

- (c) What are the clinical applications of Technetium-99m in diagnostic imaging and which specific organ systems does it primarily target? (5,5,5)
6. (a) Identify two essential trace metals commonly found in multivitamin supplements and elaborate on their physiological roles.
- (b) Name the metal based drug used for treating sleeping sickness. Draw its structure and explain its mode of action in the biological system.
- (c) Explain how Gallium is used in the treatment of Cancer. How it is different from chemotherapy? Explain its advantages and limitations. (5,5,5)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5309

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Unique Paper Code : 2174001210

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

Name of the Course : **B.Sc. (Hons.)**

Semester : II/IV/VI/VIII

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) The lithium compound _____ is used in the treatment of Manic-depressive illness.
- (ii) Cadmium and mercury are regarded as _____ elements.
- (iii) _____ disease is caused by excessive accumulation of copper in liver, brain and other organs.

- (iv) Calamine lotion is a topical antimicrobial lotion composed of zinc oxide and _____.
- (v) _____ Ions are commonly used as contrast agent in MRI scans.
- (b) Draw the structure of cis-platin and trans-platin. Which is a better anti cancer drug and why? Explain the mode of action in detail.
- (c) Name the metal which plays a significant role in managing Diabetes. Discuss its mode of action in brief. (5,5,5)
2. Write short notes on the following :-
- (i) Auranofin
- (ii) Biological importance of Zinc and Copper
- (iii) I^{123} as a radiopharmaceutical. (5,5,5)
3. (a) Name bismuth containing drug used in the treatment of peptic ulcer and explain its mode of action in the biological system.
- (b) Name the drug used in the treatment of manic-depressive illness. Explain the biological mode of action.

- (c) Name the metal which plays a vital role in hemoglobin. Discuss the importance of globin in hemoglobin. (5,5,5)
4. (a) Give full form of the following :-
- (i) ADP
- (ii) DNA
- (iii) GERD
- (iv) MRI
- (v) PPI
- (b) What is the function of Manganese in human body? Explain effects of its deficiency on human body.
- (c) Explain why $BaSO_4$ is used as a contrast agent? What are its applications in radiology? Discuss its mechanism of action. (5,5,5)
5. (a) Which metal is present in Vitamin B12? Explain its importance in the biological system.
- (b) What is the chemical composition of lacto-calamine lotion? Enlist its applications.