



4	(a) ionic form	(b) ligands	(c) covalent compounds	(d) ionic form and ligands
5	Harmful trace elements include.....			
	(a) Cd and Co	(b) Cd and Hg	(c) Hg and Co	(d) Hg and Cu
6	Transferrin is a carrier protein for transport of the following elements			
	(a) Fe, Cr, Co, Mn	(b) Fe, Cr, Co, Zn	(c) Fe, Cr, Mn, Zn	(d) Fe, Cu, Mn, Zn
7	Mucosal cell sloughing is the normal routes for excretion of			
	(a) Mo, Zn	(b) Fe, Zn	(c) Mo, Fe	(d) Mn and Zn
8	Enzymes are.....			
	(a) lipids	(b) proteins	(c) carbohydrates	(d) nucleic acids
9	Which of the following binds to the active sites of an enzyme?			
	(a) water	(b) product	(c) substrate	(d) any other enzyme
10	The element that effects on kidneys, fertility, nervous system and heart is.....			
	(a) Pb	(b) Cd	(c) Hg	(d) As

Year: Environmental Sciences/Chemistry program students in Environmental Chemistry-2
(2023/2024)

the questions: (Total Marks: 60)

1. Choose the correct answer from the following:

(30 Marks)

1. The direction of gas movement in the blood is determined by

- (a) partial pressure difference (b) pH (c) temperature

2. The most abundant part of vitamins is

- (a) Chromium (b) Copper (c) Cobalt

3. The essential elements for homeostatic balance are

- (a) Ca, K (b) Ca, Na (c) Mg, Na

4. Which of the following molecules can move directly through the cell membrane

- (a) H_2O and H_2O (b) CO_2 and K^+ (c) H_2O and K^+ (d) K^+ and Ca^{2+}

5. Which of the following are ion transport mechanisms except

- (a) transport (b) ion channel transport (c) ion carrier transport (d) ion pump transport

6. When alkali tension is high, the hemoglobin will

- (a) load faster (b) load oxygen slowly (c) show no change (d) does not load oxygen

Find attached exam for 2nd
Date: (Answer sheet 2023/2024)

Answer all the following

Question 11: (30 marks)

Choose the correct answer

- The direction of gas movement in the blood is determined by
 - partial pressure difference
 - pH
 - temperature
 - any other factor
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 - Cobalt
 - any other element
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14	Which is the source of energy used to power the sodium-potassium pump?				
(a)	formation of ATP	(b)	breakdown of ATP	(c) transport of ATP	(d) breakdown of GTP
15	The molecule which transport vitamin B ₁₂ into cells is				
(a)	transcobalamine I	(b)	transcobalamine II	(c) transcobalamine III	(d) transcobalamine IV
16is used in production of thyroid hormones				
(a)	Iron	(b)	Iodine	(c) Indium	(d) Iridium
17	The sodium-potassium pump functions to pump				
(a)	Na ⁺ out and K ⁺ into the cell	(b)	Na ⁺ into and K ⁺ out the cell	(c) Na ⁺ and K ⁺ out of the cell	(d) Na ⁺ and K ⁺ into cell
18is important for body growth, and plays part in immune system				
a)	Iron	(b)	Sodium	(c) Calcium	(d) Zinc
19	The element that reduces aging action of free radicals is				
a)	sodium	(b)	selenium	(c) chromium	(d) calcium
20	The bile is the normal routes of excretion of				
(a)	Co, Cr, Mo, Zn	(b)	Cu, Mn, Cr, Zn	(c) Mo, Zn, Mn, Cr	(d) Co, Cr, Cu, Mn
21	Absorption of iron enhanced by				
a)	succinate	(b)	phytates	(c) tannic acid	(d) oxalate
22	2000 to 5000 µg of stored vitamin B12 in.....				
a)	Mucosal cell	(b)	blood	(c) heart	(d) liver
23	Factors that increase release of oxygen by hemoglobin				
a)	increase of T, PCO ₂ , pH, PBG	(b)	decrease of T, PCO ₂ , pH, PBG	(c) increase T, PCO ₂ , PBG and decrease pH	(d) increase of pH and decrease of T, PCO ₂ , PBG
24	Transcobalamine I and III are secreted by.....				
a)	red blood cells	(b)	white blood cells	(c) Mucosal cells	(d) white and red blood cells
25	Valinomycin is the selective ionophore for				
a)	K ⁺ and H ⁺	(b)	Na ⁺ and K ⁺	(c) Na ⁺ and Li ⁺	(d) NH ₄ ⁺ and Ca ⁺⁺
26	Each Hb molecule binds four oxygen molecules in				
(a)	a rapid and reversible process	(b)	a rapid and irreversible process	(c) a slow and reversible process	(d) a slow and irreversible process
27	Ferritin store iron in				
a)	liver	(b)	heart	(c) liver and heart	(d) heart and other organs
28	When like charged ions are transported in opposite directions, this is called.... transport				
a)	antiport	(b)	uniport	(c) symport	(d) asymport
29	Transferrin is the carrier protine for				
a)	Cu, Zn, Cr, Mn	(b)	Ca, Fe, Mn, Zn	(c) Fe, Cr, Mn, Zn	(d) Cr, Mn, Zn, Co
30	Sweat is the normal rout for excretion of				
a)	Cu	(b)	Mn	(c) Co	(d) Zn

Question [2]:(30 Marks)

- a) **Why** are certain metal ion involved in specific function? [9 Marks]
- b) **Compare** between **active** and **passive** transport. [9 marks]
- c) **Illustrate** by drawing only, **one** of the following: [6 Marks]
- i. Enzyme reaction mechanism.
 - ii. The role of vitamin B12 in Methionine synthesis.
- d) **Give the Scientific term for the following:** [6 marks]
- i. is a condition caused by the over-absorption of iron from foods that be consumed, leading to an excessive concentration of iron in blood.
 - ii. The lower the PO_2 and hemoglobin saturation with oxygen, the more carbon dioxide can be carried in the blood.
 - iii. molecules using energy to transport ions in one direction through a membrane.
 - iv. channels that open or close in response to changes in membrane potential
 - v. is the protein contained in red blood cells that is responsible for delivery of oxygen to the tissues.
 - vi. Is a complex of iron with phosphate and hydroxide, formed when the capacity for storage of iron in ferritin is exceeded.

Best wishes

Prof. Dr. Mervat E.S. Sonbati