulting in the accumulation of \_\_\_\_\_.

(a) carbon dioxide

(b) lactic acid

(c) ethanol

(d) heat

Answer: (b)

Question 26: Which of the following are the stages of respiration in the correct order?

(a) gaseous transport, breathing, tissue respiration and cellular respiration

(b) breathing, gaseous transport, tissue respiration and cellular respiration

(c) breathing, gaseous transport, cellular respiration and tissue respiration

(d) breathing, tissue respiration, cellular respiration and gaseous transport

Answer: (b)

Question 27: Adrenaline increases \_\_\_\_\_.

(a) heart rate

(b) blood pressure

(c) amount of glucose in blood

(d) all the above

Answer: (d)

Question 28: All the energy that passes along a food chain comes originally from:

(a) oxygen

(b) carbon dioxide

(c) glucose

(d) light

Answer: (d)

Question 29: Which of the followings is not a renewable source of energy?

(a) hydroelectric power

(b) tidal power

(c) coal

(d) wave power

Answer: (c)

Question 30: Which gas is responsible for the depletion of the ozone layer?

(a)  $\text{SO}_2$

(b) CFC

(c) CO

(d)  $\text{NH}_3$

Answer: (b)

Question 31: In which stage of the cell division the chromosomes move from centre to pole of the spindle?

- (a) Metaphase
- (b) Anaphase
- (c) Telophase
- (d) Pro-metaphase

Answer: (b)

Question 32: How many pairs of autosomes are present in human body?

- (a) 23 pairs
- (b) 22 pairs
- (c) One pair
- (d) 24 pairs

Answer: (b)

Question 33: Which of the followings is made of protein and nucleic acid only?

- (a) Bacterium
- (b) Fern
- (c) Virus
- (d) Algae

Answer: (c)

Question 34: Where does electron transport chain take place?

- (a) Golgi apparatus
- (b) Cytoplasm
- (c) Mitochondria
- (d) Chloroplast

Answer: (c)

Question 35: Which of the followings is not a phytohormone?

- (a) Abscisic acid
- (b) Ethanol
- (c) Dormin
- (d) Auxin

Answer: (b)

Question 36: Which of the followings is a disaccharide?

- (a) Cellulose
- (b) Galactose

- (c) Maltose
- (d) Fructose

Answer: (c)

Question 37: Which of the followings is storage-food in animal cell?

- (a) Glucose
- (b) Starch
- (c) Glycogen
- (d) Cellulose

Answer: (c)

Question 38: The finger like projections found in small intestine is called-

- (a) Villi
- (b) Rugae
- (c) Alveoli
- (d) Ligament

Answer: (a)

Question 39: Insulin is synthesized in\_\_\_\_\_.

- (a) Liver
- (b) Pancreas
- (c) Small intestine
- (d) Stomach

Answer: (b)

Question 40: Which of the followings is a water-soluble vitamin?

- (a) Vitamin-A
- (b) Vitamin-E
- (c) Vitamin-D
- (d) Vitamin-C

Answer: (d)

Question 41: Which of the followings is the major energy fuel for the brain?

- (a) acetate
- (b) lactate
- (c) glucose
- (d) glycine

Answer: (c)

Question 42: Human genome contains \_\_\_\_\_ base pairs.

- (a) 2.2 billion
- (b) 3.2 billion
- (c) 4.2 billion
- (d) 5.2 billion

Answer: (b)

Question 43: Which of the following statements is false?

- (a) Mutation may delete a portion of DNA
- (b) Mutation may cause change in base pairs of DNA
- (c) A mutated gene may produce functional protein
- (d) Mutation can never be a reversible process

Answer: (d)

Question 44: Matured red blood cells (RBC) do not contain-

- (a) Golgi apparatus
- (b) Glycophorin C
- (c) Nucleus
- (d) Hemoglobin

Answer: (c)

Question 45: Which virus is responsible for tumor?

- (a) T<sub>2</sub> phage
- (b) Dengue virus
- (c) Influenza virus
- (d) Papilloma

Answer: (d)

Question 46: The most dangerous ultraviolet ray is-

- (a) UV-B
- (b) UV-C
- (c) UV-A
- (d) UV-D

Answer: (b)

Question 47: Fill in the blanks by selecting appropriate term(s) from the followings:

- (A) Night blindness
- (B) Scurvy
- (C) Rickets
- (D) Beriberi
- (E) Calcium

- (F) Vitamin-K
- (G) Iron
- (H) Hemoglobin
- (I) Myoglobin
- (J) Sucrose
- (K) Starch
- (L) Osteoporosis

- (i) \_\_\_\_\_ is present in muscle and can store oxygen. Answer: (I)
- (ii) \_\_\_\_\_ is found in sugar cane. Answer: (J)
- (iii) Deficiency of vitamin-A causes \_\_\_\_\_. Answer: (A)
- (iv) \_\_\_\_\_ helps in clotting blood. Answer: (E)
- (v) Oxygen is carried to different parts of the body via \_\_\_\_\_. Answer: (H)