

6. (a) How unequal concentration of Na^+ and K^+ ions in extracellular and intracellular fluid is controlled in human body? Give diagrammatic representation of the process and explain the mechanism involved in it.

(b) Discuss in detail few properties of iron which makes it important biologically.

(c) Write the structure of Melarsoprol. What is the purpose of this medicine? Explain. (5,5,5)

[This question paper contains 8 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 4657

J

Unique Paper Code : 2174001210

Name of the Paper : GE : Role of Metals in Medicines

Name of the Course : All Undergraduate Courses
Except with Chemistry
Discipline

Semester : II / IV / VI

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **FOUR** questions in all.
3. Each question carries **15** marks.

1. (a) Fill in the blanks :

- (i) _____ compounds behave as insulin mimetic agents in the treatment of diabetes.
- (ii) The ring system acting as a ligand in vitamin B12 is _____ .
- (iii) In the transformation from oxy-haemoglobin to deoxy-haemoglobin, Fe^{+2} in _____ spin state is converted to Fe^{+2} in _____ spin state.
- (iv) _____ is the important constituent of bones, teeth and plays a vital role in blood clotting.
- (v) _____ plays a crucial role in glucose metabolism by enhancing the action of insulin and is involved in regulation of blood sugar levels.

(b) Name the metal which plays a significant role in managing Diabetes. Discuss its mode of action in brief.

(c) What is the principle of antacids? Discuss the uses and composition of Alka-seltzer. (5,5,5)

5. (a) Trans-platin has no anti- cancer activity though cis-platin is a promising anticancer drug. Explain.

(b) Enlist any two metals which play a vital role in multivitamins. Explain their significance and toxicity.

(c) Explain how Camcolitis used in the treatment of manic depression? Discuss the mechanism of action and its side effects. (5,5,5).

(iv) What is the role of iron in the human body?

(A) It helps to regulate blood pressure.

(B) It is component of hemoglobin and is essential for oxygen transport

(C) It strengthens bones and teeth.

(D) It assists in muscle contraction.

(v) The abnormal growth of cells in the body is known as –

(A) Cancer

(B) Malignancy

(C) Both (A) and (B)

(D) Only (A)

(b) Mention any two potential anti-arthritis gold drugs.

Discuss the possible mechanism of their drug action.

(c) Define any **two** of the following :

(i) Metalloenzyme

(ii) Complex

(iii) Cofactor (5,5,5)

2. Write short notes on any **two** of the following :

(a) Gaviscon

(b) Essential and non-essential elements in the biological system

(c) Cyanocobalamin (5,5,5)

3. (a) What do you understand by co-operative effect?
Explain the origin of co-operativity of O_2 binding with haemoglobin.

(b) Explain the significance and function of technetium-99m (^{99m}Tc) in diagnostic imaging and therapeutic interventions.

(c) Which compound of bismuth is prescribed for the treatment of peptic ulcer? Enlist few side effects associated with it. (5,5,5)

4. (a) Answer the following multiple-choice question-

(i) Which cancer treatment uses cell killing (cytotoxic) drug?

(A) Biological therapy

(B) Chemo therapy

(C) Radio therapy

(D) Total body irradiation

(ii) Which of the following elements is a trace element that plays a role in enzyme activity?

(A) Sodium

(B) Potassium

(C) Zinc

(D) Iron

(iii) Which of the following vitamin help in blood clotting?

(A) Vitamin – A

(B) Vitamin – C

(C) Vitamin – D

(D) Vitamin – K