

(FOR THE CANDIDATES ADMITTED

SUBCODE

24PCY413

DURING THE ACADEMIC YEAR 2024-2025 ONLY)

REG.NO. :

N.G.M. COLLEGE (AUTONOMOUS): POLLACHI

END-OF-SEMESTER EXAMINATIONS: MAY 2026

MSC CHEMISTRY

SEMESTER: IV

MAXIMUM MARKS: 75

TIME:3 HOURS

INORGANIC CHEMISTRY–III: BIOINORGANIC CHEMISTRY

SECTION – A

(10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS. (K1)

1. What is the name of the branch of chemistry that deals with the study of metal ions?
a) Organic chemistry b) inorganic chemistry c) physical chemistry d) bioinorganic chemistry
2. The element which is required for the maintenance of life is called as ----- element
a) Essential b) Non-essential c) bulk metal d) non vital
3. Cyanocobalamin is otherwise known as
a) Vitamin A b) Vitamin D c) Vitamin B12 d) Vitamin C
4. Which of the following is used as a radio diagnostic agent?
a) ^{19}F b) ^{12}C c) ^{18}F d) ^1H
5. Cis platin drug is used in
a) Chemotherapy b) hormone therapy c) radiation therapy d) All the above

ANSWER THE FOLLOWING IN ONE (or) TWO SENTENCES

(K2)

6. List the names of any four trace elements.
7. List the functions of Urease enzyme.
8. Explain the structure and role of Ferridoxin enzyme.
9. Define the term chemotherapy and mention any two chemotherapeutic agents used in medicine.
10. Define the term IC₅₀ value in drug discovery

SECTION – B

(5 X 5 = 25 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

11. a) Sketch the working of Na-K pump in regulation of pH of blood.

(OR)

b) Describe the biological functions of iron and zinc metals in biological systems

12. a) List any two names of metallo-enzymes containing magnesium, zinc and copper metal

(OR)

b) Illustrate the structure and functions of Carboxypeptidases.

13. a) Describe the role of Cytochrome P-450 enzyme

(OR)

ETHICAL PAPER

(CONTD..2)

- b) Illustrate the structure and applications of Hemocyanin and Hemerythrin
14. a) Illustrate the structure of DNA with a neat sketch.
- (OR)**
- b) Discuss the electronic absorption and fluorescence spectral technique employed for binding studies of metal complexes in biological systems.
15. a) Explain the terms therapeutic index and chemotherapeutic index
- (OR)**
- b) Discuss the bioinorganic chemistry of Ru and Fe metals.

SECTION – C

(5 X 8 = 40 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K4 (Or) K5)

16. a) Outline the structure and role of PS-I and PS-II in photosynthesis of plants.
- (OR)**
- b) Explain any two in vivo and in vitro methods for nitrogen fixation in detail
17. a) Discuss the structure and functions of iron, nickel and manganese superoxide dismutase
- (OR)**
- b) Discuss the structure and functions of nitrogenases and hydrogenases enzymes.
18. a) Discuss the structure and functions of Myoglobin and explain the functions of vitamin B12
- (OR)**
- b) Discuss in detail the structure and functions of haemoglobin
19. a) Discuss any four monitoring techniques available for binding interactions of DNA with complexes
- (OR)**
- b) What are chemotherapeutic agents? Explain the role of radiodiagnostic agent in MRI with an example
20. a) Discuss the factors governing the drug design and discovery.
- (OR)**
- b) Discuss in detail the applications of coordination complexes in medicinal field.
